2026-2027

Mathematics Course Guides

Middle School

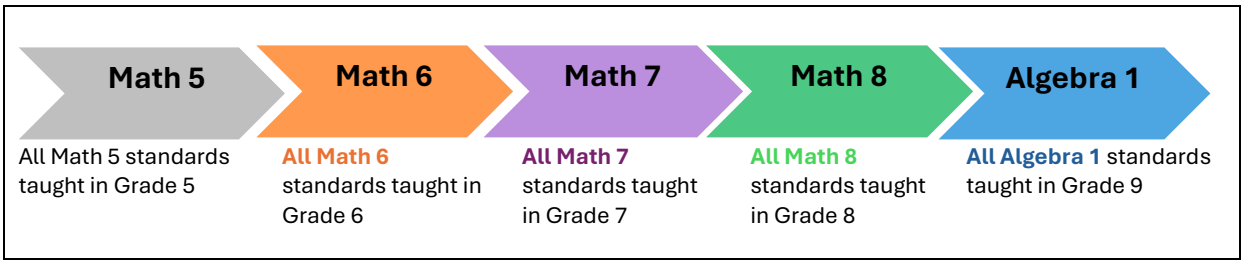
The Secondary Math Course Guides provide the standards aligned to topics and resources available in the currently adopted text. It is the teacher's professional responsibility to ensure that their students are prepared for the next course in the Pathway. This can only be accomplished when all grade level/course standards are taught with student engagement and an expectation of rigor in mathematics.

Excellence in Education, Every Student, Every Day, to Graduation

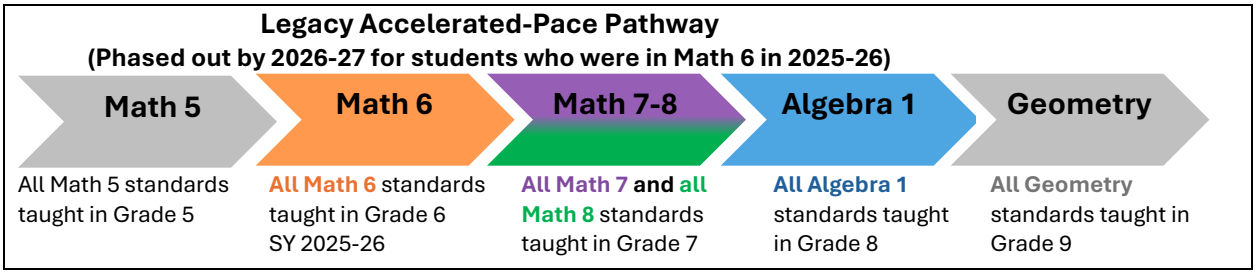
Instructional Materials & Pacing Feedback:
https://forms.office.com/r/AxxXq6XPMk

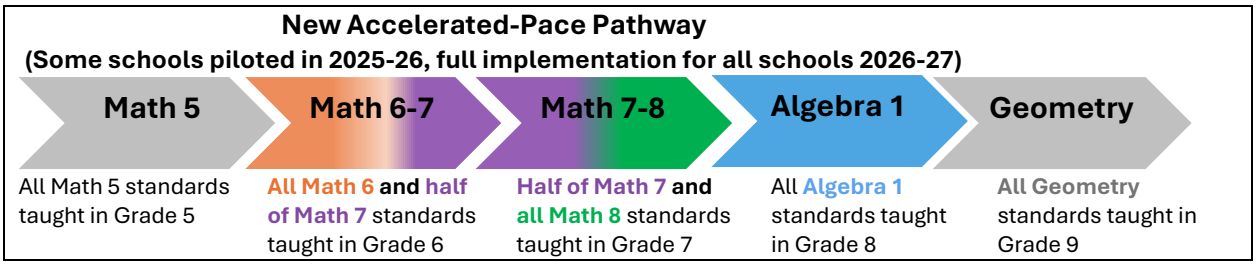
Middle School Math Pathways

Traditional Pathway to Algebra

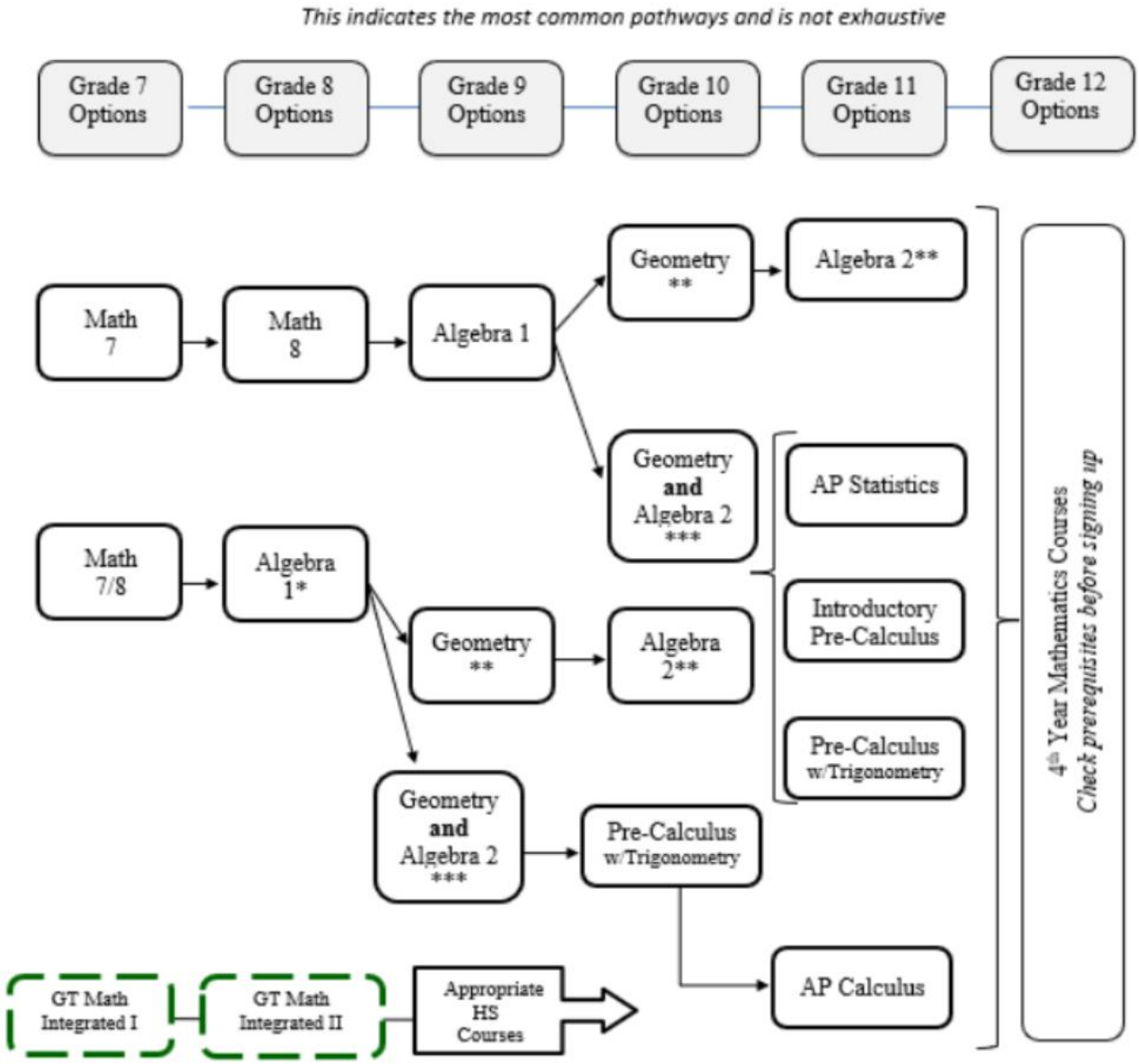


Accelerated Pathways to Algebra 1





Middle School/High School Course Sequences



* High School credit is not awarded for high school level courses taken prior to 9th grade. Middle School students must earn a qualifying grade in Algebra 1 to progress on to Geometry

** Students choose from two class options to fulfill this requirement – Geometry or Formal Geometry (H) and Algebra 2 or Honors Algebra 2 (H)

***Students can concurrently enroll in Formal Geometry and Honors Algebra 2 for acceleration.

All students must earn credits in Algebra 1, Geometry and Algebra 2 before enrolling in any of the senior level courses. Some senior level courses have other pre-requisites (see the Course Descriptions).

1

COURSE DESCRIPTIONS FOR MIDDLE SCHOOL MATHEMATICS

Math 6 (6th grade) **Course #204, 204A/204B, 721, 258**

This is a one year course for students in the 6th grade to focus on active engagement with numbers by focusing on conceptual understanding, computational and procedural skills, and problem solving. The 6th grade standards require students to study the following areas: operations with positive rational numbers, understanding of signed numbers on the number line, expressions and equations, proportional reasoning, data analysis in statistics, and plane and solid shapes. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 6/7 (6th grade) **Course #206, 206A/206B**

This is a one year course for students in the 6th grade to focus on active engagement with numbers by focusing on conceptual understanding, computational and procedural skills, and problem solving. The 6th grade standards and ½ the 7th grade standards require students to study the following areas: understanding of signed numbers on the number line, operations with positive and negative rational numbers, expressions and equations, proportional reasoning, data analysis in statistics, and plane and solid shapes. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 7 (7th grade) **Course #214, 215A/215B, 212**

This is a one year course for students in 7th grade to focus on real-world scenarios and mathematical problems involving numerical and algebraic expressions and equations. Students begin to apply their understanding of rational numbers with increased complexity to add, subtract, multiply and divide. Students develop and apply understandings of proportional relationships. Students explore concepts of angle measure, area, surface area and volume. Data analysis with multiple sets of data are examined in statistics and students investigate the chance process with probability models. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 7/8 (7th grade) **Course #220, 227A/227B, 755**

Prerequisite: Successful completion of all semesters of Math 6/7.

This is a one year course for students in 7th grade to focus on real-world scenarios and mathematical problems involving numerical and algebraic expressions and equations. Half the 7th grade standards and 8th grade standards require students to apply their understanding of rational numbers with increased complexity to add, subtract, multiply and divide. Students develop and apply understandings of proportional relationships and become comfortable using a linear equation to describe the relationship between two values in the (x,y) plane. Students will work with two- and three-dimensional shapes including side and angle measures, areas, volumes, and surface areas. Students will increase their understanding in data analysis with multiple sets of data are examined in statistics and students investigate chance process with probability models. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Math 8 (7th grade) **Course #224, 225A/225B, 222**

This is a one year course for students in 8th grade to focus on how to formulate expressions and equations, show the association of data with a linear equation, and to solve linear equations. The students become comfortable using a linear equation to describe the relationship between two values in the (x,y) plane. They will also be able to solve problems with one linear equation and systems with two linear equations. Students will learn to understand functions and to use a function to describe quantitative relationships. Students learn to assess two- and three-dimensional shapes using distance, angle, and similarity using ideas about distance

and angles. The students will understand the Pythagorean Theorem and be able to explain why it is true. The students will complete their study of volume by learning to solve for the volume of cones, cylinders, and spheres. Students will increase their understanding of the course material by participating in homework, class work, quizzes, tests, group and individual tasks, and independent problem solving.

Algebra 1 **Course #2201-2202**
Prerequisite: Successful completion of all semesters of Math 7/8.

This is a one-year course designed to teach the fundamentals of elementary algebra. This course lays the foundation of knowledge and skills to meet the Nevada Academic Content Standards in Mathematics (NVACS) for high school students. A strong foundation in algebra is needed for subsequent mathematics courses. The NVACS studied include all 5 Domains: Relationships between Quantities and Reasoning with Equations, Linear and Exponential Relationships, Descriptive Statistics, Expressions and Equations and Quadratic Functions and Modeling. Throughout the year, students will be expected to develop the ability to reason and communicate mathematically, apply learned concepts to new problem-solving situations and exhibit increased confidence in their ability to solve mathematical problems.

Successful completion of Math 6, Math 7 and Math 8 OR Math 6/7 and Math 7/8 prepares a student for Algebra 1.

Middle School Course Minutes

The course guide assumes that math students are taught for an average of 45 minutes per day or an average of 225 minutes a wee

COURSE DESCRIPTIONS FOR GT MAGNENT MIDDLE SCHOOL MATHEMATICS

Accelerated Math 6 **MS Course #771**

This course is designed to meet the needs of mathematically accelerated students enrolled in the Middle School Magnet program model by preparing students for Accelerated High School Integrated Math I, which covers Pre-algebra and begins high school Algebra 1 and Formal Geometry. Mathematical Practice Standards apply throughout each course and with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. Content is organized into units, covering the following topics: Integer number sense; integer computation; number theory; fractions; decimals; algebraic expressions and equations; 2-dimensional and 3-dimensional geometry; ratios and proportions; percent concepts and computation; and statistics. Successful completion of this course will prepare students for Accelerated High School Integrated Math I.

Accelerated HS Integrated Math I **MS Course #772**

This course is designed to offer an integrated approach to mathematics learning, with an emphasis on solving real-world problems connected to multiple content areas. The course begins with a foundation in Pre-algebra and follows a logical path through High School Algebra 1 and Formal Geometry. Algebra and geometry topics are integrated to fully establish mathematical connections. Students who successfully complete Accelerated High School Integrated Math I may be recommended for Accelerated High School Integrated Math II. Students do NOT receive high school credit for this course.

Accelerated HS Integrated Math II **MS Course #773**

Prerequisite: Accelerated High School Integrated Math I. This course is the continuation of Accelerated High School Integrated Math I, offering an integrated approach to high school Algebra 1 and Formal Geometry. The course emphasizes connections between algebraic and geometric topics and includes the solution of real-world problems connected to multiple content areas. Upon completion of this course, students will take the Nevada State End of Course Exam for Math 1 (Algebra) and Math II (Geometry) required for graduation. Successful completion of this course is the equivalent of WCSD High School Algebra 1 and Formal Geometry courses. Students who successfully complete Accelerated High School Integrated Math II may be recommended for Accelerated High School Integrated Math III or Algebra 2 Honors. Students do NOT receive high school credit for this course.

Middle School Mathematics Instructional Materials

Math 6

Amplify Desmos Math Grade 6

Copyright 2026 by Amplify

TE-ISBN 9798894042985/9798894042992
SE-ISBN 9798891805545/9798891805552

Math 7

Amplify Desmos Math Grade 7

Copyright 2026 by Amplify

TE-ISBN 9798894043173/9798894043180
SE-ISBN 9798891805583/9798891805590

Math 7/8

Amplify Desmos Math Grade Accelerated 7

Copyright 2026 by Amplify

TE-ISBN 97988940448581/9798894048598
SE-ISBN 97988940448536/9798894048543

Math 8

Amplify Desmos Math Grade 8

Copyright 2026 by Amplify

TE-ISBN 9798894043364/9798894043371
SE-ISBN 9798891805620/9798891805637

Algebra 1

Amplify Desmos Math Algebra 1

Copyright 2026 by Amplify

TE-ISBN 9798894043555/9798894043562
SE-ISBN 9798894043500/9798894043517

Standards for Mathematical Practices

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible

arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers *x* and *y*.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through $(1, 2)$ with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x-1)(x+1)$ $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

2026-2027: Recommendations for 6-12 Grading in Mathematics

Grading recommendations were established to provide those that need more specific direction somewhere to start. ***The importance of the recommendations is that consistency is established at a school site or between a feeder middle school and the high school.*** The PLC group should decide on more specific grading policies for their school but should be in line with the recommendations here.

1. Grading at any level should be **consistent** within the building for like grades levels and courses.
2. **Lesson Activities** are assigned and are completed by the students on their own time or in class with assistance. Individual performance on projects may be included in this category. *Only grade-level lesson activities should be included int the gradebook.*
3. **Assessments** are to determine what the students have learned and are summative in nature. These are **individual performance measures and should be monitored assessments**. Students **may** have the opportunity to take a retake. Grades recorded in assessment should reflect what the students know. Caution should be given to practices that would inflate test grades.

6-12 Math Courses Grading Recommendations

Middle School

Grade-Level	Lesson Activities (at grade level)	Assessments
6th grade	30 – 40%	60 – 70%
7th grade	25 – 35%	65 – 75%
8th grade	20 – 30%	70 – 80%

High School (for middle school students enrolled in HS level courses)

Courses	Lesson Activities (at grade level)	Assessments	Final
Algebra	0 – 15%	75– 90%	10 – 15%

Other Considerations:

- Each category should include multiple assignments.
- Be careful when using multipliers, percents, and weighted categories together. The combination can skew the weight of the assignment.

Amplify Calculator Guidance – By Grade and Unit (based on SBA access)

Math 6							
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**
Calculator: Yes	Calculator: Yes	Calculator: Yes	Calculator: No	Calculator: No	Calculator: Yes*	Calculator: No**	Calculator: Yes

Math 6-7							
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**
Calculator: Yes	Calculator: Yes	Calculator: No	Calculator: Yes*	Calculator: Yes	Calculator: Yes*	Calculator: No	Calculator: Yes

Math 7							
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**
Calculator: Yes	Calculator: Yes	Calculator: Yes	Calculator: Yes	Calculator: No	Calculator: No***	Calculator: Yes	Calculator: Yes

Math 7-8 (entering from Math 6)									
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**	**Unit 9**	**Unit 10**
Calc: Yes	Calc: Yes	Calc: No	Calc: Yes*	Calc: Yes*	Calc: Yes*	Calc: Yes*	Calc: Yes*	Calc: No***	Calc: No

Math 7-8 (entering from Math 6-7)								
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**	**Unit 9**
Calculator: Yes	Calculator: Yes	Calculator: Yes*	Calculator: Yes*	Calculator: Yes*	Calculator: Yes*	Calculator: Yes*	Calculator: No***	Calculator: No

Math 8							
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**	**Unit 8**
Calculator: Yes	Calculator: Yes	Calculator: Yes*	Calculator: Yes	Calculator: Yes*	Calculator: Yes*	Calculator: No***	Calculator: No

* Calculator use varies by task model, students should practice with and without a calculator. The Amplify assessments include a calculator.

** The Amplify Assessment includes a calculator. For most, if not all, a calculator is not useful.

*** The Amplify Assessment includes a calculator. Recommend disabling.

Even though calculators are allowed in certain units, number fact automaticity is important to the success of all students in mathematics.
If students struggle with automaticity, consider using the Amplify Fact Fluency App

Recommendation: Limit the use of calculators for all lessons that have "friendly" numbers.

Fall 2026

August	26	27	28	29	30	31	1
	2	3	4 Teacher PD Day	5 Teacher PD Day	6 Teacher PD Day	7 Teacher Work Day	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
September	30	31	1	2	3	4	5
	6	7 Labor Day	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	1	2	3
October	4	5 Fall Break	6 Fall Break	7 Fall Break	8 Fall Break	9 Fall Break	10
	11	12 Teacher PD Day	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30 Nevada Day	31
November	1	2	3	4	5	6	7
	8	9	10	11 Veteran's Day	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25 Thanksgiving Break	26 Thanksgiving Break	27 Thanksgiving Break	28
December	29	30	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14 HS Finals	15 HS Finals	16 HS Finals	17 HS Finals	18 Teacher Work Day	19
	20	21	22	23	24	25	26
	27	28	29	30	31	1	2

Spring 2027

January	27	28	29	30	31	1	2
	3	4 Teacher PD Day	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18 MLK Day	19	20	21	22	23
	24	25	26	27	28	29	30
February	31	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15 President's Day	16	17	18	19	20
	21	22	23	24	25	26	27
March	28	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22 Spring Break	23 Spring Break	24 Spring Break	25 Spring Break	26 Spring Break	27
	28	29 Spring Break	30 Spring Break	31 Spring Break	1 Spring Break	2 Spring Break	3
April	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	1
May	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
June	30	31 Memorial Day	1 (HS Finals)	2 HS Finals	3 HS Finals	4 HS Finals	5
	6	7 Contingency Day	8 Contingency Day	9 Contingency Day	10	11	12

Blank

Page

2026-2027

Math 6
Course Guide

#204 Math 6
#204A/204B MYP Math 6

Math 6 Pacing (Days in Q1-43, Q2-38, Q3-47, Q4-49)

Semester 1		***Semester 2***	
Unit	*Days*	*Unit*	*Days*
Community & Identity through SMP	4	Unit 5: Decimal Arithmetic	23
Unit 1: Area & Surface Area	17	Unit 6: Expressions & Equations	21
Unit 2: Introducing Ratios – Sub Unit 1 & 2 (start Sub-Unit 3 after fall break)	19	*Flex Days (iReady Testing, school events etc)*	3
Flex Days (iReady Testing, school events etc)	3		
Be here by 10/16, the end of Q1		Be here by 3/12, the end of Q3	
Unit 3: Unit Rates and Percentages	18	Unit 7: Pos/Neg Numbers	18
Unit 4: Dividing Fractions	19	Unit 8: Describing Data	18
Flex Days (iReady Testing, school events etc)	1	*Flex Days (iReady Testing, school events etc)*	13
Be here by 12/17, the end of Q2		Be here by 6/4, the end of Q4	

Math 6

Math 6 – Unit 1: Area and Surface Area

Standards

Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)
Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.1)

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.4)

Apply and extend previous understandings of arithmetic to algebraic expressions. (6.EE.A)
Write, read, and evaluate expressions in which letters stand for numbers. (6.EE.A.2)

> Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y*. (6.EE.A.2.a)
>
> Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$*. (6.EE.A.2.c)

Concepts	Skills
Area Triangles Right triangles Special quadrilaterals Three-dimensional nets Surface Area Expressions Variables	- Find area of triangle - Find area of parallelogram - Find area of polygons by composing of decomposing into other shapes - Represent 3-dimensional objects using nets - Find the surface area of 3-diminsional objects using nets. - Evaluate expressions for specific values (area of parallelogram or triangle formulas)

Learning Progressions/Concept Development

1. Calculate the area of a parallelogram. (L1 – L5)
2. Calculate the area of a triangle. (L6 – L8)
3. Calculate the area of polygons by decomposing into quadrilaterals and triangles. (L9)
4. Calculate the surface area of prisms and pyramids, consisting of quadrilateral and triangular faces. (L10 – L13)

Math 6

Unit 6.1: Area and Surface Area (18 days)		
Day	**Lessons (45 – minutes)**	**Success Criteria**
Sub-Unit 1 - Area		
1	1: Shapes on Plane *(Exploring area)*	• I know what area is. • I can describe a strategy for determining the area of a shape on a grid.
2	2: Letters *(Area strategies)*	• I can determine the area of a non-rectangular shape using a variety of strategies. • I can explain why breaking apart a shape and rearranging the pieces keeps the area the same.
3	3: Exploring Parallelograms, Part 1 *(Areas on a grid)*	• I can use different strategies to determine the area of a parallelogram. • I can compare and contrast strategies for determining the area of a parallelogram.
4	4: Exploring Parallelograms, Part 1 *(Areas on a grid)*	• I can calculate the area of any parallelogram using its base and height. • I can explain strategies for determining the area of a parallelogram on a grid.
5	5: Off the Grid, Part 1 *(Calculating areas of parallelograms)*	• I can calculate the area of a parallelogram or use a given area to determine the length of a missing base or height. • I can analyze strategies for determining the area of a parallelogram.
**** Concept Dev. Check Point: Students should be able to calculate the area of a parallelogram***		
6	6: Exploring Triangles *(Areas on a grid)*	• I can use different strategies to determine the area of a triangle on a grid.
7	7: Triangles & Parallelograms *(Generalize area of triangle)*	• I know the relationship between the area of a triangle and the area of a parallelogram with the same base and height. • I can make sense of strategies for determining the area of a triangle on a grid.
8	8: Off the Grid, Part 2 *(Apply formula for area of triangle)*	• I can calculate the area of any triangle. • I can explain strategies for determining the area of a triangle off a grid
**** Concept Dev. Check Point: Students should be able to calculate the area of a triangle***		
9	9: Pile of Polygons *(Investigate polygons and their areas)*	• I can use what I know about the areas of rectangles and triangles to calculate the area of a polygon. • I can describe strategies for determining the area of polygons
**** Concept Dev. Check Point: Students should be able to calculate the area of a polygon composed of familiar shapes.***		
10	Practice Day 1 *(review lessons 1-9)*	
11	Sub-Unit 1 Quiz *(Assess and respond)*	
Sub-Unit 2 – Surface Area		
12	10: Renata's Stickers *(Intro to surface area)*	• I know what surface area is. • I can calculate the surface area of a rectangular prism.

Math 6

13	11: Plenty of Polyhedra *(Polyhedra and their faces)*	• I can describe the difference between prisms and pyramids. • I know what a net is and how it's related to a polyhedron.
14	12: Nothing but Nets *(Nets and surface areas on a grid)*	• I can calculate the surface area of a prism or pyramid using a net on a grid.
15	13: Face Value *(Surface area without a grid)*	• I can calculate the surface area of a prism or pyramid using a drawing or a net, and describe my strategy. • I can describe what prism or pyramid can be created from a net without using a grid.
**** Concept Dev. Check Point: Students should be able to calculate the surface area of a prism or pyramid.***		
*	**(optional)* 14: Take it to Go *(Surface area in context)*	• I can design a net for a three-dimensional object and calculate its surface area to answer problems in context. • I can describe what prism or pyramid can be created from a net.
16	Practice Day 2 *(review lessons 1-14)*	
17	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3 & 4
4	Lesson 5
5	Lesson 6
6	Lesson 7
7	Lesson 8
8	Lesson 9 + Start Practice
9	Finish Practice 1 + Quiz
10	Lesson 10
11	Lesson 11
12	Lesson 12
13	Lesson 13 + Start Lesson 14
14	Finish Lesson 14 + Practice
15	Test

Block Schedule Pacing Adjustment (9.5 days)

Prior	Pre-Unit Check
1	Lesson 1 + Lesson 2
2	Lesson 3 + Lesson 4
3	Lesson 5 + Lesson 6
4	Lesson 7 + Lesson 8
5	Lesson 9 + Practice
6	Quiz
7	Lesson 10 + Lesson 11
8	Lesson 12 + Lesson 13
9	Lesson 14 + Practice 2
10	Test (+ Pre-check Unit 2)

Math 6

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 1L)
- Combine Pre-Unit Check and Lesson 1
- Combine Lesson 3 & 4: Warm-up (L4), Activity 1 (L3), Activity 2 (L4), Activity 3 (L4), Practice(L4)
- Omit Lesson 14

Unit 1 Reflection: Notes to my future forgetful self.

Math 6

Math 6 – Unit 2: Introducing Ratios

Standards

Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)
Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* (6.RP.A.1)

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (6.RP.A.3)

> Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. (6.RP.A.3.a)

Concepts	Skills
Ratio Ratio Relationship Quantities Tables of equivalent ratios Tape diagrams Double number line diagrams Equations Coordinate pairs Coordinate plane	- Describe a relationship between two quantities - using ratio language. - Use ratio and rate reasoning to solve problems. - Use a variety of strategies to solve ratio problems. - Make tables of equivalent ratios. - Find missing values in a table of values using - ratios.

Learning Progressions/Concept Development

1. Create Equivalent Ratios (L1 – L4)
2. Determine greatest common factor or least common multiple. (L5 – L8)
3. Use tables of equivalent ratios to determine unknown values. (L9 – L10)
4. Analyze part – part and part – whole relationships. (L11 – L14)

Math 6

Unit 6.2: Introducing Ratios (18 Days)		
Day	**Lessons (45 – minutes)**	**Success Criteria**
	Sub-Unit 1 - Ratios	
1	Reflect Unit 1 & Pre-check Unit 2 *(Assess and respond)*	
2	1: Pizza Maker *(Exploring ratios)*	• I can describe the relationship between two quantities. • I can determine an unknown quantity in a given relationship.
3	2: Ratio Relationships *(Describing ratios)*	• I can use words, numbers, and the symbol : to describe a ratio relationship.
4	3: Rice Ratios *(Intro to equivalent ratios)*	• I know what equivalent ratios are and can identify them in context.
5	4: Fruit Lab *(Creating equivalent ratios)*	• I can generate an equivalent ratio by multiplying or dividing both values by the same number. • I can justify whether two ratios are equivalent.
**** Concept Dev. Check Point: Students should be able to create equivalent ratios and determine if 2 ratios are equivalent.***		
6	5: Balancing Act *(Intro to double number lines)*	• I can label a double number line and explain how it represents a situation. • I can use a double number line to solve problems involving equivalent ratios
7	6: Product Prices *(Price for one)*	• I can calculate a ratio for 1 of an item to help me solve problems.
8	Practice Day 1 *(review lessons 1-6)*	
9	Sub-Unit 1 Quiz *(Assess and respond)*	
Sub-Unit 2 – Common Factors & Multiples (finish by fall break)		
10	7: Common Multiples *(Investigating LCM)*	• I can explain what the least common multiple of two numbers means. • I can determine the least common multiple of two numbers.
11	8: Common Factors *(Investigating GCF)*	• I can explain what the greatest common factor of two numbers means. • I can determine the greatest common factor of two numbers.
**** Concept Dev. Check Point: Students should be able to calculate the GCF and LCM of 2 numbers.***		
12	9: Mixing Paint, part 1 *(Comparing ratios)*	• I can compare two ratios related to the same situation. • I can justify whether two ratios are equivalent by transforming them.
Sub-Unit 3– Solving Problems with Ratios (start after fall break)		
13	10: Disaster Preparation *(Using ratio tables with large quantities)*	• I can use a table to determine missing values for a ratio relationship in context.
**** Concept Dev. Check Point: Students should be able to use an equivalent ratio table to determine unknown values in context.***		
14	11: Balloons *(Solve ratio problems)*	• I can use multiple steps to determine an unknown value in a ratio relationship.

Math 6

15	12: Community Life *(Solving equivalent ratio problems)*	• I can solve problems involving ratio reasoning
16	13: Mixing Paint, part 2 *(Part-part-whole ratios)*	• I can use tape diagrams to solve problems when I know a ratio among the parts and a total amount. • I can justify whether to start with the parts or the total when solving ratio problems.
17	14: City Planning *(Apply part-part-whole ratio problems)*	• I can use tape diagrams to solve problems involving part-part-whole relationships. • I can interpret representations of a part-partwhole relationship in context.
**** Concept Dev. Check Point: Students should be able to analyze and calculate unknown values in part-part-whole relationships.***		
*	*(optional)* 15: Lunch Waste *(Apply ratio strategies)*	• I can apply ratio reasoning to answer questions about a real-world situation. • I can describe the relationship between ratios in context.
18	Practice Day 1 *(review lessons 1-15)*	
19	End of Unit Assessment *(Assess and Respond)*	

4 classes/week Pacing Adjustment (16 days)

1	Reflect U1 Assess & Pre-check
2	Lesson 1 & 2
3	Lesson 3 & 4
4	Lesson 5
5	Lesson 6
6	Practice Day
7	Quiz
8	Lesson 7
9	Lesson 8
10	Lesson 9
11	Lesson 10
12	Lesson 11 & 12
13	Lesson 13
14	Lesson 14 & 15
15	Practice Day 2
16	Test

Block Schedule Pacing Adjustment (12 days)

1	Reflect U1 Assess + Pre-check
2	Lesson 1 + Lesson 2
3	Lesson 3 + Lesson 4
4	Lesson 5 + Lesson 6
5	Practice
6	Quiz + lesson 7
7	Lesson 8 + Lesson 9
8	Lesson 10
9	Lesson 11 + Lesson 12
10	Lesson 13 + Lesson 14
11	Lesson 15 + Practice
12	Test + Pre-check Unit 3

Math 6

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 111L)
- Combine Lesson 1 & 2: Screens 1 – 4 from lesson 1, and screens 5 – 11 from lesson 2
  Omit Lesson 15

Unit 2 Reflection: Notes to my future forgetful self

Math 6

Math 6 – Unit 3: Unit Rates and Percentages

Standards

Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)
Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*(6.RP.A.2)

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (6.RP.A.3)

Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. (6.RP.A.3.a)

Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?* (6.RP.A.3.b)

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. (6.RP.A.3.c)

Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. (6.RP.A.3.d)

Concepts	Skills
Unit Rate Equivalent Ratios Unit Pricing Constant Speed Tables of Equivalent Ratios Percent of a quantity Measurement Units	- Convert measurements from one unit of measure to another. - Calculate and compare speeds. - Determine the two unit rates associated with a:b. - Use unit rates to complete tables of equivalent ratios. - Use unit rates to calculate unknown values. - Solve problems using friendly percents and tools such as double number lines. - Find the percent of a quantity. - Solve percent problems when given a part and a percent.

Learning Progressions/Concept Development

1. Convert between units in different systems of measurement (L1 – L3)
2. Use unit rates to make comparisons and calculate unknown quantities. (L4 – L8)
3. Calculate unknown percentages. (L9 – L13)

Math 6

Unit 6.3: Unit Rates and Percentages (18 days)		
Day	**Lessons (45 – minutes)**	**Success Criteria**
Sub-Unit 1 - Units and Measurement		
1	Reflect Unit 2 & Pre-check Unit 3	
2	1: Many Measurements *(Everyday measurements)*	• I can tell whether a certain unit measures length, area, time, weight, or volume. • I can compare different units of measurement.
3	2: Counting Classrooms *(Measuring with different units)*	• I can convert measurements from one unit to another in different measurement systems. • I can explain why it takes more of a smaller unit to measure the same quantity.
4	3: Pen Pals *(Converting units)*	• I can convert measurements from one unit to another in different measurement systems.
**** Concept Dev. Check Point: Students should be able to convert between units in different systems of measurement.***		
Sub-Unit 2 - Unit Rates		
5	4: World Records *(Comparing speeds)*	• I can calculate the speed of an object by finding the unit rate.
6	5: Model Trains *(Comparing rates)*	• I can compare rates that are written in different units.
7	6: Soft Serve *(Two unit rates)*	• I can calculate unit price and express it using the word per. • I can calculate and interpret the two unit rates for the same relationship.
8	7: Welcome to the Robot Factory *(Using unit rates)*	• I can show and explain how to use unit rates to complete a table of equivalent ratios.
9	8: More Soft Serve *(Solving rate problems)*	• I can make comparisons and calculate unknown quantities using unit rates.
**** Concept Dev. Check Point: Students should be able to use unit rates to make comparisons and calculate unknown quantities***		
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit 1 & 2 Quiz	
Sub-Unit 3 - Percentages		
12	9: Lucky Duckies	• I can calculate 10%, 25%, 50%, or 75% of a number.
13	10: Bicycle Goals *(Friendly percentages)*	• I can solve percentage problems about unknown parts and wholes using double number lines, tape diagrams, or tables.
14	11: What's Missing *(Solving percentage problems)*	• I can create tape diagrams, double number lines, or tables to determine unknown parts, percentages, or wholes
15	12: Cost Breakdown *(Any percentage number)*	• I can calculate any percentage of a number.
16	13: More Bicycle Goals *(Unknown percentages)*	• I can calculate an unknown percentage. • I can explain different expressions for calculating an unknown percentage.
**** Concept Dev. Check Point: Students should be able to calculate an unknown percentage.***		

Math 6

*	*(optional)* 14: A Country as a Village *(Applying ratios, rates, & percents)*	• I can use rates and percentages to analyze real-world data. • I can interpret and describe rates and percentages within their real-world context.
17	Practice Day 2 *(review lessons 1-14)*	
18	End of Unit Assessment	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Reflect Unit 2
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5
6	Lesson 6
7	Lesson 7 & 8
8	Practice Day 1
9	Sub-Unit Quiz
10	Lesson 9 & 10
11	Lesson 11
12	Lesson 12
13	Lesson 13 & 14
14	Practice Day 2
15	End of Unit Assessment

Block Schedule Pacing Adjustment (10 days)

1	Reflect Unit 2 + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 + 7
5	Lesson 8 + Practice
6	Sub-unit Quiz + Lesson 9
7	Lesson 10 + 11
8	Lesson 12 + 13
9	Lesson 14 + Practice
10	Test + Pre-check Unit 4

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 233L)
- Omit Lesson 1 and combine lessons 2 & 3
- Omit lesson 14

Unit 3 Reflection: Notes to my future forgetful self

Math 6

Math 6 – Unit 4: Dividing Fractions

Standards

Apply and extend previous understandings of multiplication and division to divide fractions by fractions. (6.NS.A)
Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*. (6.NS.A.1)

Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)
Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas *V = l w h* and *V = b h* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (6.G.A.2)

Concepts	Skills
Quotients Division of Fractions Fraction Models Equations Area Volume Right Rectangular Prisms Fraction Edge Lengths Formulas V = lwh or V = Bh	- Interpret quotients of fractions - Compute quotients of fractions. - Solve word problems involving fraction division. - Use visual fraction models - Use fraction equations - Find areas with fractional dimensions - Find volumes of right rectangular prisms

Learning Progressions/Concept Development

1. Develop fluency in dividing fractions using at least one strategy. (L1 – L2)
2. Divide fractions using an algorithm. (L3-L11)
3. Apply fraction division to area and volume problems involving fractional dimensions. (L12 – L15)

Unit 6.4: Dividing Fractions
(19 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Introduction to Dividing Fractions	
1	Reflect Unit 2 & Pre-check Unit 3 *(Assess and respond)*	
2	1: Cookie Cutter *(Estimating quotients)*	• I can decide whether a quotient in a division situation is greater than 1, less than 1, or equal to 1 without calculating.
3	2: Division Meaning *(Representing division situations)*	• I can draw tape diagrams that represent division situations involving whole numbers. • I can decide whether a division question is asking "How many groups?" or "How many in each group?"
4	3: Flour Planner *(How many groups?, part 1)*	• I can use diagrams to represent and solve division problems when the size of each group is a fraction.
5	4: Flower Planter *(How many in each group?)*	• I can connect situations and expressions that represent the question "How many in 1 group?" when a whole number is divided by a fraction.
	Sub-Unit 2 - Dividing Fractions	
6	5: Garden Bricks *(How many groups?, part 2)*	• I can use tape diagrams to represent and solve division problems asking "How many groups?" when the answer is a fraction.
7	6: Fill the Gap *(More of less than one group?)*	• I can use tape diagrams with common denominators to solve division problems asking "How many groups?" • I know whether the number of groups in a division problem is greater than or less than 1.
8	7: Break it Down *(Using common denominators to divide)*	• I can use common denominators to divide fractions
9	8: Potting Soil *(Dividing by unit fractions)*	• I can use a tape diagram to represent division by a fraction. • I can explain why dividing by a unit fraction, such as 1/3, results in the same value as multiplying by a whole number, such as 3.
10	9: Division Challenges *(Two strategies for dividing fractions)*	• I can calculate the quotient of two fractions using multiple methods
11	10: Action Fractions *(Relating fraction division to multiplication)*	• I can identify and write equivalent expressions using division and multiplication with fractions. • I can determine if different strategies for dividing fractions are correct and explain why.
12	11: Swap Meet *(Division of fractions in context)*	• I can solve problems involving division of fractions in context and explain my solution method.
**** Concept Dev. Check Point: Students should be able to divide fractions.***		
13	Practice Day 1 *(review lessons 1-11)*	
14	Sub-Unit 1 & 2 Quiz *(Assess and Respond)*	

Math 6

Be here by end of Semester 1		
Sub-Unit 3: Area and Volume with Fractions		
15	12: Classroom Comparisons *(Comparing fractional lengths)*	• I can divide fractions to solve problems about comparing lengths.
16	13: Puzzling Areas *(Areas with fractional dimensions)*	• I can use division and multiplication to solve problems about areas of polygons that have lengths that are fractions.
17	14: Volume Challenges *(Volume with fractional dimensions)*	• I can calculate the volume of a rectangular prism with lengths that are fractions. • I can solve problems about volumes of rectangular prisms with lengths that are fractions.
*	15: Planter Planner *(Applying Fraction Division)*	• I can use fraction division and multiplication to solve problems about area and volume in context.
**** Concept Dev. Check Point: Students should be able to calculate volumes with fractional dimensions.***		
18	Practice Day 2	
19	End of Unit Assessment *(Assess and Respond)*	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Reflect Unit 3
2	Lesson 1
3	Lesson 2 & 3
4	Lesson 4
5	Lesson 5
6	Lesson 6 & 7
7	Lesson 8
8	Lesson 9
9	Lesson 10
10	Lesson 11 + Practice Day 1
11	Sub-Unit 1 & 2 Quiz
12	Lesson 12
13	Lesson 13 & 14
14	Practice Day 2
15	Test

Block Schedule Pacing Adjustment (9 days)

1	Reflect Unit 3 + Lesson 2
2	Lesson 3 & 4
3	Lesson 5, 6 & 7
4	Lesson 9, & 10
5	Lesson 11 + Practice Day 1
6	Sub-Unit 1 & 2 Quiz
7	Lesson 12 & 13
8	Lesson 14 & Practice Day 2
9	Test + Pre-check Unit 5

Math 6

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 341L)
- Omit Lesson 1
- Omit Lesson 2 or combine with Lesson 3
- Combine Lesson 6 and 7
- Omit Lesson 15

Unit 4 Reflection: Notes to my future forgetful self

Math 6

Math 6 – Unit 5: Decimal Arithmetic

Standards

Compute fluently with multi-digit numbers and find common factors and multiples. (6.NS.B)
Fluently divide multi-digit numbers using the standard algorithm. (6.NS.B.2)

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (6.NS.B.3)

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).* (6.NS.B.4)

Use ratio and rate reasoning to solve real-world and mathematical problems. (6.RP.A)
Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. (6.RP.A.3.c)

Concepts	Skills
Standard Algorithm Multi – Digit Decimal Distributive Property (Multiply/divide powers of 10) Percent	- Fluently add - Fluently subtract - Fluently multiply - Fluently divide - Find Percent (as decimal)

Learning Progressions/Concept Development

1. Add and Subtract Decimals (L1 – L3)
2. Multiply Decimals (L4 – L8)
3. Divide Decimals (L9 – L12)
4. Rewrite equivalent forms of decimals, fractions and percents (L15 – L16)

Unit 6.5: Decimal Arithmetic
(23 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Adding and Subtracting Decimals	
1	Reflect Unit 4 & Pre-check Unit 5 *(Assess and respond)*	
2	1: Dishing Out Decimals *(Reasoning with decimals)*	• I can use decimals to estimate and calculate costs. • I can describe strategies for estimating costs
3	2: Decimal Diagrams and Algorithms *(Representing Fractions)*	• I can represent decimals using tenths, hundredths, and thousandths. • I can use diagrams and algorithms to add and subtract decimals.
4	3: Fruit by the Pound *(Adding and subtracting decimals, part 1)*	• I can use diagrams, vertical calculations, and place value to add and subtract decimals
5	4: Missing Digits *(Adding and subtracting decimals, part 1)*	• I can add and subtract decimals using vertical calculations.
	**** Concept Dev. Check Point: Students should be able to add and subtract decimals.***	
	Sub-Unit 2 - Multiplying Decimals	
6	5: Decimal Multiplication *(Introduction to multiplying decimals)*	• I can use area to make sense of decimal multiplication.
7	6: Garden Arrangements *(Factors and expressions)*	• I can write the sum of two values as one of their common factors times the sum of two whole numbers.
8	7: Multiplying With Areas *(Using area models to multiply)*	• I can use area models to represent and calculate products of decimals.
9	8: Multiplication Methods *(Using place value to multiply)*	• I can use fractions and the products of whole numbers to calculate the products of decimals.
	**** Concept Dev. Check Point: Students should be able to multiply decimals.***	
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit Quiz 1 *(Assess and Respond)*	
	Sub-Unit 3 – Division and Dividing Decimals	
12	9: Quotient Quest *(Dividing whole numbers using partial quotients)*	• I can use division strategies to divide whole numbers when the quotient is and is not a whole number.
13	10: Just Keep Dividing *(Dividing whole numbers using long division)*	• I can use long division to divide two whole numbers, both when the quotient is a whole number and when it is not.
14	11: Division Diagrams *(Making sense of decimal division)*	• I can use a hundredths chart and reasoning to divide decimals.
15	12: Return of Long Division *(Long division with decimal quotients)*	• I can use long division to divide multi-digit decimals.
	**** Concept Dev. Check Point: Students should be able to divide decimals.***	
16	13: Movie Time *(Dividing decimals in context)*	• I can divide decimals to solve problems about speed and duration.

Math 6

17	Practice Day 2 *(review lessons 1-13)*	
18	Sub-Unit Quiz 2 *(Assess and Respond)*	
Sub-Unit 4 – Solving Problems with Decimals		
19	14: Budget Vehicles *(Operations with decimals in context)*	• I can use ratio reasoning and decimal operations to solve real-world problems involving decimal values.
20	15: Coining New Representations *(Percents, decimals, fractions)*	• I can convert between percentages, fractions, and decimals.
21	16: Grocery Prices *(Percentages as decimals)*	• I can make connections between percentages and decimals. • I can write and evaluate expressions with decimals to solve percentage problems.
22	Practice Day 3 *(review lessons 1-16)*	
21	End of Unit Assessment *(Assess and Respond)*	

4 classes/week Pacing Adjustment (19 days)

1	Pre-Check + Reflect Unit 4
2	Lesson 1
3	Lesson 2
4	Lesson 3 & 4
5	Lesson 5 & 6
6	Lesson 7
7	Lesson 8
8	Practice Day 1
9	Sub-Unit Quiz 1
10	Lesson 9
11	Lesson 10
12	Lesson 11 & 12
13	Lesson 13
14	Practice Day 2
15	Sub-Unit Quiz 2
16	Lesson 14 & 15
17	Lesson 16
18	Practice Day 3
19	End of Unit Assessment

Block Schedule Pacing Adjustment (12 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Lesson 5 & 6
4	Lesson 7 & 8
5	Practice + Quiz 1
6	Lesson 9 & 10
7	Lesson 11 & 12
8	Lesson 13 + Practice
9	Quiz 2 + Lesson 14
10	Lesson 15 & 16
11	Practice Day
12	Test + Pre-Check Unit 6



Short on Time:

- Omit Lesson 1
- Combine Lesson 3 & 4, or omit lesson 4
- Omit Lesson 12 if students show strong understanding after lesson 10
- Omit Lesson 14 and/or 15

Math 6

Unit 5 Reflection: Notes to my future forgetful self.

Math 6 – Unit 6: Equations and Expressions

Standards

Apply and extend previous understandings of arithmetic to algebraic expressions. (6.EE.A)
Write and evaluate numerical expressions involving whole-number exponents. (6.EE.A.1)

Write, read, and evaluate expressions in which letters stand for numbers. (6.EE.A.2)

Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y*. (6.EE.A.2.a)

Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms*. (6.EE.A.2.b)

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2*. (6.EE.A.2.c)

Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*. (6.EE.A.3)

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.* (6.EE.A.4)

Reason about and solve one-variable equations and inequalities. (6.EE.B)
Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5)

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (6.EE.B.6)

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. (6.EE.B.7)

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. (6.EE.B.8)

Represent and analyze quantitative relationships between dependent and independent variables. (6.EE.C)
Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph

ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. (6.EE.C)

Concepts	Skills
Equations, p+x = q and px = q Inequalities, x > c and x < c Variables Expressions Equivalent Quantitative relationships Dependent variables Independent variables Graphs, tables, and equations	- Solve equations - Solve inequalities - Write and evaluate expressions - Rewrite equivalent expressions - Use variables to represent two-quantities - Graph solutions to inequalities - Graph ordered pairs - Identify independent/dependent variables (work with science teacher)

Learning Progressions/Concept Development

1. Write and solve one-step equations (L1 – L5)
2. Write equivalent expressions. (L6 – L9)
3. Evaluate expressions, including those with exponents, for specific values. (L10 – L12)
4. Make sense of different representations of relationships. (L13 – L16)

Unit 6.6: Expressions and Equations

(21 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Solving Equations	
1	Reflect Unit 5 & Pre-check Unit 6 *(Assess and respond)*	
2	1: Weight for It *(Reasoning about unknown values)*	• I can use reasoning and tape diagrams to determine unknown values.
3	2: Five Equations *(Tape diagrams, equations, & Situations)*	• I can interpret the meaning of variables and solutions in context • I can make connections between tape diagrams, equations, and situations.
4	3: Hanging Around *(Intro to balanced hangers)*	• I can make connections between balanced hangers and true equations.
5	4: Hanging it Up *(Solving equations)*	• I can solve equations that include whole numbers, decimals, and fractions with and without diagrams.

Math 6

6	5: Swap and Solve *(Solving equations in context)*	• I can explain what the solution to an equation means in a situation. • I can write a situation to represent an equation.
**** Concept Dev. Check Point: Students should be able to solve one-step equations.***		
Sub-Unit 2 - Equivalent Expressions		
7	6: Vari-apples *(Introduction to variable expressions)*	• I can write an expression with a variable to represent a situation.
8	7: Border Tiles *(Equivalent expressions)*	• I can justify whether two expressions are equivalent.
9	8: Product and Sums *(Distributive property, part 1)*	• I can use an area model of a rectangle to write equivalent expressions.
10	9: Equivalent Expressions *(Distributive property, part 2)*	• I can analyze expressions to determine if they are equivalent
**** Concept Dev. Check Point: Students should be able to write equivalent expressions***		
11	Practice Day 1 *(review lessons 1-8)*	
12	Sub-Unit Quiz 1 *(Assess and Respond)*	
Sub-Unit 3 - Expressions Involving Exponents		
13	10: Powers *(What are exponents?)*	• I can decide whether two expressions that include exponents are equivalent.
14	11: Exponent Expressions *(Exponents & order of operations)*	• I can determine the value of an expression that has exponents and other operations.
15	12: Squares and Cubes *(Exponent expressions w/ variables)*	• I can evaluate expressions with exponents.
**** Concept Dev. Check Point: Students should be able to evaluate expressions, including those with exponents***		
Sub-Unit 4 - Introduction to Representing Relationships		
16	13: Turtles All the Way *(Stories, tables, and variables)*	• I can interpret tables and equations that represent a relationship between two quantities
17	14: Representing Relationships *(Interpret graphs)*	• I can create tables and graphs that show the relationship between two quantities • I can identify the independent and dependent variable on a graph.
18	15: Connecting Representations *(Tables, equations, graphs of relationships)*	• I can connect tables, graphs, and equations that represent the same relationship. • I can interpret an equation that represents the relationship between two quantities.
19	16: Subway Fares *(Applying relationships)*	• I can use tables, graphs, and equations to analyze an issue in society.
**** Concept Dev. Check Point: Students should be able to use graphs, tables, and equations to make sense of relationships***		
20	Practice Day 2 *(review lessons 1-16)*	
21	End of Unit Assessment *(Assess and Respond)*	

Math 6

4 classes/week Pacing Adjustment (17 days)

1	Pre-Check + Reflect Unit 4
2	Lesson 1 & Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Lesson 7
7	Lesson 8 & 9
8	Practice Day 1
9	Sub-Unit Quiz 1
10	Lesson 10 & 11
11	Lesson 12
12	Lesson 13
13	Lesson 14
14	Lesson 15
15	Lesson 16
16	Practice Day 2
17	End of Unit Assessment

Block Schedule Pacing Adjustment (11 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Lesson 5 & 6
4	Lesson 7 & 8
5	Lesson 9 + Practice Day 1
6	Quiz + Lesson 10
7	Lesson 11 & 12
8	Lesson 13 & 14
9	Lesson 15 & 16
10	Practice Day 2
11	Test + Pre-Check Unit 7



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 593L)
- Omit Lesson 1
- Combine Lesson 5 & 6, or omit lesson 5
- Omit Lesson 16

Unit 6 Reflection: Notes to my future forgetful self

Math 6 – Unit 7: Positive and Negative Numbers

Standards

Apply and extend previous understandings of numbers to the system of rational numbers. (6.NS.C)
Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (6.NS.C.5)

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. (6.NS.C.6)

- Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. (6.NS.C.6.a)

- Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. (6.NS.C.6.b)

- Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. (6.NS.C.6.c)

Understand ordering and absolute value of rational numbers. (6.NS.C.7)

- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right*. (6.NS.C.7.a)

- Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write -3 ^{o}C > -7 ^{o}C to express the fact that -3 ^{o}C is warmer than -7 ^{o}C.* (6.NS.C.7.b)

- Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars*. (6.NS.C.7.c)

- Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars*. (6.NS.C.7.d)

Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. (6.NS.C.8)

Reason about and solve one-variable equations and inequalities. (6.EE.B)
Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5)

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem;

understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (6.EE.B.6)

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. (6.EE.B.8)

Concepts	Skills
Positive/Negative Numbers Opposites Integers Absolute Value Inequality Line Diagrams Magnitude Position Coordinate Plane Quadrants	- Represent quantities - Understand positive/negatives have opposite directions - Represent points on line diagrams and coordinate planes. - Understand absolute value is distance from zero or magnitude. - Solve an inequality - Graph the solutions to an inequality

Learning Progressions/Concept Development

1. Order integers from least to greatest
2. Identify and interpret the absolute value of a number.
3. Graph the solutions to an inequality on a number line.
4. Plot points in all four quadrants in a coordinate plane.

Unit 6.7: Positive and Negative Numbers
(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Negative Numbers and Absolute Values	
1	Reflect Unit 6 & Pre-check Unit 7 *(Assess and respond)*	
2	1: Can You Dig It? *(Positive and negative numbers)*	• I can use the negative symbol (-) and the word negative to describe numbers that are less than 0.
3	2: Digging Deeper *(Positions on a number line)*	• I can identify and plot positive and negative numbers on a number line. • I know what the opposite of the opposite of a number is
4	3: Sub-Zero *(Positive and negative numbers in context)*	• I can compare positive and negative numbers in context using words and symbols. • I can explain what positive numbers, negative numbers, and 0 mean in context.

Math 6

5	4: Order in the Class *(Comparing numbers)*	• I can use a number line to order positive and negative numbers
**** Concept Dev. Check Point: Students should be able to order integers from least to greatest***		
6	5: Distance on a Number Line *(Intro to absolute value)*	• I can compare numbers and absolute values. • I understand what absolute value is and how to write it in symbols.
7	6: We've Got Game(s) *(Comparing numbers & distance from zero)*	• I can use absolute values to compare rational numbers in context.
**** Concept Dev. Check Point: Students should be able to interpret the absolute value of an equation.***		
8	Practice Day 1 *(review lessons 1-6)*	
9	Sub-Unit 1 & 2 Quiz *(Assess and Respond)*	
Sub-Unit 2 - Inequalities		
10	7: Tunnel Travels *(Graphing inequalities)*	• I can show the same information about an inequality using words, symbols, and a number line.
11	8: Shira's Solutions *(Solutions to Inequalities)*	• I can draw and label a number line diagram that represents the solutions to an inequality. • I can justify whether or not a value is a solution to an inequality.
**** Concept Dev. Check Point: Students should be able to draw and label a number line that represents the solution to an inequality***		
12	9: Comparing Weights *(Writing Inequalities)*	• I can write and interpret inequalities to describe unbalanced hangers.
Sub-Unit 2 – The Coordinate Plane		
13	10: Sand Dollar Search *(Points on a coordinate plane)*	• I can write coordinates for points on the coordinate plane. • I can estimate the location of a point on the coordinate plane using the signs of its coordinates.
14	11: The A-maze-ing Coordinate Plane *(Practice plotting)*	• I can plot points on coordinate planes with different scales
15	12: Polygon Maker *(Polygons in the plane)*	• I can draw a polygon on the coordinate plane. • I can determine horizontal and vertical side lengths of a polygon on the coordinate plane.
**** Concept Dev. Check Point: Students should be able to plot points in all four quadrants of a coordinate plane.***		
16	13: Graph Telephone *(The coordinate plane in context)*	• I can use a graph to tell a story about a situation.
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment *(Assess and Respond)*	

Math 6

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Reflect Unit 2
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Practice
7	Sub-Unit Quiz 1
8	Lesson 7
9	Lesson 8 & 9
10	Lesson 10
11	Lesson 11
12	Lesson 12
13	Lesson 13
14	Practice Day 2
15	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Reflect Unit 6 + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 + Practice
5	Sub-Unit 1 Quiz + Lesson 7
6	Lesson 8 & 9
7	Lesson 10 & 11
8	Lesson 12 + Practice
9	Test + Pre-Check Unit 8



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 723L)
- Omit Lesson 1
- Omit 9
- Omit lesson 13

Unit 7 Reflection: Notes to my future forgetful self

Math 6

Math 6 – Unit 8: Describing Data

Standards

Develop understanding of statistical variability. (6.SP.A)
Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.(6.SP.A.1)

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. (6.SP.A.2)

Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. (6.SP.A.3)
Summarize and describe distributions. (6.SP.B)
Display numerical data in plots on a number line, including dot plots, histograms, and box plots. (6.SP.B.4)

Summarize numerical data sets in relation to their context, such as by: (6.SP.B.5)

Reporting the number of observations. (6.SP.B.5.a)

Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. (6.SP.B.5.b)

Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. (6.SP.B.5.c)

Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.(6.SP.B.5.d)

Concepts	Skills
Set of data Center, Spread, Shape Measure of Center/ Measure of variation Dot plots Histograms Boxplots Mean / Median Interquartile Range / Mean average deviation	- Create graphical displays of numerical sets of data - Calculate numeric measures of center - Calculate numeric measures of spread - Compare and contrast sets of data and their graphical displays.

Learning Progressions/Concept Development

1. Create dot plots and histograms of sets of data
2. Calculate the mean and mean average deviation of a set of data.
3. Create a box plot of a set of data.
4. Compare and contrast sets of data.

Unit 6.8: Describing Data
(19 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Visualizing Data	
1	Reflect Unit 7 & Pre-check Unit 8	
2	1: Screen Time *(Asking questions, collecting data, and making claims)* 2: Dot Plots *(Visualizing data with dot plots)*	• I can make connections between questions, claims, and data. • I can explain the difference between numerical and categorical data. • I can describe and interpret a dot plot to help answer a statistical question.
3	3: Minimum Wage *(Creating dot plots)*	• I can create a dot plot for a given set of data. • I can use dot plots to compare and contrast data sets.
**** Concept Dev. Check Point: Students should be able to create a dot plot***		
4	4: Lots More Dots *(Comparing dot plots)*	• I can compare and contrast the center, shape, and spread of dot plots. • I can describe the center, spread, and shape of a data set
5	5: The Plot Thickens *(Introduction to histograms)*	• I can describe and interpret a histogram that represents a data set.
6	6: DIY Histograms *(Creating histograms)*	• I can create a histogram to visualize data. • I can compare and contrast data sets using histograms, including making statements about their shape, center, and spread.
**** Concept Dev. Check Point: Students should be able to create a histogram***		
	Sub-Unit 2 – Measuring Data Mean and MAD	
7	7: Snack Time *(Introduction to the mean)*	• I can calculate the mean of a data set.
8	8: Pop It! *(Sum of Deviations)*	• I can calculate distances between data points and the mean of a data set.
**** Concept Dev. Check Point: Students should be able to calculate the mean of a data set***		
9	9: Hoops *(Mean absolute deviation)*	• I can calculate the mean absolute deviation of a data set.
10	10: Hollywood, part 1 *(Using mean and MAD to analyze actor salaries)*	• I can use mean and mean absolute deviation to compare real-world data sets.
**** Concept Dev. Check Point: Students should be able to calculate the mean average deviation of a data set.***		
11	Practice Day 1 *(Review lessons 1-10)*	
12	Sub-Unit Quiz 1*)*	
	Sub-Unit 3 – Measuring Data Median and IQR	
13	11: Toy Cars *(Introducing the median)* 12: In the News *(Comparing measures of center)*	• I can describe what the median is. • I can explain when the mean or median best describes a given data set.
14	13: Pumpkin Patch *(Introduction to quartiles)*	• I can determine the quartiles of a data set.

Math 6

15	14: Car, Plane, Bus, or Train? *(Boxplots, IQR, and range)*	• I can create a box plot to visualize a data set. • I can determine the range and IQR of a data set.
**** Concept Dev. Check Point: Students should be able to create a box plot***		
*	*(optional)* 15: Hollywood, part 2 *(Making claims using boxplots)*	
16	16: Hollywood, part 3 *(Using statistics to analyze movies)*	• I can create a dot plot, histogram, or box plot to visualize a data set. • I can choose and calculate either the mean and MAD or median and IQR for a data set. • I can use mean and MAD or median and IQR to compare real-world data sets.
**** Concept Dev. Check Point: Students should be able to compare and contract data sets using graphical displays.***		
17	Practice Day 2 *(Review lessons 1-16)*	
18	End of Unit Assessment	
Be here by end of Semester 2		

4 classes/week Pacing Adjustment (14 days)

1	Pre-Check + Lesson 1
2	Lesson 2 & 3
3	Lesson 4
4	Lesson 5 & 6
5	Lesson 7
6	Lesson 8 & 9
7	Lesson 10
8	Practice Day
9	Sub-Unit Quiz 1
10	Lesson 11 & 12
11	Lesson 13
12	Lesson 14 & 15
13	Lesson 16 + Practice
14	End of Unit Assessment

Block Schedule Pacing Adjustment (10 days)

1	Reflect Unit 7 + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 & 9
6	Lesson 10 & Practice
7	Sub-Unit Quiz 1 + Lesson 11
8	Lesson 12 & 13
9	Lesson 14 & Practice
10	End of Unit Assessment



Math 6

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 831L)
- Combine Lesson 1 & 2
- Omit Lesson 10
- Omit lesson 15

Notes to my future forgetful self

2026-2027

Math 6-7
Course Guide

#206 Math 6-7
#206A/204B MYP Math 6-7
#771 Acc Math 6 (GT)

Math 6-7 Pacing (Days in Q1-41, Q2-39, Q3-47, Q4-49)

Semester 1		Semester 2	
Unit	Days	Unit	Days
Community & Identity through SMP	3	Unit 5: Proportional Relationships	20
Unit 1: Area and Surface Area	13	Unit 6: Percentages	18
Unit 2: Introducing Ratios and Rates *(finish by fall break)*	17	*Flex Days (iReady Testing, school events etc)*	9
(start) Unit 3: Fractions and Decimals	4		
Flex Days (iReady Testing, school events etc)	3		
Be here by 10/17, the end of Q1		Be here by 3/13, the end of Q3	
(finish) Unit 3: Fractions and Decimals	18	Unit7: Positive and Negative Numbers	21
Unit 4: Expressions and Equations	18	Unit 8: Data Sets & Distributions	20
Flex Days (iReady Testing, school events etc)	3	*Flex Days (iReady Testing, school events etc)*	8
Be here by 12/18, the end of Q2		Be here by 6/5, the end of Q4	

Math 6-7

Math 6/7 – Unit 1: Area and Surface Area

Standards

Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)
Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.1)

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.4)

Apply and extend previous understandings of arithmetic to algebraic expressions. (6.EE.A)
Write, read, and evaluate expressions in which letters stand for numbers. (6.EE.A.2)

> Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y*. (6.EE.A.2.a)
>
> Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$*. (6.EE.A.2.c)

Concepts	Skills
Area Triangles Right triangles Special quadrilaterals Three-dimensional nets Surface Area Expressions Variables	- Find area of triangle - Find area of parallelogram - Find area of polygons by composing of decomposing into other shapes - Represent 3-dimensional objects using nets - Find the surface area of 3-diminsional objects using nets. - Evaluate expressions for specific values (area of parallelogram or triangle formulas)

Learning Progressions/Concept Development

1. Calculate the area of a parallelogram. (L1 – L5)
2. Calculate the area of a triangle. (L6 – L8)
3. Calculate the area of polygons by decomposing into quadrilaterals and triangles. (L9)
4. Calculate the surface area of prisms and pyramids, consisting of quadrilateral and triangular faces. (L10 – L13)

Math 6-7

Unit Acc6.1: Area and Surface Area (18 days)		
Day	**Lessons (45 – minutes)**	**Success Criteria**
	Sub-Unit 1 - Area	
1	1: Shapes on Plane *(Exploring area)*	• I know what area is. • I can describe a strategy for determining the area of a shape on a grid.
2	2: Letters *(Area strategies)*	• I can determine the area of a non-rectangular shape using a variety of strategies. • I can explain why breaking apart a shape and rearranging the pieces keeps the area the same.
3	3: Exploring Parallelograms, Part 1 *(Areas on a grid)*	• I can use different strategies to determine the area of a parallelogram. • I can compare and contrast strategies for determining the area of a parallelogram.
4	4: Exploring Parallelograms, Part 2 *(Areas on a grid)*	• I can calculate the area of any parallelogram using its base and height. • I can explain strategies for determining the area of a parallelogram on a grid.
5	5: Off the Grid, Part 1 *(Calculating areas of parallelograms)*	• I can calculate the area of a parallelogram or use a given area to determine the length of a missing base or height. • I can analyze strategies for determining the area of a parallelogram.
**** Concept Dev. Check Point: Students should be able to calculate the area of a parallelogram***		
6	6: Triangles & Parallelograms *(Generalize area of triangle)*	• I know the relationship between the area of a triangle and the area of a parallelogram with the same base and height. • I can make sense of strategies for determining the area of a triangle on a grid.
7	7: Off the Grid, Part 2 *(Apply formula for area of triangle)*	• I can calculate the area of any triangle. • I can explain strategies for determining the area of a triangle off a grid
**** Concept Dev. Check Point: Students should be able to calculate the area of a triangle***		
8	Sub-Unit 1 Quiz *(Assess and respond)*	
	Sub-Unit 2 – Surface Area	
9	8: Plenty of Polyhedra *(Polyhedra and their faces)*	• I can describe the difference between prisms and pyramids. • I know what a net is and how it's related to a polyhedron.
10	9: Nothing but Nets *(Nets and surface areas on a grid)*	• I can calculate the surface area of a prism or pyramid using a net on a grid.
11	10: Face Value *(Surface area without a grid)*	• I can calculate the surface area of a prism or pyramid using a drawing or a net, and describe my strategy. • I can describe what prism or pyramid can be created from a net without using a grid.
**** Concept Dev. Check Point: Students should be able to calculate the surface area of a prism or pyramid.***		

Math 6-7

12	11: Take it to Go *(Surface area in context)*	• I can design a net for a three-dimensional object and calculate its surface area to answer problems in context. • I can describe what prism or pyramid can be created from a net.
*	Practice Day 1 and 2 *(review lessons 1-14)*	*optional*
13	End of Unit Assessment *(Assess and respond)*	

Unit 1 Reflection: Notes to my future forgetful self.

Math 6-7

Math 6/7 – Unit 2: Introducing Ratios and Rates

Standards

Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)
Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*(6.RP.A.2)

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (6.RP.A.3)

Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. (6.RP.A.3.a)

Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?* (6.RP.A.3.b)

Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. (6.RP.A.3.d)

Concepts	Skills
Ratio Ratio Relationship Quantities Tables of equivalent ratios Tape diagrams Double number line diagrams Equations Coordinate pairs Coordinate plane Unit Rate Equivalent Ratios Unit Pricing Constant Speed Tables of Equivalent Ratios	- Describe a relationship between two quantities - using ratio language. - Use ratio and rate reasoning to solve problems. - Use a variety of strategies to solve ratio problems. - Make tables of equivalent ratios. - Find missing values in a table of values using - ratios. - Convert measurements from one unit of measure to another. - Calculate and compare speeds. - Determine the two unit rates associated with a:b. - Use unit rates to complete tables of equivalent ratios. - Use unit rates to calculate unknown values.

Learning Progressions/Concept Development

1. Create Equivalent Ratios
2. Determine greatest common factor or least common multiple.
3. Use tables of equivalent ratios to determine unknown values.
4. Analyze part – part and part – whole relationships.
5. Convert between units in different systems of measurement (L1 – L3)
6. Use unit rates to make comparisons and calculate unknown quantities. (L4 – L8)

Math 6-7

Unit Acc6.2: Introducing Ratios and Rates (17 Days)		
Day	**Lessons (45 – minutes)**	**Success Criteria**
	Sub-Unit 1 - Ratios	
1	1: Ratio Relationships *(Describing ratios)*	• I can use words, numbers, and the symbol : to describe a ratio relationship.
2	2: Rice Ratios *(Intro to equivalent ratios)*	• I know what equivalent ratios are and can identify them in context.
**** Concept Dev. Check Point: Students should be able to create equivalent ratios and determine if 2 ratios are equivalent.***		
3	3: Balancing Act *(Intro to double number lines)*	• I can label a double number line and explain how it represents a situation. • I can use a double number line to solve problems involving equivalent ratios
4	4: Product Prices *(Price for one)*	• I can calculate a ratio for 1 of an item to help me solve problems.
5	5: Mixing Paint, part 1 *(Comparing ratios)*	• I can compare two ratios related to the same situation. • I can justify whether two ratios are equivalent by transforming them.
6	6: Disaster Preparation *(Using ratio tables with large quantities)*	• I can use a table to determine missing values for a ratio relationship in context.
**** Concept Dev. Check Point: Students should be able to use an equivalent ratio table to determine unknown values in context.***		
7	7: Balloons *(Solve ratio problems)*	• I can use multiple steps to determine an unknown value in a ratio relationship.
8	8: Mixing Paint, part 2 *(Part-part-whole ratios)*	• I can use tape diagrams to solve problems when I know a ratio among the parts and a total amount. • I can justify whether to start with the parts or the total when solving ratio problems.
9	9: City Planning *(Apply part-part-whole ratio problems)*	• I can use tape diagrams to solve problems involving part-part-whole relationships. • I can interpret representations of a part-partwhole relationship in context.
**** Concept Dev. Check Point: Students should be able to analyze and calculate unknown values in part-part-whole relationships.***		
10	Quiz	
	Sub-Unit 2 - Rates	
11	10: Many Measurements *(Everyday measurements)*	• I can tell whether a certain unit measures length, area, time, weight, or volume. • I can compare different units of measurement.
12	11: Counting Classrooms *(Measuring with different units)*	• I can convert measurements from one unit to another in different measurement systems. • I can explain why it takes more of a smaller unit to measure the same quantity.
13	12: World Records *(Comparing speeds)*	• I can calculate the speed of an object by finding the unit rate.

Math 6-7

14	13: Model Trains *(Comparing rates)*	• I can compare rates that are written in different units.
15	14: More Soft Serve *(Solving rate problems)*	• I can make comparisons and calculate unknown quantities using unit rates.
16	15: Welcome to the Robot Factory *(Using unit rates)*	• I can show and explain how to use unit rates to complete a table of equivalent ratios.
17	End of Unit Assessment	

Unit 2 Reflection: Notes to my future forgetful self

Math 6-7

Math 6/7 – Unit 3: Fractions and Decimals

Standards

Apply and extend previous understandings of multiplication and division to divide fractions by fractions. (6.NS.A)
Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*. (6.NS.A.1)

Compute fluently with multi-digit numbers and find common factors and multiples. (6.NS.B)
Fluently divide multi-digit numbers using the standard algorithm. (6.NS.B.2)

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (6.NS.B.3)

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).* (6.NS.B.4)

Use ratio and rate reasoning to solve real-world and mathematical problems. (6.RP.A)
Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. (6.RP.A.3.c)

Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)
Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (6.G.A.2)

Concepts	Skills
Quotients Division of Fractions Fraction Models Equations Area Standard Algorithm Multi – Digit Decimal Distributive Property (Multiply/divide powers of 10) Percent	- Interpret quotients of fractions - Compute quotients of fractions. - Solve word problems involving fraction division. - Use visual fraction models - Use fraction equations - Find areas with fractional dimensions - Fluently add, subtract, multiply, and divide decimals. - Find Percent (as decimal)

Math 6-7

Learning Progressions/Concept Development
1. Develop fluency in dividing fractions using at least one strategy. 2. Divide fractions using an algorithm. 3. Apply fraction division to area 4. Add and Subtract Decimals 5. Multiply Decimals 6. Divide Decimals 7. Rewrite equivalent forms of decimals, fractions and percents

Unit Acc6.3: Fractions and Decimals
(22 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Dividing Fractions	
1	1: Flour Planner *(How many groups?, part 1)*	• I can use diagrams to represent and solve division problems when the size of each group is a fraction.
2	2: Flower Planter *(How many in each group?)*	• I can connect situations and expressions that represent the question "How many in 1 group?" when a whole number is divided by a fraction.
3	3: Garden Bricks *(How many groups?, part 2)*	• I can use tape diagrams to represent and solve division problems asking "How many groups?" when the answer is a fraction.
4	4: Fill the Gap *(More of less than one group?)*	• I can use tape diagrams with common denominators to solve division problems asking "How many groups?" • I know whether the number of groups in a division problem is greater than or less than 1.
5	5: Break it Down *(Using common denominators to divide)*	• I can use common denominators to divide fractions
6	6: Potting Soil *(Dividing by unit fractions)*	• I can use a tape diagram to represent division by a fraction. • I can explain why dividing by a unit fraction, such as 1/3, results in the same value as multiplying by a whole number, such as 3.
7	7: Division Challenges *(Two strategies for dividing fractions)*	• I can calculate the quotient of two fractions using multiple methods
8	8: Action Fractions *(Relating fraction division to multiplication)*	• I can identify and write equivalent expressions using division and multiplication with fractions. • I can determine if different strategies for dividing fractions are correct and explain why.
9	9: Puzzling Areas *(Areas with fractional dimensions)*	• I can use division and multiplication to solve problems about areas of polygons that have lengths that are fractions.

Math 6-7

10	Quiz	
Sub-Unit 2: Operations with Decimals		
11	10: Decimal Diagrams and Algorithms *(Representing Fractions)*	• I can represent decimals using tenths, hundredths, and thousandths. • I can use diagrams and algorithms to add and subtract decimals.
12	11: Fruit by the Pound *(Adding and subtracting decimals, part 1)*	• I can use diagrams, vertical calculations, and place value to add and subtract decimals
13	12: Missing Digits *(Adding and subtracting decimals, part 1)*	• I can add and subtract decimals using vertical calculations.
14	13: Decimal Multiplication *(Introduction to multiplying decimals)*	• I can use area to make sense of decimal multiplication.
15	14: Multiplying With Areas *(Using area models to multiply)*	• I can use area models to represent and calculate products of decimals.
16	15: Multiplication Methods *(Using place value to multiply)*	• I can use fractions and the products of whole numbers to calculate the products of decimals.
17	16: Just Keep Dividing *(Dividing whole numbers using long division)*	• I can use long division to divide two whole numbers, both when the quotient is a whole number and when it is not.
18	17: Division Diagrams *(Making sense of decimal division)*	• I can use a hundredths chart and reasoning to divide decimals.
19	18: Return of Long Division *(Long division with decimal quotients)*	• I can use long division to divide multi-digit decimals.
20	19: Coining New Representations *(Percents, decimals, fractions)*	• I can convert between percentages, fractions, and decimals.
21	20: Grocery Prices *(Percentages as decimals)*	• I can make connections between percentages and decimals. • I can write and evaluate expressions with decimals to solve percentage problems.
22	End of Unit Assessment	

Unit 3 Reflection: Notes to my future forgetful self.

Math 6-7

Math 6/7 – Unit 4: Equations and Expressions

Standards

Apply and extend previous understandings of arithmetic to algebraic expressions. (6.EE.A)
Write and evaluate numerical expressions involving whole-number exponents. (6.EE.A.1)

Write, read, and evaluate expressions in which letters stand for numbers. (6.EE.A.2)

Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y*. (6.EE.A.2.a)

Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms*. (6.EE.A.2.b)

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2*. (6.EE.A.2.c)

Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*. (6.EE.A.3)

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.* (6.EE.A.4)

Reason about and solve one-variable equations and inequalities. (6.EE.B)
Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5)

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (6.EE.B.6)

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers. (6.EE.B.7)

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. (6.EE.B.8)

Represent and analyze quantitative relationships between dependent and independent variables. (6.EE.C)
Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. (6.EE.C)

Math 6-7

Concepts	Skills
Equations, p+x = q and px = q Inequalities, x > c and x < c Variables Expressions Equivalent Quantitative relationships Dependent variables Independent variables Graphs, tables, and equations	- Solve equations - Solve inequalities - Write and evaluate expressions - Rewrite equivalent expressions - Use variables to represent two-quantities - Graph solutions to inequalities - Graph ordered pairs - Identify independent/dependent variables (work with science teacher)

Learning Progressions/Concept Development

1. Write and solve one-step equations (L1 – L5)
2. Write equivalent expressions. (L6 – L9)
3. Evaluate expressions, including those with exponents, for specific values. (L10 – L12)
4. Make sense of different representations of relationships. (L13 – L16)

Unit Acc6.4: Expressions and Equations
(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Solving Equations	
1	1: Weight for It *(Reasoning about unknown values)*	• I can use reasoning and tape diagrams to determine unknown values.
2	2: Five Equations *(Tape diagrams, equations, & Situations)*	• I can interpret the meaning of variables and solutions in context • I can make connections between tape diagrams, equations, and situations.
3	3: Hanging Around *(Intro to balanced hangers)*	• I can make connections between balanced hangers and true equations.
4	4: Hanging it Up *(Solving equations)*	• I can solve equations that include whole numbers, decimals, and fractions with and without diagrams.
5	5: Swap and Solve *(Solving equations in context)*	• I can explain what the solution to an equation means in a situation. • I can write a situation to represent an equation.
**** Concept Dev. Check Point: Students should be able to solve one-step equations.***		
6	6: Vari-apples *(Introduction to variable expressions)*	• I can write an expression with a variable to represent a situation.

Math 6-7

7	7: Border Tiles *(Equivalent expressions)*	• I can justify whether two expressions are equivalent.
8	8: Product and Sums *(Distributive property, part 1)*	• I can use an area model of a rectangle to write equivalent expressions.
9	9: Equivalent Expressions *(Distributive property, part 2)*	• I can analyze expressions to determine if they are equivalent
**** Concept Dev. Check Point: Students should be able to write equivalent expressions***		
10	Quiz	
Sub-Unit 3 - Expressions Involving Exponents		
11	10: Powers *(What are exponents?)*	• I can decide whether two expressions that include exponents are equivalent.
12	11: Exponent Expressions *(Exponents & order of operations)*	• I can determine the value of an expression that has exponents and other operations.
13	12: Squares and Cubes *(Exponent expressions w/ variables)*	• I can evaluate expressions with exponents.
**** Concept Dev. Check Point: Students should be able to evaluate expressions, including those with exponents***		
14	13: Turtles All the Way *(Stories, tables, and variables)*	• I can interpret tables and equations that represent a relationship between two quantities
15	14: Representing Relationships *(Interpret graphs)*	• I can create tables and graphs that show the relationship between two quantities • I can identify the independent and dependent variable on a graph.
16	15: Connecting Representations *(Tables, equations, graphs of relationships)*	• I can connect tables, graphs, and equations that represent the same relationship. • I can interpret an equation that represents the relationship between two quantities.
17	16: Subway Fares *(Applying relationships)*	• I can use tables, graphs, and equations to analyze an issue in society.
**** Concept Dev. Check Point: Students should be able to use graphs, tables, and equations to make sense of relationships***		
18	End of Unit Assessment *(Assess and Respond)*	

Unit 6 Reflection: Notes to my future forgetful self

Math 6/7 Unit 5: Proportional Relationships

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour*. (7.RP.A.1)

Recognize and represent proportional relationships between quantities. (7.RP.A.2)

Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2.a)

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2.b)

Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. (7.RP.A.2.c)

Explain what a point (*x*, *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where r is the unit rate. (7.RP.A.2.d)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2a)

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2b)

Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. (7.RP.A.2c)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.(7.G.B)
Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.B.4)

Math 6-7

Concepts	Skills
Unit rate Proportional relationships Equivalent ratios Graphs of straight line Constant of proportionality Tables, graphs, equations, verbal descriptions. Point (x, y) Variable equations Circumference of a circle Area of a circle Relationship between circumference & area	- Use a table of values of a proportional relationship and equivalent ratios to determine other table values. - Compute a unit rate. - Identify and compute a constant of proportionality. - Identify the graph of a proportional relationship. - Graph a straight line proportional relationship. - Create an equation of a proportional relationship. - Know the parts of a circle, including diameter and radius. - Calculate the circumference of a circle. - Apply knowledge of circumference to determine perimeters of shapes consisting of squares and parts of circles. - Derive the formula for area of a circle from circumference - Calculate the area of a circle. - Apply knowledge to determine the area of shapes consisting of squares and parts of circles.

Learning Progressions/Concept Development

1. Understand and describe the meaning of a constant of proportionality.
2. Justify whether or not a graph represents a proportional relationship.
3. Write an equation of a proportional relationship when given a verbal description, a table, or a point on a graph.
4. Calculate the circumference of a circle
5. Calculate the perimeter of complex shapes
6. Calculate the area of a circle
7. Calculate the area of complex shapes

Unit Acc6.5: Proportional Relationships
(20 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Proportional Relationships	
1	1: Paint *(Use equivalent ratios)*	• I understand and can generate equivalent ratios.
2	2: Balloon Float *(Introduce proportional relationships w/tables)*	• I can use a table to calculate unknown quantities in a proportional relationship. • I can determine whether two quantities are in a proportional relationship
3	3: Sugar, Spice, and Everything Rice *(Constant of proportionality)*	• I can determine the constant of proportionality for a proportional relationship represented in a table. • I can use the constant of proportionality to determine values in a table.
4	4: Robot Factory *(Proportional relationships and equations)*	• I can write equations of the form y = kx to represent proportional relationships.
5	5: Two and Two *(Two equations for each relationship)*	• I can write two equations that represent the same proportional relationship, such as y = kx
	**** Concept Development Check Point: Students should be able to determine and explain the constant of proportionality***	
6	6: All Kinds of Equations *(Equations of Proportional Relationships)*	• I can understand that equations of the form y = kx represent proportional relationships. • I can justify whether a relationship is proportional or not by looking at the structure of an equation.
7	7: DinoPops *(Introduce graphs of proportional relationships)*	• I can use a graph that represents a proportional relationship to predict other points in that relationship. I understand that a proportional relationship can be represented by points on a line that passes through the origin.
8	8: Gallon Challenge *(Interpret graphs of proportional relationships)*	• I can identify the constant of proportionality from the graph of a proportional relationship
	**** Concept Development Check Point: Students should be able to determine whether or not a graph represents a proportional relationship***	
9	9: Three Turtles *(Proportional relationships and graphs)*	• I can write an equation of a proportional relationship given a point on a graph.
	**** Concept Development Check Point: Students should be able to determine the equation of a proportional relationship when given a verbal description or a point on a line.***	
10	10: Four Representations *(Connect descriptions, tables, graphs, and equations)*	• I can create four different representations of a proportional relationship: description, table, graph, and equation.
11	11: Water Efficiency, part 1 *(Let's put it to work)*	• I can model a real-world situation using proportional relationships.
12	Quiz	
	Sub-Unit 1 – Circles	
13	12: Toothpicks *(Perimeter and proportional relationships)*	• I can use proportional relationships to determine missing side lengths, diagonal lengths, and perimeters.

Math 6-7

14	13: Measuring Around *(Estimate and calculating circumference)*	• Given the radius, diameter, or circumference of a circle, I can calculate the other two measurements.
**** Concept Development Check Point: Students should be able to calculate the circumference of circle.***		
15	14: Perimeter Challenges *(Calculate perimeters of complex shapes)*	• I can calculate the perimeter of a complex shape made up of squares and fractions of circles.
16	15: Radius Squares *(Explore circle areas)*	• I can determine the area of a complex shape using a variety of strategies. • I can estimate the area of a shape with curved edges
17	16: Circle Area *(Calculate circle area)*	• I can calculate the area of a circle given the radius.
**** Concept Development Check Point: Students should be able to calculate the area of circle.***		
18	17: Why Pi? *(Relate area to circumference)*	• I can explain that the relationship between the radius and the area of a circle is not proportional.
19	18: Area Challenges *(Calculating area of complex shapes)*	• I can calculate the area of a complex shape that's made up of squares and fractions of circles. • I can write area as an expression that includes π, such as $20\pi + 50$.
20	End of Unit Assessment	

Unit 5 Reflection: Notes to my future forgetful self

Math 6-7

Math 6/7 – Unit 6: Percentages

Standards

Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)
Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (6.RP.A.3)

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. (6.RP.A.3.c)

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (7.RP.A.3)

Concepts	Skills
Tables of Equivalent Ratios Percent of a quantity Multi-step percent problems Simple interest Tax Markups and markdowns Gratuities Commissions Percent increase and decrease Equations	- Solve problems using friendly percents and tools such as double number lines. - Find the percent of a quantity. - Solve percent problems when given a part and a percent. - Represent proportional relationships - Use proportional relationships in percent problems - Determine percent increase or decrease - Use variables to represent quantities

Learning Progressions/Concept Development

1. Calculate unknown percentages.
2. Solve problems involving percent increase and decrease (L1 – L6)
3. Solve multi-step percent problems, including percent error (L7-L10)
4. Apply proportional relationships to real world situations involving fractional quantities. (L11-L12)
5. Write fractions as decimals, including repeating decimals. (L13)

Unit Acc6.6: Percentages

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Percentages	
1	1: Lucky Duckies	• I can calculate 10%, 25%, 50%, or 75% of a number.
2	2: Bicycle Goals *(Friendly percentages)*	• I can solve percentage problems about unknown parts and wholes using double number lines, tape diagrams, or tables.
3	3: What's Missing *(Solving percentage problems)*	• I can create tape diagrams, double number lines, or tables to determine unknown parts, percentages, or wholes
4	4: Cost Breakdown *(Any percentage number)*	• I can calculate any percentage of a number.
5	5: More Bicycle Goals *(Unknown percentages)*	• I can calculate an unknown percentage. • I can explain different expressions for calculating an unknown percentage.
**** Concept Dev. Check Point: Students should be able to calculate an unknown percentage.***		
6	6: A Country as a Village *(Applying ratios, rates, & percents)*	• I can use rates and percentages to analyze real-world data. • I can interpret and describe rates and percentages within their real-world context.
7	Quiz	
	Sub-Unit 2 - Percent Change	
8	7: More or Less *(Percent increase/decrease with tape diagrams)*	• I can use tape diagrams and tables to represent situations involving a percent increase or decrease. • I can determine a new amount given an original amount and a percent increase or decrease.
9	8: All the Equations *(Percent increase with equations)*	• I can use equations to represent situations involving percent increase or decrease. • I can use a tape diagram where 100% corresponds to the original value to represent adding or subtracting a percent of the original value.
10	9: 100% *(Percent increase/decrease with dbl number lines)*	• I can use double number lines to represent situations involving a percent increase or decrease. • I can determine the original amount given the new amount and a percent increase or decrease.
**** Concept Development Check Point: Students should be able to use the percent increase or decrease to calculate unknown values.***		
11	10: Percent Machines *(Calculate unknowns w/percentages)*	• I can calculate the original amount given the new amount and a percent change for one-step and multistep percent problems.
12	11: Back in My Day *(Real world situations involving percent increase)*	• I can solve problems about price changes over time, including calculating the new price or the percentage change. • I can solve problems involving a percent increase of more than 100%.

Math 6-7

13	12: Tax and Tip *(Multistep percent problems)*	• I can calculate an original amount, new amount, or percent change in the context of sales tax and tip, including situations that involve multiple percent increases or decreases
14	13: Plate Rate *(More real-world situations involving percent increase)*	• I can use proportional relationships that represent a percent change to analyze an issue in society.
15	14: Bookcase Builder *(Percent error)*	• I can use percent error to express error as a percentage of a desired value. • I can decide whether a value is within an acceptable percent error
**** Concept Development Check Point: Students should be able to calculate and use percent errors.***		
16	15: Sticker Sizes *(Revisit proportional relationships)*	• I can determine an unknown value in a proportional relationship using a table
17	16: Peach Cobbler *(Ratios and rates with fractions)*	• I can use a constant of proportionality to solve problems involving fractional quantities
18	End of Unit Assessment	

Unit 6 Reflection: Notes to my future forgetful self

Math 6/7 – Unit 7: Positive and Negative Numbers

Standards

Apply and extend previous understandings of numbers to the system of rational numbers. (6.NS.C)
Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (6.NS.C.5)

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. (6.NS.C.6)

- Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. (6.NS.C.6.a)

- Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. (6.NS.C.6.b)

- Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. (6.NS.C.6.c)

Understand ordering and absolute value of rational numbers. (6.NS.C.7)

- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right*. (6.NS.C.7.a)

- Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write -3 ^{o}C > -7 ^{o}C to express the fact that -3 ^{o}C is warmer than -7 ^{o}C*. (6.NS.C.7.b)

- Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars*. (6.NS.C.7.c)

- Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars*. (6.NS.C.7.d)

Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. (6.NS.C.8)

Reason about and solve one-variable equations and inequalities. (6.EE.B)
Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.B.5)

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand

that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (6.EE.B.6)

Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x <$ c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. (6.EE.B.8)

Apply and extend previous understandings of operations with fractions. (7.NS.A)

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. (7.NS.A.1)

Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged*. (7.NS.A.1.a)

Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. (7.NS.A.1.b)

Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. (7.NS.A.1.c)

Apply properties of operations as strategies to add and subtract rational numbers. (7.NS.A.1.d)

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. (7.NS.A.2)

Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. (7.NS.A.2.a)

Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. (7.NS.A.2.b)

Apply properties of operations as strategies to multiply and divide rational numbers. (7.NS.A.2.c)

Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.A.3)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Math 6-7

Concepts	Skills
Positive/Negative Numbers Opposites Integers Absolute Value Inequality Line Diagrams Magnitude Position Coordinate Plane Quadrants Rational Numbers Horizontal/Vertical Number Line Distance between rational numbers Absolute Value Opposites Additive Inverse Distributive Property Algebraic Equations Multi-Step real-life problems	- Represent quantities - Understand positive/negatives have opposite directions - Represent points on line diagrams and coordinate planes. - Understand absolute value is distance from zero or magnitude. - Solve an inequality - Graph the solutions to an inequality - Add and subtract rational numbers. - Represent addition/subtraction of rational numbers on a number line. - Combine opposites quantities. - Show distance between numbers is absolute value. - Apply properties of operations to rational numbers. - Multiply and Divide rational numbers. - Extend rules for multiplication to signed numbers (+/-). - Solver real world problems involving rational numbers.

Learning Progressions/Concept Development

1. Order integers from least to greatest
2. Identify and interpret the absolute value of a number.
3. Graph the solutions to an inequality on a number line.
4. Plot points in all four quadrants in a coordinate plane.
5. Add and subtract integers, including positive and negative rational numbers.
6. Multiply and divide integers, including positive and negative rational numbers.
7. Apply integer operations (add, subtract, multiply, divide) to real world situations.

Unit Acc6.7: Positive and Negative Numbers
(21 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Add/Subtract Positive and Negative Numbers	
1	1: Can You Dig It? *(Positive and negative numbers)*	• I can use the negative symbol (-) and the word negative to describe numbers that are less than 0.
2	2: Digging Deeper *(Positions on a number line)*	• I can identify and plot positive and negative numbers on a number line. • I know what the opposite of the opposite of a number is
3	3: Sub-Zero *(Positive and negative numbers in context)*	• I can compare positive and negative numbers in context using words and symbols. • I can explain what positive numbers, negative numbers, and 0 mean in context.
4	4: Order in the Class *(Comparing numbers)*	• I can use a number line to order positive and negative numbers
	**** Concept Dev. Check Point: Students should be able to order integers from least to greatest***	
5	5: Distance on a Number Line *(Intro to absolute value)*	• I can compare numbers and absolute values. • I understand what absolute value is and how to write it in symbols.
	**** Concept Dev. Check Point: Students should be able to interpret the absolute value of an equation.***	
6	1: Floats and Anchors *(Represent adding & subtracting)*	• I can use a visual model to represent adding and subtracting positive and negative numbers. • I can use a visual model to represent that pairs of numbers can be combined to make 0.
7	2: More Floats and Anchors *(Add and subtract positive and negative numbers)*	• I can connect different visual models that represent addition and subtraction. • I can add and subtract positive and negative numbers.
8	3: Bumpers *(Add on a number line)*	• I can add positive and negative numbers, including decimals and fractions, on a number line.
9	4: Draw Your Own *(Number lines and expressions)*	• I can subtract positive and negative numbers on a number line. • I can compare and contrast expressions that include the same signed numbers in different orders (e.g., 2.5 - 3.5 and 3.5 - 2.5).
10	5: Number Puzzles *(Practice adding and subtracting)*	• I can add and subtract integers, decimals, and fractions in complex expressions
	**** Concept Development Check Point: Students should be able to add and subtract positive and negative numbers.***	
11	Quiz	
	Sub-Unit 2 – Multiply/Divide/Graph Positive and Negative Numbers	
12	6: Floating in Groups *(Represent multiplication)*	• I can use visual models to represent multiplying integers
13	7: Back in Time *(Position, rate, time)*	• I can represent rate, time, and position using the product of positive and negative numbers.
14	8: Speeding Turtles *(Divide integers)*	• I can multiply and divide integers

Math 6-7

15	9: Expressions *(Variable expressions)*	• I can analyze variable expressions involving the four operations
16	10: Integer Puzzles *(Practice all four operations)*	• I can add, subtract, multiply, and divide integers in multistep expressions.
**** Concept Development Check Point: Students should be able to multiply and divide positive and negative numbers.***		
17	11: Temperatures Around the World *(Real world situations involving positive and negative numbers, part 1)*	• I can add and subtract positive and negative numbers to solve problems involving real world situations.
18	10: Sand Dollar Search *(Points on a coordinate plane)*	• I can write coordinates for points on the coordinate plane. • I can estimate the location of a point on the coordinate plane using the signs of its coordinates.
19	11: The A-maze-ing Coordinate Plane *(Practice plotting)*	• I can plot points on coordinate planes with different scales
20	12: Polygon Maker *(Polygons in the plane)*	• I can draw a polygon on the coordinate plane. • I can determine horizontal and vertical side lengths of a polygon on the coordinate plane.
**** Concept Dev. Check Point: Students should be able to plot points in all four quadrants of a coordinate plane.***		
21	End of Unit Assessment	

Unit 7 Reflection: Notes to my future forgetful self

Math 6/7 – Unit 8: Data Sets and Distributions

Standards

Develop understanding of statistical variability. (6.SP.A)
Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*.(6.SP.A.1)

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. (6.SP.A.2)

Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. (6.SP.A.3)

Summarize and describe distributions. (6.SP.B)
Display numerical data in plots on a number line, including dot plots, histograms, and box plots. (6.SP.B.4)

Summarize numerical data sets in relation to their context, such as by: (6.SP.B.5)

Reporting the number of observations. (6.SP.B.5.a)

Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. (6.SP.B.5.b)

Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. (6.SP.B.5.c)

Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.(6.SP.B.5.d)

Use random sampling to draw inferences about a population. (7.SP.A)
Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. (7.SP.A.1)

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be*. (7.SP.A.2)

Draw informal comparative inferences about two populations. (7.SP.B)
Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable*. (7.SP.B.3)

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade*

science book are generally longer than the words in a chapter of a fourth-grade science book. (7.SP.B.3)

Investigate chance processes and develop, use, and evaluate probability models. (7.SP.C)
Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. (7.SP.C.5)

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times*. (7.SP.C.6)

Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (7.SP.C.7)

> Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected*. (7.SP.C.7a)
>
> Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?* (7.SP.C.7b)

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (7.SP.C.8)

> Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (7.SP.C.8.a)
>
> Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. (7.SP.C.8.b)
>
> Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?* (7.SP.C.8.b)

Concepts	Skills
Set of data Center, Spread, Shape Measure of Center/ Measure of variation Dot plots Histograms Boxplots Mean / Median Interquartile Range / Mean average deviation Sample Populations Measures of Centers	- Create graphical displays of numerical sets of data - Calculate numeric measures of center - Calculate numeric measures of spread - Compare and contrast sets of data and their graphical displays. - Use random samples to make inferences. - Compare and contrast numerical data sets. - Use measures of center and spread to make informal comparative inferences. - Create and use probability models. - Find probabilities of compound events.

Measures of Spread/Variability Comparative Inferences Probability Likelihood Compound Probability Simulations	-

Learning Progressions/Concept Development

1. Create dot plots and histograms of sets of data
2. Calculate the mean and mean average deviation of a set of data.
3. Create a box plot of a set of data.
4. Compare and contrast sets of data.

Unit Acc6.8: Data Sets and Distributions

(20 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Visualizing and Describing Data	
1	2: Dot Plots *(Visualizing data with dot plots)*	• I can describe and interpret a dot plot to help answer a statistical question.
**** Concept Dev. Check Point: Students should be able to create a dot plot***		
2	4: Lots More Dots *(Comparing dot plots)*	• I can compare and contrast the center, shape, and spread of dot plots. • I can describe the center, spread, and shape of a data set
3	5: The Plot Thickens *(Introduction to histograms)*	• I can describe and interpret a histogram that represents a data set.
**** Concept Dev. Check Point: Students should be able to create a histogram***		
4	7: Snack Time *(Introduction to the mean)*	• I can calculate the mean of a data set.
**** Concept Dev. Check Point: Students should be able to calculate the mean of a data set***		
5	9: Hoops *(Mean absolute deviation)*	• I can calculate the mean absolute deviation of a data set.
6	11: Toy Cars *(Introducing the median)* 12: In the News *(Comparing measures of center)*	• I can describe what the median is. • I can explain when the mean or median best describes a given data set.
7	13: Pumpkin Patch *(Introduction to quartiles)*	• I can determine the quartiles of a data set.
8	14: Car, Plane, Bus, or Train? *(Boxplots, IQR, and range)*	• I can create a box plot to visualize a data set. • I can determine the range and IQR of a data set.
**** Concept Dev. Check Point: Students should be able to create a box plot***		
9	Quiz	
	Sub-Unit 2 - Probability	
10	10: Crab Island *(Sample from large populations)*	• I can compare the mean of multiple samples from the same population to the mean of the population.
**** Concept Development Check Point: Students should be able to calculate the mean and mean average deviation of a data set.***		

Math 6-7

11	11: Headlines *(Sampling bias)*	• I can determine whether or not a sampling method is likely to result in a representative sample.
12	12: Flower Power *(Use percentages to predict populations)*	• I can estimate unknown information about a population using proportional reasoning.
13	14: School Newspaper *(Compare populations)*	• I can calculate the difference between the measures of center of two samples with similar variability, then express the difference as a multiple of the measure of variability
**** Concept Development Check Point: Students should be able to create a box plot.***		
14	15: Air Quality *(Put it all together)*	• I can use statistics from random samples to understand a population or compare two populations.
15	2: Prob-bear-bilities *(Intro to probability)*	• I can use the sample space to determine the probability of an event as a number between 0 and 1. • I can compare the probability of events using fractions, decimals, and percentages.
16	3: Mystery Bag *(Predict sample sizes)*	• I can use proportional reasoning and data from a repeated experiment to make predictions about the sample space.
**** Concept Development Check Point: Use probabilities to make predictions***		
17	5: Is it Fair? *(Compare probabilities and experiments)*	• I can use the results from a repeated experiment to approximate the probability of an event.
18	6: Fair Games *(Compound events)*	• I can create and interpret a list, table, or tree diagram that represents the sample space of a compound event. • I can determine the probability of a compound event.
**** Concept Development Check Point: I can use determine compound probabilities.***		
19	7: Weather or Not *(Estimate probabilities using simulations)*	• I can use a simulation to estimate the probability of a compound event.
20	End of Unit Assessment	

Unit 8: Notes to my future forgetful self

Blank

Page

2026-2027

Math 7
Course Guide

#214 Math 7
#215A/215B MYP Math 7
#212 Basic Math 7

Math 7 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

Semester 1		***Semester 2***	
Unit	*Days*	*Unit*	*Days*
Community & Identity through SMP	5	Unit 5: Operations with Pos & Neg Numbers	18
Unit 1: Scale Drawings	16	Unit 6: Equations, Expressions, & Inequalities	22
Unit 2: Introducing Proportional Relationships	18	*Flex Days*	8
Flex Days (iReady Testing, school events etc)	4		
Be here by 10/17, the end of Q1		*Be here by 3/13 , the end of Q3*	
Unit 3: Measuring Circles	15	Unit 7: Angles, Triangles, & Prisms	18
Unit 4: Proportional Relationships & Percentages	18	Unit 8: Probability & Sampling	20
Flex Days (iReady Testing, school events etc)	5	*Flex Days (Reduced to 6 if Unit 6 is extended into Q4)*	11
Be here by 12/18, the end of Q2		*Be here by 6/5, the end of Q4*	

Math 7 Unit 1: Scale Drawings

Standards

Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.A.1)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6)

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Recognize and represent proportional relationships between quantities. (7.RP.A.2)

> Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2.a)
>
> Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2.b)

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (7.RP.A.3)

Concepts	Skills
Scale drawing Geometric figure Scale factor Area Equivalent ratio Proportional relationship	- Solve problems using scale drawings/factors - Compute lengths and areas from a scale - drawing. - Reproduce a scale drawing at a different scale. - Test equivalent ratios to determine a proportional - relationship. - Use proportional relationships to solve multi-step - problems involving scale drawings.

Learning Progressions/Concept Development

1. Draw a scaled copy. (L1 – L3)
2. Determine a scale factor. (L4)
3. Create a scale drawing. (L5 – L9)
4. Determine the scale of a drawing. (L10-L11)

Unit 7.1: Scale Drawings (16 days)

Lessons (45 – minutes)	Success Criteria
Sub-Unit 1	
Pre-Unit Check *(Assess and respond)*	
1: Scaling Machines *(What are scaled copies?)*	• I can determine whether one figure is a scaled copy of another. • I can use equivalent ratios to create a scaled copy of a figure. • I can justify whether two shapes are scaled copies of one another
2: Scaling Robots *(Lengths and scaled copies)*	• I recognize that a scale factor is the number multiplied by each side length in an original figure to create a scaled copy. • I understand that there is a proportional relationship between lengths in a figure and corresponding lengths in a scaled copy. • I can explain how scaling affects the side lengths in scaled copies.
3: Make it Scale *(Draw scaled copies)*	• I can draw a scaled copy of a figure using a given scale factor. • I can describe and critique strategies for precisely drawing a scaled copy
**** Concept Development Check Point: Students can draw a scaled copy***	
4: Scale Factor Challenge *(Effects of scale factor)*	• I can determine the effect of scale factors greater than 1, between 0 and 1, or equal to 1 on lengths in scaled copies. • I can understand how the scale factor from figure A to figure B relates to the scale factor from figure B to figure A. • I can explain how different scale factors affect lengths in scaled copies.
**** Concept Development Check Point: Students can determine a scale factor***	
5: Tiles *(Scaling and area)*	• I can calculate the area of a scaled copy. • I can explain how scaling affects lengths and areas in scaled copies.
Practice Day 1 *(review lessons 1-5)*	*Know all success criteria from above*
Sub-Unit 1 Quiz *(Assess and respond)*	
Sub-Unit 2	
6: Introducing Scale *(Compare scale factor and scale)*	• I know what a scale in a drawing is. • I can interpret the scale of a drawing. • I can explain how a scale helps to represent actual distances.
7: Will it Fit? *(Scale drawings)*	• I can use a scale drawing to calculate actual distances and scaled distances. • I can calculate actual areas from a scale drawing. • I can describe how actual distances are represented on scale drawings.
8: Scale States, part 1 *(Create scale drawings)*	• I can create a scale drawing given the actual dimensions of the object and the scale. • I can determine the scale given actual lengths and lengths on a scale drawing. • I can compare and contrast strategies for determining lengths in scale drawings.
9: Scale States, part 2 *(Create scale drawings)*	• I can create scale drawings of the same object using different scales. • I can determine the scale given actual lengths and lengths on a scale drawing. • I can analyze how different scales impact scale drawings of the same object.

**** Concept Development Check Point: Students can create a scale drawing***	
10: Scale Buildings *(Same object, different scales)*	• I can calculate distances on a scale drawing given a drawing of the same object with a different scale. • I can determine the scale of a scale drawing. • I can explain how using a different scale will impact the size of a scale drawing.
**** Concept Development Check Point: Students can determine the scale of a drawing***	
11: Team Spirit *(Scale and scale factor)*	• I can choose an appropriate scale to create a scale drawing of a specific size. • I can accurately draw a complex scaled copy. • I can explain how to determine a scale factor or scale to resize a drawing to a specific size.
Practice Day 2 *(review lessons 1-11)*	*Know all success criteria from above*
Unit 1 Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (13 days)

1	Pre-Check 1 + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 & 5
5	Practice Day 1
6	Sub-Unit Quiz 1
7	Lesson 6
8	Lesson 7
9	Lesson 8 & 9
10	Lesson 10
11	Lesson 11
12	Practice Day 2
13	End of Unit Assessment

Block Schedule Pacing Adjustment (8 days)

1	Pre-Check + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Practice + Lesson 6
5	Quiz + Lesson 7
6	Lesson 8 & 9
7	Lesson 10 & 11
8	Practice Day 2
9	Test + Pre-Check Unit 2



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 1L)
- Combine Pre-Unit Check and Lesson 1
- Combine Lesson 4 & 5
- Combine Lesson 8 & 9
- Omit Lesson 11

Unit 1 Notes to my future forgetful self:

Math 7 Unit 2: Introducing Proportional Relationships

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour*. (7.RP.A.1)

Recognize and represent proportional relationships between quantities. (7.RP.A.2)

Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2.a)

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2.b)

Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. (7.RP.A.2.c)

Explain what a point (*x*, *y*) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r*) where r is the unit rate. (7.RP.A.2.d)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Concepts	Skills
Unit rate Proportional relationships Equivalent ratios Graphs of straight line Constant of proportionality Tables, graphs, equations, verbal descriptions. Point (x, y) Variable equations	- Use a table of values of a proportional relationship and equivalent ratios to determine other table values. - Compute a unit rate. - Identify and compute a constant of proportionality. - Identify the graph of a proportional relationship. - Graph a straight line proportional relationship. - Create an equation of a proportional relationship.

Learning Progressions/Concept Development

1. Understand and describe the meaning of a constant of proportionality. (L1 – L6)
2. Justify whether or not a graph represents a proportional relationship. (L7 – L8)
3. Write an equation of a proportional relationship when given a verbal description, a table, or a point on a graph. (L9 – L13)

Unit 7.2: Introducing Proportional Relationships
(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Proportional Relationships in Tables	
1	Reflect Unit 1 & Pre-check Unit 2 *(Assess and respond)*	
2	1: Paint *(Use equivalent ratios)*	• I understand and can generate equivalent ratios.
3	2: Balloon Float *(Introduce proportional relationships w/tables)*	• I can use a table to calculate unknown quantities in a proportional relationship. • I can determine whether two quantities are in a proportional relationship
4	3: Sugar, Spice, and Everything Rice *(Constant of proportionality)*	• I can determine the constant of proportionality for a proportional relationship represented in a table. • I can use the constant of proportionality to determine values in a table.
	Sub-Unit 2 – Proportional Relationships in Equations	
5	4: Robot Factory *(Proportional relationships and equations)*	• I can write equations of the form y = kx to represent proportional relationships.
6	5: Snapshots *(More equations for each relationship)*	• I can connect each part of an equation of the form y = kx to the situation it represents. • I can create equations representing proportional relationships and use them to solve problems.
7	6: Two and Two *(Two equations for each relationship)*	• I can write two equations that represent the same proportional relationship, such as y = kx
	**** Concept Development Check Point: Students should be able to determine and explain the constant of proportionality***	
8	7: All Kinds of Equations *(Equations of Proportional Relationships)*	• I can understand that equations of the form y = kx represent proportional relationships. • I can justify whether a relationship is proportional or not by looking at the structure of an equation.
9	Practice Day 1 *(review lessons 1-7)*	
10	Sub-Unit 1 Quiz *(Assess and respond)*	
	Be here by end of Quarter 1	
	Sub-Unit 3 – Proportional Relationships in Graphs (Finish here by Q1, 10/17)	
11	8: DinoPops *(Introduce graphs of proportional relationships)*	• I can use a graph that represents a proportional relationship to predict other points in that relationship. I understand that a proportional relationship can be represented by points on a line that passes through the origin.
12	9: Gallon Challenge *(Interpret graphs of proportional relationships)*	• I can identify the constant of proportionality from the graph of a proportional relationship
	**** Concept Development Check Point: Students should be able to determine whether or not a graph represents a proportional relationship***	
13	10: Three Turtles *(Proportional relationships and graphs)*	• I can write an equation of a proportional relationship given a point on a graph.

**** Concept Development Check Point: Students should be able to determine the equation of a proportional relationship when given a verbal description or a point on a line.***		
Sub-Unit 4 – Using Proportional Relationships		
14	11: Four Representations *(Connect descriptions, tables, graphs, and equations)*	• I can create four different representations of a proportional relationship: description, table, graph, and equation.
15	12: Water Efficiency, part 1 *(Let's put it to work)*	• I can model a real-world situation using proportional relationships.
16	13: Water Efficiency, part 2 *(Let's put it to work)*	• I can use a model of a real-world situation to make recommendations.
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (14 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 & 5
5	Lesson 6
6	Lesson 7
7	Practice Day 1
8	Sub-Unit Quiz + Lesson 8
9	Lesson 9
10	Lesson 10
11	Lesson 11
12	Lesson 12 & 13
13	Practice Day 2
14	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Lesson 5 & 6
4	Lesson 7 & Practice Day 1
5	Sub-Unit Quiz 1 + Lesson 8
6	Lesson 9 & 10
7	Lesson 11 & 12
8	Lesson 13 + Practice Day 2
9	Test + Pre-Check Unit 3



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 87L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 5, be sure to address how equation relates to situation in future lessons
- Omit Lesson 11
- Combine lessons 12 & 13

Unit 2 Reflection: Notes to my future forgetful self

Math 7 Unit 3: Circles

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2a)

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2b)

Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. (7.RP.A.2c)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.(7.G.B)
Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.B.4)

Concepts	Skills
Proportional relationship Constant of proportionality Equations of proportional relationships Circumference of a circle Area of a circle Relationship between circumference & area	- Know the parts of a circle, including diameter and radius. - Calculate the circumference of a circle. - Apply knowledge of circumference to determine perimeters of shapes consisting of squares and parts of circles. - Derive the formula for area of a circle from circumference - Calculate the area of a circle. - Apply knowledge to determine the area of shapes consisting of squares and parts of circles.

Learning Progressions/Concept Development

1. Calculate the circumference of a circle (L1 – L3)
2. Calculate the perimeter of complex shapes (L4 – Practice Day1)
3. Calculate the area of a circle (L5 – L8)
4. Calculate the area of complex shapes (L9 – L10)

Unit 7.3: Circles
(15 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Circumference of a Circle	
1	Reflect Unit 2 & Pre-check Unit 3	
2	1: Toothpicks *(Perimeter and proportional relationships)*	• I can use proportional relationships to determine missing side lengths, diagonal lengths, and perimeters.
3	2: Is it a Circle? *(Parts of a Circle)*	• I can identify the diameter and radius of a circle and explain how they are related.
4	3: Measuring Around *(Estimate and calculating circumference)*	• Given the radius, diameter, or circumference of a circle, I can calculate the other two measurements.
**** Concept Development Check Point: Students should be able to calculate the circumference of circle.***		
5	4: Perimeter Challenges *(Calculate perimeters of complex shapes)*	• I can calculate the perimeter of a complex shape made up of squares and fractions of circles.
6	Practice Day 1 *(review lessons 1-4)*	
7	Sub-Unit 1 Quiz *(Assess and respond)*	
	Sub-Unit 2 – Area of a Circle	
8	5: Area Strategies *(Estimate and calculating area)*	• I can determine the area of a complex shape using a variety of strategies. • I can estimate the area of a shape with curved edges
9	6: Radius Squares *(Explore circle areas)*	• I can determine the area of a complex shape using a variety of strategies. • I can estimate the area of a shape with curved edges
10	7: Circle Area *(Calculate circle area)*	• I can calculate the area of a circle given the radius.
**** Concept Development Check Point: Students should be able to calculate the area of circle.***		
11	8: Why Pi? *(Relate area to circumference)*	• I can explain that the relationship between the radius and the area of a circle is not proportional.
12	9: Area Challenges *(Calculating area of complex shapes)*	• I can calculate the area of a complex shape that's made up of squares and fractions of circles. • I can write area as an expression that includes π, such as 20π + 50.
13	10: Circle vs. Square *(Calculate area given a perimeter)*	• I can connect the relationship between perimeter and area for both a circle and a square.
14	Practice Day 2 *(review lessons 1-10)*	
15	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (12 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 + Practice Day 1
5	Sub-Unit Quiz
6	Lesson 5 & 6
7	Lesson 7
8	Lesson 8
9	Lesson 9
10	Lesson 10
11	Practice Day 2
12	End of Unit Assessment

Block Schedule Pacing Adjustment (8 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Practice Day + Lesson 5
4	Sub-Unit Quiz 1 + Lesson 6
5	Lesson 7 & 8
6	Lesson 9 & 10
7	Practice Day 2
8	Test + Pre-Check Unit 4



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 185L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 5
- Omit Lesson 10

Unit 3 Reflection: Notes to my future forgetful self

Math 7 Unit 4: Introducing Proportional Relationships

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour*. (7.RP.A.1)

Recognize and represent proportional relationships between quantities. (7.RP.A.2)

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (7.RP.A.3)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Apply and extend previous understandings of operations with fractions.
Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. (7.NS.A.2d)

Concepts	Skills
Unit Rate Proportional Relationships Multi-step ratio problems Multi-step percent problems Simple interest Tax Markups and markdowns Gratuities Commissions Percent increase and decrease Equations Rational number Long division Decimal form	- Compute rates - Represent proportional relationships - Use proportional relationships in percent problems - Determine percent increase or decrease - Use variables to represent quantities - Convert rational numbers to decimals

Learning Progressions/Concept Development

1. Solve problems involving percent increase and decrease (L1 – L6)
2. Solve multi-step percent problems, including percent error (L7-L10)
3. Apply proportional relationships to real world situations involving fractional quantities. (L11-L12)
4. Write fractions as decimals, including repeating decimals. (L13)

Unit 7.4: Introducing Proportional Relationships
(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Percentages as Proportional Relationships	
1	Reflect Unit 3 & Pre-check Unit 4	
2	1: Mosaics *(Work with fractions and percentages)*	• I can visualize benchmark percentages. • I can calculate the percent of a quantity as a rate per 100.
3	2: More or Less *(Percent increase/decrease with tape diagrams)*	• I can use tape diagrams and tables to represent situations involving a percent increase or decrease. • I can determine a new amount given an original amount and a percent increase or decrease.
4	3: All the Equations *(Percent increase with equations)*	• I can use equations to represent situations involving percent increase or decrease. • I can use a tape diagram where 100% corresponds to the original value to represent adding or subtracting a percent of the original value.
5	4: 100% *(Percent increase/decrease with dbl number lines)*	• I can use double number lines to represent situations involving a percent increase or decrease. • I can determine the original amount given the new amount and a percent increase or decrease.
**** Concept Development Check Point: Students should be able to use the percent increase or decrease to calculate unknown values.***		
6	5: Percent Machines *(Calculate unknowns w/percentages)*	• I can calculate the original amount given the new amount and a percent change for one-step and multistep percent problems.
7	6: Back in My Day *(Real world situations involving percent increase)*	• I can solve problems about price changes over time, including calculating the new price or the percentage change. • I can solve problems involving a percent increase of more than 100%.
8	Practice Day 1 *(review lessons 1-6)*	
9	Sub-Unit 1 Quiz	
	Sub-Unit 2 – Applying Percentages	
10	7: Tax and Tip *(Multistep percent problems)*	• I can calculate an original amount, new amount, or percent change in the context of sales tax and tip, including situations that involve multiple percent increases or decreases
11	8: Plate Rate *(More real-world situations involving percent increase)*	• I can use proportional relationships that represent a percent change to analyze an issue in society.
12	9: Bookcase Builder *(Percent error)*	• I can use percent error to express error as a percentage of a desired value. • I can decide whether a value is within an acceptable percent error
**** Concept Development Check Point: Students should be able to calculate and use percent errors.***		
13	10: Population and Pollution *(Posing problems involving percents)*	• I can answer questions involving percent increase and decrease in the world.

Sub-Unit 3 – Proportional Relationships with Fractions and Decimals		
14	11: Sticker Sizes *(Revisit proportional relationships)*	• I can determine an unknown value in a proportional relationship using a table
15	12: Peach Cobbler *(Ratios and rates with fractions)*	• I can use a constant of proportionality to solve problems involving fractional quantities
16	13: Decimal Deep Dive *(Write fractions as decimals)*	• I can convert a fraction to a decimal using long division.
**** Concept Development Check Point: Students should be able to convert fractions and decimals.***		
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Practice Day 1
7	Sub-Unit Quiz 1
8	Lesson 7
9	Lesson 8
10	Lesson 9
11	Lesson 10
12	Lesson 11
13	Lesson 12
14	Practice Day 2 *(Lesson 13 opt)*
15	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Lesson 5 & 6
4	Practice Day 1
5	Sub-Unit Quiz 1 + Lesson 7
6	Lesson 8 & 9
7	Lesson 10 + Lesson 11
8	Lesson 12 + Practice Day 2
9	Test + Pre-Check Unit 5



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 295L)
- Combine Pre-Unit Check and Lesson 1
- Combine Lesson 7 & 8
- Omit Lesson 10
- Omit Lesson 13

Unit 4 Reflection: Notes to my future forgetful self

Math 7 Unit 5: Operations with Positive and Negative Numbers

Standards

Apply and extend previous understandings of operations with fractions. (7.NS.A)

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. (7.NS.A.1)

Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged*. (7.NS.A.1.a)

Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. (7.NS.A.1.b)

Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. (7.NS.A.1.c)

Apply properties of operations as strategies to add and subtract rational numbers. (7.NS.A.1.d)

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. (7.NS.A.2)

Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. (7.NS.A.2.a)

Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. (7.NS.A.2.b)

Apply properties of operations as strategies to multiply and divide rational numbers. (7.NS.A.2.c)

Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.A.3)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Concepts	Skills
Rational Numbers Horizontal/Vertical Number Line Distance between rational numbers Absolute Value Opposites Additive Inverse Distributive Property Algebraic Equations Multi-Step real-life problems	- Add and subtract rational numbers. - Represent addition/subtraction of rational numbers on a number line. - Combine opposites quantities. - Show distance between numbers is absolute value. - Apply properties of operations to rational numbers. - Multiply and Divide rational numbers. - Extend rules for multiplication to signed numbers (+/-). - Solver real world problems involving rational numbers.

Learning Progressions/Concept Development

1. Add and subtract integers, including positive and negative rational numbers. (L1 – L5)
2. Multiply and divide integers, including positive and negative rational numbers. (L6 – L10)
3. Apply integer operations (add, subtract, multiply, divide) to real world situations. (L11 – L13)

Unit 7.5: Positive and Negative Numbers

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Adding and Subtracting	
1	Reflect Unit 4 & Pre-check Unit 5 *(Assess and respond)*	
2	1: Floats and Anchors *(Represent adding & subtracting)*	• I can use a visual model to represent adding and subtracting positive and negative numbers. • I can use a visual model to represent that pairs of numbers can be combined to make 0.
3	2: More Floats and Anchors *(Add and subtract positive and negative numbers)*	• I can connect different visual models that represent addition and subtraction. • I can add and subtract positive and negative numbers.
4	3: Bumpers *(Add on a number line)*	• I can add positive and negative numbers, including decimals and fractions, on a number line.
5	4: Draw Your Own *(Number lines and expressions)*	• I can subtract positive and negative numbers on a number line. • I can compare and contrast expressions that include the same signed numbers in different orders (e.g., 2.5 - 3.5 and 3.5 - 2.5).
6	5: Number Puzzles *(Practice adding and subtracting)*	• I can add and subtract integers, decimals, and fractions in complex expressions
**** Concept Development Check Point: Students should be able to add and subtract positive and negative numbers.***		
7	Practice Day 1 *(review lessons 1-6)*	

8	Sub-Unit 1 Quiz *(Assess and respond)*	
Sub-Unit 2 – Multiplying and Dividing		
9	6: Floating in Groups *(Represent multiplication)*	• I can use visual models to represent multiplying integers
10	7: Back in Time *(Position, rate, time)*	• I can represent rate, time, and position using the product of positive and negative numbers.
11	8: Speeding Turtles *(Divide integers)*	• I can multiply and divide integers
12	9: Expressions *(Variable expressions)*	• I can analyze variable expressions involving the four operations
13	10: Integer Puzzles *(Practice all four operations)*	• I can add, subtract, multiply, and divide integers in multistep expressions.
**** Concept Development Check Point: Students should be able to multiply and divide positive and negative numbers.***		
Sub-Unit 3 – Applying Operations		
14	11: Temperatures Around the World *(Real world situations involving positive and negative numbers, part 1)*	• I can add and subtract positive and negative numbers to solve problems involving real world situations.
15	12: Visiting the Arctic *(Real world situations involving positive and negative numbers, part 2)*	• I can calculate positive and negative rates to solve real-world problems.
16	13: Solar Panels and More *(Real world situations involving positive and negative numbers, part 3)*	• I can apply operations with positive and negative numbers to analyze real-world situations.
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (16 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 & 5
5	Lesson 6
6	Lesson 7
7	Practice Day 1
8	Sub-Unit Quiz + Lesson 8
9	Lesson 9
10	Lesson 10
11	Lesson 11
12	Lesson 12 & 13
13	Practice Day 2
14	End of Unit Assessment
15	Practice Day 2
16	End of Unit Assessment

Block Schedule Pacing Adjustment (10 days)

1	Reflect U4 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Practice + Lesson 6
5	Sub-Unit Quiz 1 + Lesson 7
6	Lesson 8 & 9
7	Lesson 10 & 11
8	Lesson 12 & 13
9	Practice Day 2
10	Test + Pre-Check Unit 6



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 363L)
- Can omit one or two lessons from 11, 12, and/or 13

Unit 5 Reflection: Notes to my future forgetful self

Math 7 Unit 6: Expressions, Equations and Inequalities

Standards

Use properties of operations to generate equivalent expressions.(7.EE.A)
Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. (7.EE.A.1)

Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."* (7.EE.A.2)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* (7.EE.B.4.a)

Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*. (7.EE.B.4.b)

Concepts	Skills
Equivalent Expressions Linear Expressions Algebraic Equations/ expressions Rational Coefficients Multi-step problems Variables Inequalities	Apply properties of operations to add, subtract, factor and expand linear expressions. Solve multi-step real-life and mathematical equations. Solve and graph the solution set of inequalities.

Learning Progressions/Concept Development

1. Solve equations in the form px + q = r and p(x+q) = r. (L1 – L8)
2. Write equivalent expressions. (L 9 – L10)
3. Write and solve equations in context. (L11 – L12)
4. Write and graph inequalities. (L13 – L17)

Unit 7.6: Equations, Expressions, and Inequalities
(22 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Equations and Tape Diagrams	
1	Reflect Unit 5 & Pre-check Unit 6 *(Assess and respond)*	
2	1: Toothpicks and Tiles *(Determine unknowns in patterns)*	• I can make predictions and calculate unknown values in different patterns.
3	2: Smudged Receipts *(Connect context w/tape diagrams)*	• I can use a tape diagram to determine an unknown value in context
4	3: Equations *(Represent contexts w/tape diagrams & eqns)*	• I can connect tape diagrams, equations, and verbal descriptions in context. • I can write an equation to represent a tape diagram and a context
5	4: Seeing Structure *(Practice w/tape diagrams & equations)*	• I can connect a situation to the tape diagram, equation, and solution that represent it. • I can write equations of the form $px + q = r$ and $p(x + q) = r$ to represent situations and determine their solutions using a tape diagram.
	**** Concept Development Check Point: Students should be able to connect situations to tape diagrams***	
	Sub-Unit 2 – Solving Equations	
6	5: Balancing Moves *(Introduction to balanced hangers)*	• I can determine an unknown value on a hanger.
7	6: Balancing Equations *(Solve eqns w/balanced hangers)*	• I can connect moves on hanger diagrams to moves that determine the value of a variable in an equation. • I can solve equations of the form $px + q = r$ and $p(x + q) = r$.
8	7: Keeping it True *(Solve Equations)*	• I can solve equations of the form $px + q = r$ and $p(x + q) = r$ that involve positive and negative numbers
9	8: Factoring & Expanding *(options for solving one equation)*	• I can expand and factor expressions that include positive and negative coefficients. • I can solve equations that involve expanding an expression.
	**** Concept Development Check Point: Students should be able to solve equations in the form of $px + q = r$ and $p(x+q) = r$.***	
10	9: Always-Equal Machine *(Equivalent expressions)*	• I can write equivalent expressions that involve factoring, expanding, and reordering terms
11	10: Collect the Squares *(Add expressions)*	• I can write equivalent expressions with fewer terms by expanding, adding, and subtracting terms
	**** Concept Development Check Point: Students should be able to write equivalent expressions.***	
12	11: Pass the Equation *(Solve equations multiple ways)*	• I can solve equations using a variety of strategies
13	12: Community Day *(Use equations to solve problems)*	• I can write and solve equations to represent situations involving positive and negative numbers. • I can connect visual representations, equations, and verbal descriptions of the same situation.
	**** Concept Development Check Point: Students should be able to write and solve equations in context.***	
14	Practice Day 1 *(review lessons 1-12)*	

15	Sub-Unit 1 Quiz *(Assess and respond)*	
Sub-Unit 3 – Inequalities		
16	13: I Saw the Signs *(Inequalities on a number line)*	• I can understand and use the symbols ≤ and ≥ to describe inequalities. • I can draw and label a graph on the number line that represents an inequality.
17	14: Unbalanced Hangers *(Solutions to inequalities)*	• I can determine the solutions to an inequality with positive numbers
18	15: Budgeting *(Solve Inequalities in context)*	• I can write an inequality to represent a situation. • I can solve an inequality in context using its corresponding equation.
19	16: Shira the Sheep *(Solve inequalities with positive and negative numbers)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
20	17: Write Them and Solve Them *(Model w/inequalities)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
**** Concept Development Check Point: Students should be able to write and graph inequalities.***		
21	Practice Day 2 *(review lessons 1-13)*	
22	End of Unit Assessment	

4 classes/week Pacing Adjustment (18 days)

1	Reflect Unit 5 + Pre-Check
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Lesson 7
7	Lesson 8
8	Lesson 9 & 10
9	Lesson 11
10	Lesson 12
11	Practice
12	Sub-Unit 1 Quiz + Lesson 13
13	Lesson 14
14	Lesson 15
15	Lesson 16
16	Lesson 17
17	Practice Day 2
18	End of Unit Assessment

Block Schedule Pacing Adjustment (11 days)

1	Reflect U4 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 & 9
6	Lesson 10 & 11
7	Lesson 12 + Practice Day 1
8	Lesson 13 & 14
9	Lesson 15 & 16
10	Lesson 17 + Practice Day 2
11	Test + Pre-Check Unit 7

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 463L)
- Omit Lesson 1
- Combine Lessons 2 and 3

Unit 6 Reflection: Notes to my future forgetful self

Math 7 Unit 7: Angles, Triangles and Prisms

Standards

Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids (7.G.A.3)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B.4)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Concepts	Skills
Geometrical figure Unique Triangle Measures of sides/angles Supplementary/Complementary Angles Vertical Angles Adjacent Angles Volume Surface Area Right Prisms Equations	- Constructing triangles from three measures - Describe 2-dimensional figures from slicing 3-d figures - Use facts about angel relationships to write and solve simple equations. - Solve real-world problems involving area, volume, and surface area. - Use variables to represent quantities. - Construct simple equations to solve problems.

Learning Progressions/Concept Development

1. Determine missing angle measures.
2. Build triangles given three measurements.
3. Determine the volume of right rectangular and triangular prisms.
4. Calculate the surface area of a prism.

Unit 7.7: Angles, Triangles, and Prisms
(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Angle Relationships	
1	Reflect Unit 6 & Pre-check Unit 7 *(Assess and respond)*	
2	1: Pinwheels *(Explore angles)*	• I can use reasoning to determine angle measures around a vertex
3	2: Friendly Angles *(Complementary Supplementary angles)*	• I can determine unknown angle measures by reasoning about complementary and supplementary angles. • I can describe what it means for angles to be complementary or supplementary.
4	3: Angle Diagrams *(Vertical angles and equations)*	• I can use angle relationships to write equations and determine unknown angle measures.
5	4: Missing Measures *(Write and solving problems with angle relationships)*	• I can solve multistep problems involving complementary, supplementary, and vertical angles.
	**** Concept Development Check Point: Students should be able determine missing angle measures.***	
	Sub-Unit 2 – Drawing Triangles	
6	5: Can You Build It? *(The triangle inequality theorem)*	• I can determine whether three segments will form a triangle.
7	6: Is It Enough? *(Build polygons given side lengths)*	• I can determine how many non-identical polygons can be made with a given set of segments.
8	7: More Than One *(Build triangles with technology)*	• I can use manipulatives, tools, or technology to build triangles given three measurements
	**** Concept Development Check Point: Students should be able to build triangles given three measurements.***	
9	8: Can You Draw It? *(Draw triangles with rulers and protractors)*	• I can use a protractor and ruler to draw triangles given three measurements.
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit Quiz 1 *(Assess and respond)*	
	Sub-Unit 3 – Solid Geometry	
12	9: Slicing Solids *(Describe cress sections)*	• I can determine the shapes that result from a cross section
13	10: Simple Prisms *(Use base area to calculate volume)*	• I can determine the volume of right rectangular prisms and right triangular prisms
14	11: Complex Prisms *(Calculate volumes of right prisms)*	• I can calculate the volume of a prism with a complex base using a variety of area strategies.
	**** Concept Development Check Point: Students should be able to determine the volume of right rectangular and triangular prisms..***	
15	12: Surface Area Strategies *(Surface area of right prisms)*	• I can calculate the surface area of a prism.
	**** Concept Development Check Point: Students should be able to calculate surface area of a prism.***	

16	13: Popcorn Possibilities *(Apply volume & surface area)*	• I can calculate surface area and volume to answer questions about a real-world situation.
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment	

4 classes/week Pacing Adjustment (14 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 & 5
5	Lesson 6
6	Lesson 7
7	Practice Day 1
8	Sub-Unit Quiz + Lesson 8
9	Lesson 9
10	Lesson 10
11	Lesson 11
12	Lesson 12 & 13
13	Practice Day 2
14	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Reflect U6 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 + Practice Day 1
6	Sub-Unit Quiz 1 + Lesson 9 & 10
7	Lesson 11, & 12
8	Lesson 13+ Practice Day 2
9	Test + Pre-Check Unit 6

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 689L)
- Omit Lesson 1
- Omit Lesson 2
- Do either lesson 13 or Practice Day 2

Unit 7 Reflection: Notes to my future forgetful self

Math 7 Unit 8: Probability and Sampling

Standards

Use random sampling to draw inferences about a population. (7.SP.A)
Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. (7.SP.A.1)

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be*. (7.SP.A.2)

Draw informal comparative inferences about two populations. (7.SP.B)
Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable*. (7.SP.B.3)

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book*. (7.SP.B.3)

Investigate chance processes and develop, use, and evaluate probability models. (7.SP.C)
Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. (7.SP.C.5)

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times*. (7.SP.C.6)

Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (7.SP.C.7)

> Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected*. (7.SP.C.7a)
>
> Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?* (7.SP.C.7b)

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (7.SP.C.8)

> Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (7.SP.C.8.a)

Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. (7.SP.C.8.b)

Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?* (7.SP.C.8.b)

Concepts	**Skills**
Sample Populations Measures of Centers Measures of Spread/Variability Comparative Inferences Probability Likelihood Compound Probability Simulations	- Use random samples to make inferences. - Compare and contrast numerical data sets. - Use measures of center and spread to make informal comparative inferences. - Create and use probability models. - Find probabilities of compound events.

Learning Progressions/Concept Development

1. Create dot plots and histograms.
2. Calculate the mean and mean average deviation of a data set
3. Create a box plot.
4. Use box plots to compare and contrast data sets.

Unit 7.8: Probability and Sampling

(20 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Probability	
1	Reflect Unit 7 & Pre-check Unit 8 *(Assess and respond)*	
2	1: How Likely *(Chance experiments)*	• I can describe the likelihood of events using the words impossible, unlikely, equally likely as not, likely, or certain.
3	2: Prob-bear-bilities *(Intro to probability)*	• I can use the sample space to determine the probability of an event as a number between 0 and 1. • I can compare the probability of events using fractions, decimals, and percentages.
4	3: Mystery Bag *(Predict sample sizes)*	• I can use proportional reasoning and data from a repeated experiment to make predictions about the sample space.
**** Concept Development Check Point: Use probabilities to make predictions***		

5	4: Spin Class *(Repeated experiments)*	• I can recognize that the results of a repeated experiment approach the probability of the event.
6	5: Is it Fair? *(Compare probabilities and experiments)*	• I can use the results from a repeated experiment to approximate the probability of an event.
7	6: Fair Games *(Compound events)*	• I can create and interpret a list, table, or tree diagram that represents the sample space of a compound event. • I can determine the probability of a compound event.
**** Concept Development Check Point: I can use determine compound probabilities.***		
8	7: Weather or Not *(Estimate probabilities using simulations)*	• I can use a simulation to estimate the probability of a compound event.
9	8: Simulate It! *(Design simulations)*	• I can design and use a simulation to estimate the probability of a compound event.
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit Quiz 1 *(Assess and respond)*	
Sub-Unit 2 – Sampling		
12	9: Car, Bike or Train? *(Use mean and MAD to compare groups)*	• I can calculate the mean and mean absolute deviation (MAD) for a data set. • I can use shape, center, and spread to compare data sets.
13	10: Crab Island *(Sample from large populations)*	• I can compare the mean of multiple samples from the same population to the mean of the population.
**** Concept Development Check Point: Students should be able to calculate the mean and mean average deviation of a data set.***		
14	11: Headlines *(Sampling bias)*	• I can determine whether or not a sampling method is likely to result in a representative sample.
15	12: Flower Power *(Use percentages to predict populations)*	• I can estimate unknown information about a population using proportional reasoning.
16	13: Plots and Samples *(Use Median and IQR to make predictions)*	• I can estimate a measure of center of a population based on one or more samples.
17	14: School Newspaper *(Compare populations)*	• I can calculate the difference between the measures of center of two samples with similar variability, then express the difference as a multiple of the measure of variability
**** Concept Development Check Point: Students should be able to create a box plot.***		
18	15: Air Quality *(Put it all together)*	• I can use statistics from random samples to understand a population or compare two populations.
**** Concept Development Check Point: Students should be able to use box plots to compare and contrast data sets.***		
19	Practice Day 2 *(review lessons 1-13)*	
20	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (16 days)

1	Reflect U7 Test + Pre-Check
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4 & 5
5	Lesson 6
6	Lesson 7
7	Lesson 8 + Practice Day 1
8	Sub Unit Quiz 1
9	Lesson 9
10	Lesson 10 & 11
11	Lesson 12
12	Lesson 13
13	Lesson 14
14	Lesson 15
15	Practice Day 2
16	End of Unit Assessment

Block Schedule Pacing Adjustment (10 days)

1	Reflect U7 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 + Practice Day 1
6	Sub-Unit Quiz + Lesson 9 & 10
7	Lesson 11, & 12
8	Lesson 13 & 14
9	Lesson 15 + Practice 2
10	End of Unit Assessment



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 699L)
- Omit Lesson 1
- Omit Lesson 8
- Omit Practice Day 2 or Lesson 15
- Do either lesson 15 or Practice Day 2

Unit 8 Reflection: Notes to my future forgetful self

Blank

Page

2026-2027

Math 7-8
Course Guide

(Retiring Pathway – Students entering from Math 6)

#220 Math 7-8
#227A/227B MYP Math 7-8

Math 7-8 Pacing (Days in Q1-43, Q2-38, Q3-47, Q4-49)

Semester 1		Semester 2	
Unit	Days	Unit	Days
Community & Identity through SMP	3	Unit 6: Expressions & Equations	24
Unit 1: Rigid Transformations & Congruence	16	Unit 7: Geometry	19
Unit 2: Scale Drawing, Dilations, and Similarity	12	*Flex Days (iReady Testing, school events etc)*	4
Unit 3: Positive & Negative Numbers	11		
Flex Days (iReady Testing, school events etc)	1		
Be here by 10/17, the end of Q1		Be here by 3/13, the end of Q3	
Unit 4: Proportional & Linear Relationships	23	Unit 8: Data Sets & Relationships	12
Unit 5: Proportional Relationships & Percents	10	Unit 9: Exponents & Scientific Notation	12
Flex Days (iReady Testing, school events etc)	5	Unit 10: Roots, Cubes, and Pythagorean Theorem	9
		Flex Days (iReady Testing, school events etc)	16
Be here by 12/18, the end of Q2		Be here by 6/5, the end of Q4	

Accelerated (Acc) Math 7 Book: Lessons shown in black.

Supplemental (Sup) Math 7-8 Book: Lessons shown in red

Math 7/8 Unit 1: Rigid Transformations and Congruence

Standards

Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B.4)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Lines are taken to lines, and line segments to line segments of the same length. (8.G.A.1.a)

Angles are taken to angles of the same measure. (8.G.A.1.b)

Parallel lines are taken to parallel lines. (8.G.A.1.c)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Concepts	Skills

Congruence
Rotations
Reflections
Translations
Sequence of transformations
Coordinates
Informal arguments about angles
Angle sum
Exterior angles
Parallel lines cut by a traversal
	- Describe rotation, reflections, and translations.
	- Determine type of transformation
	- Describe a sequence of transformations.
	- Determine coordinates of an image after a transformation on a coordinate plane.
	- Determine whether figures are congruent.
	- Determine values of angles using
	  o Angle sums
	  o Exterior angles
	- Parallel Lines cut by a traversal.

Math 7- 8 (retiring)

Learning Progressions/Concept Development

1. Perform a reflection, rotation, and translation
2. Identify coordinates after a transformation.
3. Describe a sequence of more than one transformation.
4. Calculate the measure of a missing angle.

Unit Acc7.1: Rigid Transformations

(16 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Rigid Transformations	
1	1: Spinning, Flipping, Sliding *(Name transformations)*	• I know what translations, reflections, and rotations are. • I can describe how translations, reflections, and rotations affect a figure.
2	2: Transformation Targets *(Sequence of transformations)*	• I can use a sequence of transformations to move one figure onto another
3	3: Moving Day *(Describe transformations precisely)*	• I can use grids to translate, reflect, or rotate figures
	**** Concept Development Check Point: Students should be able to perform a reflection, rotation, and translation.***	
4	4: Getting Coordinated, part 1 *(Coordinates of translations and reflections*	• I can determine the coordinates of a polygon after a translation or a reflection.
5	5: Getting Coordinated, part 2 *(Coordinates of transformations)*	• I can determine the coordinates of a polygon after a translation, reflection, or rotation.
	**** Concept Development Check Point: Students should be able to identify the coordinates after a transformation***	
6	Quiz	
	Sub-Unit 2 - Congruence	
7	6 and 7: Are They the Same? *(Define congruence)*	• I know what it means for two figures to be congruent.
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
8	8: Friendly Angles *(Complementary Supplementary angles)*	• I can determine unknown angle measures by reasoning about complementary and supplementary angles. • I can describe what it means for angles to be complementary or supplementary.
9	9: Angle Diagrams *(Vertical angles and equations)*	• I can use angle relationships to write equations and determine unknown angle measures.
10	10: Transforming Angles *(Angle measures in parallel lines)*	• I understand that rigid transformations move lines to lines and parallel lines to parallel lines.
11	12: Puzzling It Out *(Determine unknown angle measures)*	• I can use transformations and angle relationships to determine unknown angle measurements.
	**** Concept Development Check Point: Students should be able to calculate the measure of a missing angle.***	
	Sub-Unit 3 – Angle Relationships	
12	13: Can You Build It? *(The triangle inequality theorem)*	• I can determine whether three segments will form a triangle.
13	14: Is It Enough? *(Build polygons given side lengths)*	• I can determine how many non-identical polygons can be made with a given set of segments.
	**** Concept Development Check Point: Students should be able to build triangles given three measurements.***	
14	16: Can You Draw It? *(Draw triangles with rulers and protractors)*	• I can use a protractor and ruler to draw triangles given three measurements.
15	Practice Day 1 & 2	
16	End of Unit Assessment	

Math 7- 8 (retiring)

Unit 1 Reflection: Notes to my future forgetful self

Math 7/8 Unit 2: Scale Drawings, Dilations, and Similarity

Standards

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (8.G.A.4)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Understand the connections between proportional relationships, lines, and linear equations. (.8.EE.B)
Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. (8.EE.B.6)

Concepts	Skills
Dilation Sequence of Transformations Coordinates Similar Figures Similar Triangles Slope	- Perform dilations on a figure to produce a scaled copy. - Perform a sequence of transformations. - Dilate figures using a coordinate plane. - Justify why figures are similar, congruent, or neither. - Justify that two triangles are congruent using angle measures. - Use similar triangles to determine slope of a line.

Learning Progressions/Concept Development

1. Describe a sequence of transformations.
2. Apply dilations on a coordinate grid.
3. Determine if 2 triangles are similar.
4. Determine the slope of a line *on a plane*.*

*Students will explore slope at a much deeper level in the later unit(s).

Unit Acc7.2: Scale Drawings, Dilations, and Similarity

(12 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Scale Drawings	
1	1: Scaling Robots *(Lengths and scaled copies)*	• I recognize that a scale factor is the number multiplied by each side length in an original figure to create a scaled copy. • I understand that there is a proportional relationship between lengths in a figure and corresponding lengths in a scaled copy. • I can explain how scaling affects the side lengths in scaled copies.
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
2	3: Scale Factor Challenge *(Effects of scale factor)*	• I can determine the effect of scale factors greater than 1, between 0 and 1, or equal to 1 on lengths in scaled copies. • I can understand how the scale factor from figure A to figure B relates to the scale factor from figure B to figure A. • I can explain how different scale factors affect lengths in scaled copies.
	**** Concept Development Check Point: Students can determine a scale factor***	
3	4: Will it Fit? *(Scale drawings)*	• I can use a scale drawing to calculate actual distances and scaled distances. • I can calculate actual areas from a scale drawing. • I can describe how actual distances are represented on scale drawings.
4	5 and 6: Scale States, part 1 and 2 *(Create scale drawings)*	• I can create a scale drawing given the actual dimensions of the object and the scale. • I can determine the scale given actual lengths and lengths on a scale drawing. • I can compare and contrast strategies for determining lengths in scale drawings.
	**** Concept Development Check Point: Students can create a scale drawing***	
	Sub-Unit 2 - Similarity	
5	8: Dilation Mini Golf *(Dilations with no grid)*	• I can identify the scale factor and the center of dilation. • I can describe strategies for dilating a point.
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
6	11: Dilations on a Plane *(Dilations with coordinates)*	• I can dilate figures on a coordinate plane.
7	12: Social Scavenger Hunt *(Similar figures, sides, & angles)*	• I know that two figures are similar if there is a sequence of transformations that moves one onto the other. • I can justify whether two figures are similar using a sequence of transformations.
8	13: Are Angles Enough? *(Similar triangles)*	• I know that two pairs of congruent corresponding angles are enough to determine that two triangles are similar. • I can justify that two triangles are similar using what I know about their angles.
9	14: Shadows *(Side length relationships in similar triangles)*	• I understand the relationships between side lengths in similar triangles. • I can determine missing side lengths in similar triangles
10	15: Water Slide *(Similarity & slope)*	• I can use similar triangles to determine the slope of a line.
	**** Concept Development Check Point: Students should be able to determine the slope of a line on a plane.***	
11	Practice Day 1 and 2	
12	End of Unit Assessment	

Unit 2: Notes to my future forgetful self

Math 7/8 Unit 3: Operations with Positive and Negative Numbers

Standards

Apply and extend previous understandings of operations with fractions. (7.NS.A)

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. (7.NS.A.1)

Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged*. (7.NS.A.1.a)

Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. (7.NS.A.1.b)

Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. (7.NS.A.1.c)

Apply properties of operations as strategies to add and subtract rational numbers. (7.NS.A.1.d)

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. (7.NS.A.2)

Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. (7.NS.A.2.a)

Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. (7.NS.A.2.b)

Apply properties of operations as strategies to multiply and divide rational numbers. (7.NS.A.2.c)

Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.A.3)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Math 7- 8 (retiring)

Concepts	Skills
Rational Numbers Horizontal/Vertical Number Line Distance between rational numbers Absolute Value Opposites Additive Inverse Distributive Property Algebraic Equations Multi-Step real-life problems	- Add and subtract rational numbers. - Represent addition/subtraction of rational numbers on a number line. - Combine opposites quantities. - Show distance between numbers is absolute value. - Apply properties of operations to rational numbers. - Multiply and Divide rational numbers. - Extend rules for multiplication to signed numbers (+/-). - Solver real world problems involving rational numbers.

Learning Progressions/Concept Development

1. Add and subtract integers, including positive and negative rational numbers. (L1 – L5)
2. Multiply and divide integers, including positive and negative rational numbers. (L6 – L10)
3. Apply integer operations (add, subtract, multiply, divide) to real world situations. (L11 – L13)

Unit Acc7.3: Positive and Negative Numbers

(11 days – Supplemental Book)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Adding and Subtracting	
1	1: Floats and Anchors *(Represent adding & subtracting)*	• I can use a visual model to represent adding and subtracting positive and negative numbers. • I can use a visual model to represent that pairs of numbers can be combined to make 0.
2	2: More Floats and Anchors *(Add and subtract positive and negative numbers)*	• I can connect different visual models that represent addition and subtraction. • I can add and subtract positive and negative numbers.
3	3: Bumpers *(Add on a number line)*	• I can add positive and negative numbers, including decimals and fractions, on a number line.
4	4: Draw Your Own *(Number lines and expressions)*	• I can subtract positive and negative numbers on a number line. • I can compare and contrast expressions that include the same signed numbers in different orders (e.g., 2.5 - 3.5 and 3.5 - 2.5).
5	6: Floating in Groups *(Represent multiplication)*	• I can use visual models to represent multiplying integers
6	7: Back in Time *(Position, rate, time)*	• I can represent rate, time, and position using the product of positive and negative numbers.
7	8: Speeding Turtles *(Divide integers)*	• I can multiply and divide integers
8	9: Expressions *(Variable expressions)*	• I can analyze variable expressions involving the four operations
9	11: Temperatures Around the World *(Real world situations involving positive and negative numbers, part 1)*	• I can add and subtract positive and negative numbers to solve problems involving real world situations.
10	Practice Day 1 and 2	
11	End of Unit Assessment *(Assess and respond)*	

Unit 3 Reflection: Notes to my future forgetful self

Math 7/8 Unit 4: Proportional and Linear Relationships

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction* $^{1/2}/_{1/4}$ *miles per hour, equivalently 2 miles per hour*. (7.RP.A.1)

Recognize and represent proportional relationships between quantities. (7.RP.A.2)

Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.A.2.a)

Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.A.2.b)

Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as* $t = pn$. (7.RP.A.2.c)

Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate. (7.RP.A.2.d)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Analyze and solve linear equations and pairs of simultaneous linear equations. (8.EE.C)
Analyze and solve pairs of simultaneous linear equations. (8.EE.C.8)

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. (8.EE.C.8a)

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example,* $3x + 2y = 5$ *and* $3x + 2y = 6$ *have no solution because* $3x + 2y$ *cannot simultaneously be 5 and 6*. (8.EE.C.8b)

Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*. (8.EE.C.8c)

Use functions to model relationships between quantities.(8.f.B)
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (8.F.B.4)

Math 7- 8 (retiring)

Concepts	Skills
Unit rate Proportional relationships Equivalent ratios Graphs of straight line Constant of proportionality Tables, graphs, equations, verbal descriptions. Point (x, y) Variable equations Proportional Relationships Slope of a graph Similar Triangles y = mx y = mx + b function linear relationship rate of change (x, y) values Ordered pair (x,y) Linear function	- Use a table of values of a proportional relationship and equivalent ratios to determine other table values. - Compute a unit rate. - Identify and compute a constant of proportionality. - Identify the graph of a proportional relationship. - Graph a straight line proportional relationship. - Create an equation of a proportional relationship. - Represent a solution to a problem as an ordered pair. - Write and graph equations of proportional relationships - Translate proportional relationships to create linear relationships (y = mx+b) - Calculate slope between 2 points. - Write and graph equations of linear functions. - Write and graph horizontal and vertical lines. - Write linear functions when given two points.

Learning Progressions/Concept Development

1. Understand and describe the meaning of a constant of proportionality.
2. Justify whether or not a graph represents a proportional relationship. Write an equation of a proportional relationship when given a verbal description, a table, or a point on a graph.
3. Calculate the slope between two points.
4. Write an equation for a line.

Unit Acc7.4: Introducing Proportional Relationships
(23 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Proportional Relationships (Supplemental Book)	
1	1: Paint *(Use equivalent ratios)*	• I understand and can generate equivalent ratios.
2	2: Balloon Float *(Introduce proportional relationships w/tables)*	• I can use a table to calculate unknown quantities in a proportional relationship. • I can determine whether two quantities are in a proportional relationship
3	3: Sugar, Spice, and Everything Rice *(Constant of proportionality)*	• I can determine the constant of proportionality for a proportional relationship represented in a table. • I can use the constant of proportionality to determine values in a table.
4	4: Robot Factory *(Proportional relationships and equations)*	• I can write equations of the form y = kx to represent proportional relationships.
5	6: Two and Two *(Two equations for each relationship)*	• I can write two equations that represent the same proportional relationship, such as y = kx
	**** Concept Development Check Point: Students should be able to determine and explain the constant of proportionality***	
6	7: All Kinds of Equations *(Equations of Proportional Relationships)*	• I can understand that equations of the form y = kx represent proportional relationships. • I can justify whether a relationship is proportional or not by looking at the structure of an equation.
7	8: DinoPops *(Introduce graphs of proportional relationships)*	• I can use a graph that represents a proportional relationship to predict other points in that relationship. I understand that a proportional relationship can be represented by points on a line that passes through the origin.
8	9: Gallon Challenge *(Interpret graphs of proportional relationships)*	• I can identify the constant of proportionality from the graph of a proportional relationship
	**** Concept Development Check Point: Students should be able to determine whether or not a graph represents a proportional relationship***	
9	10: Three Turtles *(Proportional relationships and graphs)*	• I can write an equation of a proportional relationship given a point on a graph.
	**** Concept Development Check Point: Students should be able to determine the equation of a proportional relationship when given a verbal description or a point on a line.***	
10	11: Four Representations *(Connect descriptions, tables, graphs, and equations)*	• I can create four different representations of a proportional relationship: description, table, graph, and equation.
11	12: Water Efficiency, part 1 *(Let's put it to work)*	• I can model a real-world situation using proportional relationships.
12	Practice Day 1&2 *(review lessons 1-13)*	
13	Quiz	
	Sub-Unit 1 – Linear Relationships	
14	4: Flags *(Introduction to linear relationships)*	• I know that there are linear relationships that are not proportional.

15	5: Water Cooler *(Slopes don't have to be positive)*	• I can use repeated calculations to write an equation for a linear relationship with a negative slope. • I can identify the slope and vertical intercept in a graph, equation, and situation.
16	6 and 7: Ups and Downs *(Analyze linear relationships)* | Stacking Cups	• I can create and connect representations for linear relationships. • I can use a linear relationship to make a prediction.
17	8: Translations *(Translate y = mx + b)*	• I can translate the graph y = mx to y = mx + b, where b is the y-intercept.
**** Concept Development Check Point: Students should be able to determine the slope between two points***		
18	9: Landing Planes *(Calculate slope)*	• I can calculate the slope of a line that passes through two given points.
**** Concept Development Check Point: Students should be able to write an equation for a line.***		
19	10 and 11: Coin Capture *(Horizontal and vertical lines)* | Why Intercepts?	• I can write equations of horizontal and vertical lines.
20	12: Solutions *(Solutions to linear equations)*	• I know that linear equations can be written in different forms. • I can write an equation so that a given point is a solution to that equation.
21	13: Pennies and Quarters *(Using linear relationships to solve problems)*	• I can connect situations with tables, equations, graphs, and solutions.
22	Practice Day	
23	End of Unit Assessment	

Unit 4 Reflection: Notes to my future forgetful self

Math 7/8 Unit 5: Proportional Relationships & Percents

Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour*. (7.RP.A.1)

Recognize and represent proportional relationships between quantities. (7.RP.A.2)

Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (7.RP.A.3)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Apply and extend previous understandings of operations with fractions.
Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. (7.NS.A.2d)

Concepts	Skills
Unit Rate Proportional Relationships Multi-step ratio problems Multi-step percent problems Simple interest Tax Markups and markdowns Gratuities Commissions Percent increase and decrease Equations Rational number Long division Decimal form	- Compute rates - Represent proportional relationships - Use proportional relationships in percent problems - Determine percent increase or decrease - Use variables to represent quantities - Convert rational numbers to decimals

Learning Progressions/Concept Development

1. Solve problems involving percent increase and decrease (L1 – L6)
2. Solve multi-step percent problems, including percent error (L7-L10)
3. Apply proportional relationships to real world situations involving fractional quantities. (L11-L12)
4. Write fractions as decimals, including repeating decimals. (L13)

Unit Acc7.5: Proportional Relationships & Percentages

(10 days – Supplemental Materials)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Percentages as Proportional Relationships	
1	2: More or Less *(Percent increase/decrease with tape diagrams)*	• I can use tape diagrams and tables to represent situations involving a percent increase or decrease. • I can determine a new amount given an original amount and a percent increase or decrease.
2	3: All the Equations *(Percent increase with equations)*	• I can use equations to represent situations involving percent increase or decrease. • I can use a tape diagram where 100% corresponds to the original value to represent adding or subtracting a percent of the original value.
3	4 and 5: 100% *(Percent increase/decrease with dbl number lines)* |Percent Machines	• I can use double number lines to represent situations involving a percent increase or decrease. • I can determine the original amount given the new amount and a percent increase or decrease.
**** Concept Development Check Point: Students should be able to use the percent increase or decrease to calculate unknown values.***		
4	6: Back in My Day *(Real world situations involving percent increase)*	• I can solve problems about price changes over time, including calculating the new price or the percentage change. • I can solve problems involving a percent increase of more than 100%.
5	7 and 8: Tax and Tip *(Multistep percent problems)* | Plate Rate	• I can calculate an original amount, new amount, or percent change in the context of sales tax and tip, including situations that involve multiple percent increases or decreases
6	9: Bookcase Builder *(Percent error)*	• I can use percent error to express error as a percentage of a desired value. • I can decide whether a value is within an acceptable percent error
**** Concept Development Check Point: Students should be able to calculate and use percent errors.***		
7	11: Sticker Sizes *(Revisit proportional relationships)*	• I can determine an unknown value in a proportional relationship using a table
8	12: Peach Cobbler *(Ratios and rates with fractions)*	• I can use a constant of proportionality to solve problems involving fractional quantities
9	Practice Day 2 *(review lessons 1-13)*	
10	End of Unit Assessment *(Assess and respond)*	

Unit 5 Reflection: Notes to my future forgetful self

Math 7/8 Unit 6: Equations and Inequalities

Standards

Use properties of operations to generate equivalent expressions.(7.EE.A)
Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. (7.EE.A.1)

Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."* (7.EE.A.2)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* (7.EE.B.4.a)

Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*. (7.EE.B.4.b)

Analyze and solve linear equations and pairs of simultaneous linear equations. (8.EE.C)
Solve linear equations in one variable. (8.EE.C.7)

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). (8.EE.C.7a)

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. (8.EE.C.7.b)

Concepts	Skills
Algebraic Equations/ expressions Rational Coefficients Multi-step problems Variables Inequalities	Apply properties of operations to add, subtract, factor and expand linear expressions. Solve multi-step real-life and mathematical equations. Solve and graph the solution set of inequalities.

Learning Progressions/Concept Development
1. Solve equations in the form px + q = r and p(x+q) = r. 2. Write equivalent expressions. 3. Write and solve equations in context. 4. Write and graph inequalities.

Unit Acc7.6: Equations and Inequalities

(24 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Equations and Tape Diagrams	
1	2: Equations *(Represent contexts w/tape diagrams & eqns)* 3: Seeing Structure *(Practice w/tape diagrams & equations)*	• I can connect tape diagrams, equations, and verbal descriptions in context. • I can write an equation to represent a tape diagram and a context • I can connect a situation to the tape diagram, equation, and solution that represent it. • I can write equations of the form px + q = r and p(x + q) = r to represent situations and determine their solutions using a tape diagram.
**** Concept Development Check Point: Students should be able to connect situations to tape diagrams***		
2	4: Balancing Moves *(Introduction to balanced hangers)*	• I can determine an unknown value on a hanger.
3	5: Balancing Equations *(Solve eqns w/balanced hangers)*	• I can connect moves on hanger diagrams to moves that determine the value of a variable in an equation. • I can solve equations of the form px + q = r and p(x + q) = r.
4	6: Keeping it True *(Solve Equations)*	• I can solve equations of the form px + q = r and p(x + q) = r that involve positive and negative numbers
5	7: Factoring & Expanding *(options for solving one equation)*	• I can expand and factor expressions that include positive and negative coefficients. • I can solve equations that involve expanding an expression.
**** Concept Development Check Point: Students should be able to solve equations in the form of px + q = r and p(x+q) = r.***		
6	8: Always-Equal Machine *(Equivalent expressions)*	• I can write equivalent expressions that involve factoring, expanding, and reordering terms
7	9: Collect the Squares *(Add expressions)*	• I can write equivalent expressions with fewer terms by expanding, adding, and subtracting terms
**** Concept Development Check Point: Students should be able to write equivalent expressions.***		
8	10: Pass the Equation *(Solve equations multiple ways)*	• I can solve equations using a variety of strategies
9	11: Community Day *(Use equations to solve problems)*	• I can write and solve equations to represent situations involving positive and negative numbers. • I can connect visual representations, equations, and verbal descriptions of the same situation.
**** Concept Development Check Point: Students should be able to write and solve equations in context.***		

12	Quiz	
Sub-Unit 2 – More Equations		
13	12: Balanced Moves *(Create more equivalent equations)*	• I can connect balanced moves and equivalent equations to hanger diagrams.
14	13: More Balanced Moves *(Solving equations)*	• I can solve a linear equation.
15	14: Equation Roundtable *(Analyze unbalanced equations)*	• I can solve an equation where the variable terms appear on both sides of the equal sign.
**** Concept Development Check Point: Students should be able to solve an equation in one-variable***		
16	15: All, Some, Or None?, part 1 *(How many solutions?)*	• I can recognize whether a linear equation has no solution, one solution, or infinitely many solutions.
17	16: Strategic Solving, part 1 *(Solve many types of equations)*	• I can solve a variety of linear equations with one variable.
18	17: When Will They Meet? *(Solve linear equations in context)*	• I can write one equation by setting two expressions equal to each other.
**** Concept Development Check Point: Students should be able to solve and interpret an equation in context***		
19	Quiz	
Sub-Unit 3 – Inequalities		
20	18: I Saw the Signs *(Inequalities on a number line)*	• I can understand and use the symbols ≤ and ≥ to describe inequalities. • I can draw and label a graph on the number line that represents an inequality.
21	19: Unbalanced Hangers *(Solutions to inequalities)*	• I can determine the solutions to an inequality with positive numbers
22	20: Budgeting *(Solve Inequalities in context)*	• I can write an inequality to represent a situation. • I can solve an inequality in context using its corresponding equation.
23	21: Shira the Sheep *(Solve inequalities with positive and negative numbers)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
24	22: Write Them and Solve Them *(Model w/inequalities)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
**** Concept Development Check Point: Students should be able to write and graph inequalities.***		
25	Practice Day	
26	End of Unit Assessment	

Unit 3 Reflection: Notes to my future forgetful self

Math 7/8 U8: 2-D and 3-D Geometry

Standards

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.(7.G.B)
Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.B.4)
Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids (7.G.A.3)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B.4)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. (8.G.C.9)
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. (8.G.C.9)

Concepts	Skills
Circumference of a circle Area of a circle Relationship between circumference & area Volume Surface Area Right Prisms Cone Cylinder Cone Equations	- Know the parts of a circle, including diameter and radius. - Calculate the circumference of a circle. - Apply knowledge of circumference to determine perimeters of shapes consisting of squares and parts of circles. - Derive the formula for area of a circle from circumference - Calculate the area of a circle. - Apply knowledge to determine the area of shapes consisting of squares and parts of circles. - Solve real-world problems involving area, volume, and surface area. - Use variables to represent quantities. - Construct simple equations to solve problems. - Know and use formulas for volumes of cylinders, cones, and spheres.

Learning Progressions/Concept Development
1. Calculate the circumference of a circle 2. Calculate the area of a circle 3. Determine the volume of right rectangular prisms and right triangular prisms. 4. Calculate the surface area of a prism 5. Calculate the volume of cylinders. 6. Calculate and compare the volumes of a cone and a cylinder. 7. Calculate the volume of spheres.

Unit Acc7.8: 2-D & 3-D Geometry

(19 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Circles (Supplemental Book)	
1	1 and 2: Toothpicks *(Perimeter and proportional relationships)* | Is it a Circle?	• I can use proportional relationships to determine missing side lengths, diagonal lengths, and perimeters.
2	3: Measuring Around *(Estimate and calculating circumference)*	• Given the radius, diameter, or circumference of a circle, I can calculate the other two measurements.
**** Concept Development Check Point: Students should be able to calculate the circumference of circle.***		
3	4: Perimeter Challenges *(Calculate perimeters of complex shapes)*	• I can calculate the perimeter of a complex shape made up of squares and fractions of circles.
4	6: Radius Squares *(Explore circle areas)*	• I can determine the area of a complex shape using a variety of strategies. • I can estimate the area of a shape with curved edges
5	7: Circle Area *(Calculate circle area)*	• I can calculate the area of a circle given the radius.
**** Concept Development Check Point: Students should be able to calculate the area of circle.***		
6	8: Why Pi? *(Relate area to circumference)*	• I can explain that the relationship between the radius and the area of a circle is not proportional.
7	Practice Day 1 & 2 *(review lessons 1-10)*	
8	Quiz	
	Sub-Unit 2 – Volumes	
9	1: Slicing Solids *(Describe cross sections)*	• I can determine the shapes that result from a cross section
10	2: Simple Prisms *(Use base area to calculate volume)* 3: Complex Prisms *(Calculate volumes of right prisms)*	• I can determine the volume of right rectangular prisms and right triangular prisms • I can calculate the volume of a prism with a complex base using a variety of area strategies.
**** Concept Development Check Point: Students should be able to determine the volume of right rectangular and triangular prisms..***		

11	4: Surface Area Strategies *(Surface area of right prisms)*	• I can calculate the surface area of a prism.
**** Concept Development Check Point: Students should be able to calculate surface area of a prism.***		
12	5: Volume Lab *(Explore Volume)*	• I can estimate the volumes of different solids.
13	6: Cylinders *(Volume of cylinders)*	• I can calculate the volume of a cylinder by building on my understanding of how to calculate the volume of a prism.
14	8: Cones *(Volumes of cones)*	• I can use a formula to calculate the volume of a cone.
**** Concept Development Check Point: Students should be able to compare and calculate the volume of a cone & cylinder.***		
15	9: Unknown Dimensions *(Determine cylinder and cone dimensions)*	• I can determine one dimension of a cylinder or cone using its volume and another dimension.
16	10: Spheres *(Volumes of Spheres)*	• I can use a formula to calculate the volume of a sphere.
**** Concept Development Check Point: Students should be able to calculate the volume of a sphere.***		
17	11: Popcorn Possibilities *(Apply volume & surface area)*	• I can calculate surface area and volume to answer questions about a real-world situation.
18	Practice Day	
19	End of Unit Assessment	

Unit 8 Reflection: Notes to my future forgetful self

Math 7/8 Unit 9: Associations in Data

Standards

Use random sampling to draw inferences about a population. (7.SP.A)
Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. (7.SP.A.1)

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be*. (7.SP.A.2)

Draw informal comparative inferences about two populations. (7.SP.B)
Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable*. (7.SP.B.3)

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book*. (7.SP.B.3)

Investigate chance processes and develop, use, and evaluate probability models. (7.SP.C)
Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. (7.SP.C.5)

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times*. (7.SP.C.6)

Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (7.SP.C.7)

> Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected*. (7.SP.C.7a)
>
> Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?* (7.SP.C.7b)

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (7.SP.C.8)

> Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. (7.SP.C.8.a)
>
> Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which

compose the event. (7.SP.C.8.b)

Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?* (7.SP.C.8b)

Investigate patterns of association in bivariate data. (8.SP.A)
Construct and interpret scatter plots for bivariate measurement data to inate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. (8.SP.A.1)

Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. ((8.SP.A.2)

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. ((8.SP.A.3)

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? (8.SP.A.4)

Concepts	Skills
Sample Populations Measures of Centers Measures of Spread/Variability Comparative Inferences Probability Likelihood Compound Probability Simulations Associations Bivariate data Scatter plots Linear association Linear model Slope Patterns Categorical data Two-way tables	- Use random samples to make inferences. - Compare and contrast numerical data sets. - Use measures of center and spread to make informal comparative inferences. - Create and use probability models. - Find probabilities of compound events. - Construct and interpret scatter plots. - Describe patterns and associations. - Informally fit a line of straight line (linear model) to a scatter plot. - Use the equation of a linear model. - Interpret the slope and y-intercept of a linear model. - Display categorical data in a frequency and relative frequency two-way table. - Use relative frequencies to describe possible associations.

Learning Progressions/Concept Development
1. Create dot plots and histograms. 2. Calculate the mean and mean average deviation of a data set 3. Create a box plot. 4. Use box plots to compare and contrast data sets. 5. Create scatter plots from data and identify whether the association is linear or non-linear. 6. Create a line of best fit and use it to make predictions. 7. Use representations (two-way tables) of categorical data to identify possible associations.

	Unit Acc7.9: Associations in Data **(12 days)**	
Day	**Lessons (45 – minutes)**	**Success Criteria**
	Sub-Unit 1 – Organizing Numerical Data (Supplemental Book)	
1	2: Prob-bear-bilities *(Intro to probability)*	• I can use the sample space to determine the probability of an event as a number between 0 and 1. • I can compare the probability of events using fractions, decimals, and percentages.
	**** Concept Development Check Point: Use probabilities to make predictions***	
2	6: Fair Games *(Compound events)*	• I can create and interpret a list, table, or tree diagram that represents the sample space of a compound event. • I can determine the probability of a compound event.
	**** Concept Development Check Point: I can use determine compound probabilities.***	
3	7: Weather or Not *(Estimate probabilities using simulations)*	• I can use a simulation to estimate the probability of a compound event.
	Sub-Unit 2– Comparing Distributions (Supplemental Book)	
4	9: Car, Bike or Train? *(Use mean and MAD to compare groups)*	• I can calculate the mean and mean absolute deviation (MAD) for a data set. • I can use shape, center, and spread to compare data sets.
	**** Concept Development Check Point: Students should be able to calculate the mean and mean average deviation of a data set.***	
5	14: School Newspaper *(Compare populations)*	• I can calculate the difference between the measures of center of two samples with similar variability, then express the difference as a multiple of the measure of variability
	**** Concept Development Check Point: Students should be able to create a box plot.***	
6	15: Air Quality *(Put it all together)*	• I can use statistics from random samples to understand a population or compare two populations.
7	Practice Day 1 and 2	•
	**** Concept Development Check Point: Students should be able to use box plots to compare and contrast data sets.***	
	Sub-Unit 3– Relationships in Data	
8	1: Click Battle *(Organize data)*	• I can organize data to notice patterns more clearly
9	2: Wingspan *(Plot data)*	• I can plot points to represent data.

**** Concept Development Check Point: Students should be able to create scatterplots from tables of data***		
10	10: Tasty Fruit *(Two-way tables and bar graphs)*	• I can identify and represent the same data in bar graphs and in two-way tables.
11	11: Finding Associations *(Use data displays to find associations)*	• I can use relative frequencies in tables and in segmented bar graphs to decide if there is an association between two variables.
**** Concept Development Check Point: Students should be able to use representations of categorical data to identify possible associations between the variables.***		
12	End of Unit Assessment	

Unit 6 Reflection: Notes to my future forgetful self

Math 7/8 Unit 10: Exponents and Scientific Notation

Standards

Expressions and Equations Work with radicals and integer exponents. (8.EE.A)
Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. (8.EE.A.1)

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*. (8.EE.A.3)

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. (8.EE.A.4)

Concepts	Skills
Expressions Integer Exponents Equivalent expressions Integer power of 10 Scientific Notation	- Apply properties of integer exponents to generate equivalent expressions. (Simplify) - Express a number as a single digit multiplied by a power of 10. - Perform operations with numbers expressed in scientific notation.

Learning Progressions/Concept Development

1. Generalize and use properties of exponents. (L1 – L6)
2. Write numbers as a single power of 10. (L7 – L8)
3. Apply operations with numbers expressed in scientific notation. (L9 – L13)

Unit Acc7.10: Exponents and Scientific Notation

(12 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Exponent Properties	
1	1: Circles *(Exponent review)* 2: Combining Exponents *(Equivalent expressions w/exponents)*	• I can use exponents to describe repeated multiplication. • I can identify and write equivalent expressions with exponents, such as $6^3 \cdot 6^5$, $(6^4)^2$, and $2^8 \cdot 3^8$.
2	3: Power Pairs *(Multiply powers and powers of powers)*	• I can justify whether two expressions with exponents are equivalent.
3	4: Rewriting Powers *(Rewrite exponential expressions as a single power)*	• I can divide expressions with exponents that have the same base.
4	5: Negative and Zero Exponents *(Use patterns with negative/zero exponents)* 6: Write a Rule *(Generalize exponent properties)*	• I can explain what it means for a number to be raised to a negative or zero exponent. • I can determine if expressions with positive, negative, and zero exponents are equivalent. • I can create rules for properties of exponents
	**** Concept Development Check Point: Students should be able to generalize the properties of exponents***	
5	Practice day	
	Sub-Unit 2 – Scientific Notation	
6	7: Scales and Weights, part 1 *(Describe large numbers using powers of 10)* 8: Scales and Weights, part 2 *(Describe small numbers using powers of 10)*	• I can rewrite a large number as a combination of powers of 10 • I can rewrite a small number as a combination of powers of 10.
	**** Concept Development Check Point: Students should be able to write numbers as powers of 10.***	
7	9: Specific and Scientific *(Definition of scientific notation)*	• I can decide whether a number is written in scientific notation. • I can rewrite large and small numbers in scientific notation.
8	10: Multiplying and Dividing *(Multiply & divide w/sci not)*	• I can multiply and divide numbers written in scientific notation.
9	13: City Lights *(Add & subtract w/sci not)*	• I can add and subtract numbers written in scientific notation.
	**** Concept Development Check Point: Students should be able to apply operations with numbers in scientific notation.***	
10	14: Nothing but Net Worth *(Let's put it to work)*	• I can use scientific notation to compare different real-world quantities and answer questions about certain situations.
11	Practice Day 2	
12	End of Unit Assessment	

Unit 8 Reflection: Notes to my future forgetful self

Math 7/8 Unit 10: The Pythagorean Theorem and Irrational Numbers

Standards

Work with radicals and integer exponents (8.EE.A)
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. (8.EE.A.2)

Understand and apply the Pythagorean Theorem. (8.G.B)
Explain a proof of the Pythagorean Theorem and its converse. (8.G.B.6)

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Solve $x^2 = p$ for any p. (8.G.B.7)

Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (8.G.B.8)

Know that there are numbers that are not rational, and approximate them by rational numbers (8.NS.A)
Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. (8.NS.A.1)

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. (8.NS.A.2)

Concepts	Skills
Square Root Cube Root Perfect Square/Cube Pythagorean Theorem Side Lengths in Rt. Triangle Rational/Irrational numbers Approximation Expansion Number Line	- Use square roots and cube root symbols - Explain a proof of the Pythagorean Theorem. - Apply the Pythagorean Theorem to find unknown sides. - Apply the Pythagorean Theorem to find the distance between points. - Understand that every number has a decimal expansion. - Use rational approximations of irrational numbers to compare the size.

Learning Progressions/Concept Development

1. Calculate and approximate values of square roots and cube roots.
2. Use the Pythagorean Theorem to determine missing sides of a right triangle, and determine whether a triangle is right.
3. Identify whether a number is rational or irrational.

Unit Acc7.9: Pythagorean Theorem

(9 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Square Roots and Cube Roots	
1	2: From Squares to Roots *(Side lengths and areas)*	• I can write the side length of a square using square root notation (like √3).
2	3: Between Squares *(Approximate square roots)*	• I can approximate a square root as a decimal.
**** Concept Development Check Point: Students should be able to approximate the value of a square root.***		
3	5: Filling Cubes *(Edge length, volumes, and cube roots)*	• I can plot cube roots on a number line
**** Concept Development Check Point: Students should be able to approximate the value of a cube root.***		
	Sub-Unit 2 – The Pythagorean Theorem	
4	6: The Pythagorean Theorem *(Squares of side lengths)*	• I can explain what the Pythagorean theorem says.
5	8: Triangle-Tracing Turtle *(Find unknown side lengths)*	• I can use the Pythagorean theorem to calculate an unknown side length of a right triangle
6	9: Make it Right *(The Converse of the Pythagorean Theorem)*	• I can determine whether a triangle is a right triangle if I know its side lengths
**** Concept Development Check Point: Students should be able to use the Pyth. Thm. and prove whether a triangle is a right triangle.***		
7	11: Pond Hopper *(Find distance on the coordinate plane)*	• I can calculate the distance between two points on the coordinate plane.
**** Concept Development Check Point: Students should be able to identify whether a number is rational or irrational.***		
8	Practice Day	
9	End of Unit Assessment	

Unit 11 Reflection: Notes to my future forgetful self.

2026-2027

Math 7-8
Course Guide

(New Pathway – Students entering from Math 6-7)

#220 Math 7-8
#227A/227B MYP Math 7-8

Math 7-8 Pacing

(Days in Q1-41, Q2-39, Q3-47, Q4-49)

Semester 1		Semester 2	
Unit	Days	Unit	Days
Community & Identity through SMP	3	Unit 4: Linear Relationships and Systems of Linear Equations	21
Unit 1: Rigid Transformations and Congruence	18	Unit 5: Functions	9
Unit 2: Scale Drawings, Dilations, and Similarity	17	Unit 6: Associations in Data	12
Flex Days	5	*Flex Days*	5
Be here by 10/17, the end of Q1		Be here by 3/13, the end of Q3	
Unit 3: Equations and Inequalities	26	Unit 7: Volume and Surface Area	12
(recommend starting) Unit 4: Linear Relationships and Systems of Equations	*	Unit 8: Exponents and Scientific Notations	16
Flex Days	13	Unit 9: Pythagorean Theorem and Irrational Numbers	16
		Flex Days	5
Be here by 12/18, the end of Q2		Be here by 6/5, the end of Q4	

All lessons will be in the Accelerated Math 7 book

Math 7/8 Unit 1: Rigid Transformations and Congruence

Standards

Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B.4)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Lines are taken to lines, and line segments to line segments of the same length. (8.G.A.1.a)

Angles are taken to angles of the same measure. (8.G.A.1.b)

Parallel lines are taken to parallel lines. (8.G.A.1.c)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Concepts	Skills

Congruence
Rotations
Reflections
Translations
Sequence of transformations
Coordinates
Informal arguments about angles
Angle sum
Exterior angles
Parallel lines cut by a traversal
	- Describe rotation, reflections, and translations.
	- Determine type of transformation
	- Describe a sequence of transformations.
	- Determine coordinates of an image after a transformation on a coordinate plane.
	- Determine whether figures are congruent.
	- Determine values of angles using
	  o Angle sums
	  o Exterior angles
	- Parallel Lines cut by a traversal.

Math 7- 8 (new)

Learning Progressions/Concept Development

1. Perform a reflection, rotation, and translation
2. Identify coordinates after a transformation.
3. Describe a sequence of more than one transformation.
4. Calculate the measure of a missing angle.

Unit Acc7.1: Rigid Transformations

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Rigid Transformations	
1	1: Spinning, Flipping, Sliding *(Name transformations)*	• I know what translations, reflections, and rotations are. • I can describe how translations, reflections, and rotations affect a figure.
2	2: Transformation Targets *(Sequence of transformations)*	• I can use a sequence of transformations to move one figure onto another
3	3: Moving Day *(Describe transformations precisely)*	• I can use grids to translate, reflect, or rotate figures
	**** Concept Development Check Point: Students should be able to perform a reflection, rotation, and translation.***	
4	4: Getting Coordinated, part 1 *(Coordinates of translations and reflections*	• I can determine the coordinates of a polygon after a translation or a reflection.
5	5: Getting Coordinated, part 2 *(Coordinates of transformations)*	• I can determine the coordinates of a polygon after a translation, reflection, or rotation.
	**** Concept Development Check Point: Students should be able to identify the coordinates after a transformation***	
6	Quiz	
	Sub-Unit 2 - Congruence	
7	6: Are They the Same? *(Define congruence)*	• I know what it means for two figures to be congruent.
8	7: Are They Congruent? *(Rigid transformations and congruent figures)*	• I can use rigid transformations to determine whether two figures on a grid are congruent.
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
9	8: Friendly Angles *(Complementary Supplementary angles)*	• I can determine unknown angle measures by reasoning about complementary and supplementary angles. • I can describe what it means for angles to be complementary or supplementary.
10	9: Angle Diagrams *(Vertical angles and equations)*	• I can use angle relationships to write equations and determine unknown angle measures.
11	10: Transforming Angles *(Angle measures in parallel lines)*	• I understand that rigid transformations move lines to lines and parallel lines to parallel lines.
12	11: Tearing It Up *(Angle sums in triangles)*	• I can observe that the measures of the three interior angles of any triangle have a sum of 180 degrees
13	12: Puzzling It Out *(Determine unknown angle measures)*	• I can use transformations and angle relationships to determine unknown angle measurements.
	**** Concept Development Check Point: Students should be able to calculate the measure of a missing angle.***	
	Sub-Unit 3 – Angle Relationships	
14	13: Can You Build It? *(The triangle inequality theorem)*	• I can determine whether three segments will form a triangle.
15	14: Is It Enough? *(Build polygons given side lengths)*	• I can determine how many non-identical polygons can be made with a given set of segments.

16	15: More Than One *(Build triangles with technology)*	• I can use manipulatives, tools, or technology to build triangles given three measurements
**** Concept Development Check Point: Students should be able to build triangles given three measurements.***		
17	16: Can You Draw It? *(Draw triangles with rulers and protractors)*	• I can use a protractor and ruler to draw triangles given three measurements.
18	End of Unit Assessment	

Unit 1 Reflection: Notes to my future forgetful self

Math 7/8 Unit 2: Scale Drawings, Dilations, and Similarity

Standards

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (8.G.A.4)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Understand the connections between proportional relationships, lines, and linear equations. (.8.EE.B)
Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. (8.EE.B.6)

Concepts	Skills
Dilation Sequence of Transformations Coordinates Similar Figures Similar Triangles Slope	- Perform dilations on a figure to produce a scaled copy. - Perform a sequence of transformations. - Dilate figures using a coordinate plane. - Justify why figures are similar, congruent, or neither. - Justify that two triangles are congruent using angle measures. - Use similar triangles to determine slope of a line.

Learning Progressions/Concept Development

1. Describe a sequence of transformations.
2. Apply dilations on a coordinate grid.
3. Determine if 2 triangles are similar.
4. Determine the slope of a line *on a plane*.*

*Students will explore slope at a much deeper level in the later unit(s).

Unit Acc7.2: Scale Drawings, Dilations, and Similarity

(17 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Scale Drawings	
1	2: Scaling Robots *(Lengths and scaled copies)*	• I recognize that a scale factor is the number multiplied by each side length in an original figure to create a scaled copy. • I understand that there is a proportional relationship between lengths in a figure and corresponding lengths in a scaled copy. • I can explain how scaling affects the side lengths in scaled copies.
2	3: Make it Scale *(Draw scaled copies)*	• I can draw a scaled copy of a figure using a given scale factor. • I can describe and critique strategies for precisely drawing a scaled copy
**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***		
3	4: Scale Factor Challenge *(Effects of scale factor)*	• I can determine the effect of scale factors greater than 1, between 0 and 1, or equal to 1 on lengths in scaled copies. • I can understand how the scale factor from figure A to figure B relates to the scale factor from figure B to figure A. • I can explain how different scale factors affect lengths in scaled copies.
**** Concept Development Check Point: Students can determine a scale factor***		
4	7: Will it Fit? *(Scale drawings)*	• I can use a scale drawing to calculate actual distances and scaled distances. • I can calculate actual areas from a scale drawing. • I can describe how actual distances are represented on scale drawings.
5	8: Scale States, part 1 *(Create scale drawings)*	• I can create a scale drawing given the actual dimensions of the object and the scale. • I can determine the scale given actual lengths and lengths on a scale drawing. • I can compare and contrast strategies for determining lengths in scale drawings.
6	9: Scale States, part 2 *(Create scale drawings)*	• I can create scale drawings of the same object using different scales. • I can determine the scale given actual lengths and lengths on a scale drawing. • I can analyze how different scales impact scale drawings of the same object.
**** Concept Development Check Point: Students can create a scale drawing***		
7	Quiz	
	Sub-Unit 2 - Similarity	
8	1: Sketchy Dilations *(Introduce dilations)*	• I know how dilations and scaled copies are connected.
9	2: Dilation Mini Golf *(Dilations with no grid)*	• I can identify the scale factor and the center of dilation. • I can describe strategies for dilating a point.
10	3: Transformations with Mini Golf *(Sequences of transformations)*	• I can use a sequence of transformations to move one figure onto another
**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***		

*	*(optional)* 4: Match My Dilation *(Dilations on a square grid)*	• I can dilate figures on a grid using a center of dilation and a scale factor.
11	5: Dilations on a Plane *(Dilations with coordinates)*	• I can dilate figures on a coordinate plane.
12	6: Social Scavenger Hunt *(Similar figures, sides, & angles)*	• I know that two figures are similar if there is a sequence of transformations that moves one onto the other. • I can justify whether two figures are similar using a sequence of transformations.
13	7: Are Angles Enough? *(Similar triangles)*	• I know that two pairs of congruent corresponding angles are enough to determine that two triangles are similar. • I can justify that two triangles are similar using what I know about their angles.
14	8: Shadows *(Side length relationships in similar triangles)*	• I understand the relationships between side lengths in similar triangles. • I can determine missing side lengths in similar triangles
	Sub-Unit 3 - Slope	
15	9: Water Slide *(Similarity and slope)*	• I can use similar triangles to determine the slope of a line.
16	10: Slope Challenges *(Developing fluency with slope)*	• I can use similar slope triangles to determine the slope of a line.
**** Concept Development Check Point: Students should be able to determine the slope of a line on a plane.***		
17	End of Unit Assessment	

Unit 2: Notes to my future forgetful self

Math 7/8 Unit 3: Equations and Inequalities

Standards

Use properties of operations to generate equivalent expressions.(7.EE.A)
Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. (7.EE.A.1)

Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."* (7.EE.A.2)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)
Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation*. (7.EE.B.3)

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* (7.EE.B.4.a)

Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*. (7.EE.B.4.b)

Analyze and solve linear equations and pairs of simultaneous linear equations. (8.EE.C)
Solve linear equations in one variable. (8.EE.C.7)

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). (8.EE.C.7a)

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. (8.EE.C.7.b)

Concepts	Skills
Algebraic Equations/ expressions Rational Coefficients Multi-step problems Variables Inequalities	Apply properties of operations to add, subtract, factor and expand linear expressions. Solve multi-step real-life and mathematical equations. Solve and graph the solution set of inequalities.

Learning Progressions/Concept Development

1. Solve equations in the form px + q = r and p(x+q) = r.
2. Write equivalent expressions.
3. Write and solve equations in context.
4. Write and graph inequalities.

Unit Acc7.3: Equations and Inequalities

(26 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Equations and Tape Diagrams	
1	1: Toothpicks and Tiles *(Determine unknowns in patterns)*	• I can make predictions and calculate unknown values in different patterns.
2	3: Equations *(Represent contexts w/tape diagrams & eqns)*	• I can connect tape diagrams, equations, and verbal descriptions in context. • I can write an equation to represent a tape diagram and a context
3	4: Seeing Structure *(Practice w/tape diagrams & equations)*	• I can connect a situation to the tape diagram, equation, and solution that represent it. • I can write equations of the form px + q = r and p(x + q) = r to represent situations and determine their solutions using a tape diagram.
**** Concept Development Check Point: Students should be able to connect situations to tape diagrams***		
4	5: Balancing Moves *(Introduction to balanced hangers)*	• I can determine an unknown value on a hanger.
5	6: Balancing Equations *(Solve eqns w/balanced hangers)*	• I can connect moves on hanger diagrams to moves that determine the value of a variable in an equation. • I can solve equations of the form px + q = r and p(x + q) = r.
6	7: Keeping it True *(Solve Equations)*	• I can solve equations of the form px + q = r and p(x + q) = r that involve positive and negative numbers
7	8: Factoring & Expanding *(options for solving one equation)*	• I can expand and factor expressions that include positive and negative coefficients. • I can solve equations that involve expanding an expression.
**** Concept Development Check Point: Students should be able to solve equations in the form of px + q = r and p(x+q) = r.***		
8	9: Always-Equal Machine *(Equivalent expressions)*	• I can write equivalent expressions that involve factoring, expanding, and reordering terms
9	10: Collect the Squares *(Add expressions)*	• I can write equivalent expressions with fewer terms by expanding, adding, and subtracting terms
**** Concept Development Check Point: Students should be able to write equivalent expressions.***		
10	11: Pass the Equation *(Solve equations multiple ways)*	• I can solve equations using a variety of strategies
11	12: Community Day *(Use equations to solve problems)*	• I can write and solve equations to represent situations involving positive and negative numbers. • I can connect visual representations, equations, and verbal descriptions of the same situation.
**** Concept Development Check Point: Students should be able to write and solve equations in context.***		

12	Quiz	
Sub-Unit 2 – More Equations		
13	3: Balanced Moves *(Create more equivalent equations)*	• I can connect balanced moves and equivalent equations to hanger diagrams.
14	4: More Balanced Moves *(Solving equations)*	• I can solve a linear equation.
15	5: Equation Roundtable *(Analyze unbalanced equations)*	• I can solve an equation where the variable terms appear on both sides of the equal sign.
**** Concept Development Check Point: Students should be able to solve an equation in one-variable***		
16	6: All, Some, Or None?, part 1 *(How many solutions?)*	• I can recognize whether a linear equation has no solution, one solution, or infinitely many solutions.
17	7: Strategic Solving, part 1 *(Solve many types of equations)*	• I can solve a variety of linear equations with one variable.
18	8: When Will They Meet? *(Solve linear equations in context)*	• I can write one equation by setting two expressions equal to each other.
**** Concept Development Check Point: Students should be able to solve and interpret an equation in context***		
19	Quiz	
Sub-Unit 3 – Inequalities		
20	13: I Saw the Signs *(Inequalities on a number line)*	• I can understand and use the symbols ≤ and ≥ to describe inequalities. • I can draw and label a graph on the number line that represents an inequality.
21	14: Unbalanced Hangers *(Solutions to inequalities)*	• I can determine the solutions to an inequality with positive numbers
22	15: Budgeting *(Solve Inequalities in context)*	• I can write an inequality to represent a situation. • I can solve an inequality in context using its corresponding equation.
23	16: Shira the Sheep *(Solve inequalities with positive and negative numbers)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
24	17: Write Them and Solve Them *(Model w/inequalities)*	• I can solve inequalities with positive and negative coefficients, and graph their solutions. • I can test values to determine which inequality symbol represents the solutions to an inequality.
**** Concept Development Check Point: Students should be able to write and graph inequalities.***		
25	Practice Day	
26	End of Unit Assessment	

Unit 3 Reflection: Notes to my future forgetful self

Math 7/8 Unit 4: Linear Relationships and Linear Systems

Standards

Analyze and solve linear equations and pairs of simultaneous linear equations. (8.EE.C)
Analyze and solve pairs of simultaneous linear equations. (8.EE.C.8)

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. (8.EE.C.8a)

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6*. (8.EE.C.8b)

Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*. (8.EE.C.8c)

Use functions to model relationships between quantities.(8.f.B)
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (8.F.B.4)

Concepts	Skills
Proportional Relationships Slope of a graph Similar Triangles y = mx y = mx + b function linear relationship rate of change (x, y) values Ordered pair (x,y) Linear function Graph Table of values No solution Infinitely many solutions System of two linear equations Points of intersection Solution of a system of equations Substitution Method Elimination Method	- Represent a solution to a problem as an ordered pair. - Write and graph equations of proportional relationships - Translate proportional relationships to create linear relationships (y = mx+b) - Calculate slope between 2 points. - Write and graph equations of linear functions. - Write and graph horizontal and vertical lines. - Write linear functions when given two points. - Create equivalent equations. - Solve equations with one solution. - Solve equations with no or infinite solutions - Solve equations with rational number coefficients - Graph two linear equations simultaneously - Know the solution to a system of equations is the intersection point - Solve a system of equations algebraically and verify graphically.

Math 7- 8 (new)

Learning Progressions/Concept Development

1. Calculate the slope between two points.
2. Write an equation for a line.
3. Identify the number of solutions to a system of equations.
4. Solve a system of equations using a variety of strategies.

Unit Acc7.4 Linear Relationships and Systems of Linear Equations

(22 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Linear Relationships	
1	1: Turtle Time Trials *(Understand proportional relationships)*	• I know that the unit rate of a proportional relationship is the slope of its line. • I can make connections between a situation and the features of its corresponding graph, equation, or table
2	2: Water Tank *(Graphs of proportional relationships)*	• I know that y = mx can represent any proportional relationship with slope m. • I can tell when two graphs represent the same proportional relationship, even if their scaled axes are different.
	**** Concept Development Check Point: Students should be able to identify equivalent scales.***	
3	3: Proportional Posters *(Compare proportional relationships)*	• I can compare proportional relationships represented in different ways.
4	4: Flags *(Introduction to linear relationships)*	• I know that there are linear relationships that are not proportional.
5	5: Water Cooler *(Slopes don't have to be positive)*	• I can use repeated calculations to write an equation for a linear relationship with a negative slope. • I can identify the slope and vertical intercept in a graph, equation, and situation.
6	6: Ups and Downs *(Analyze linear relationships)*	• I can create and connect representations for linear relationships.
7	7: Stacking Cups *(More with linear relationships)*	• I can use a linear relationship to make a prediction.
8	8: Translations *(Translate y = mx + b)*	• I can translate the graph y = mx to y = mx + b, where b is the y-intercept.
	**** Concept Development Check Point: Students should be able to determine the slope between two points***	
9	9: Landing Planes *(Calculate slope)*	• I can calculate the slope of a line that passes through two given points.
	**** Concept Development Check Point: Students should be able to write an equation for a line.***	
10	10: Coin Capture *(Horizontal and vertical lines)*	• I can write equations of horizontal and vertical lines.
11	11: Why Intercepts? *(Equations of all kinds of lines)*	• I can write an equation of a line given two points. • I can determine the y-intercept of a line using two points.
12	12: Solutions *(Solutions to linear equations)*	• I know that linear equations can be written in different forms. • I can write an equation so that a given point is a solution to that equation.
13	13: Pennies and Quarters *(Using linear relationships to solve problems)*	• I can connect situations with tables, equations, graphs, and solutions.
14	Quiz	

Sub-Unit 2 – Systems of Linear Relationships		
15	9: On or Off the Line? *(Interpreting points on/off a line)*	• I can determine a point that satisfies two linear relationships using tables or graphs.
16	10: On Both Lines *(Represent systems of equations)*	• I can create a graph representing a situation and determine the point of intersection.
17	11: Make them Balance *(Graph systems of equations)*	• I can use hanger diagrams and graphs to determine the solutions to systems of equations.
18	12: Line Zapper *(Solve systems of equations)*	• I can solve systems of equations without using a graph.
**** Concept Development Check Point: Students should be able to solve a system of equations.***		
19	13: All, Some, or None?, part 2 *(Systems with no, one, or many solutions)*	• I can identify the number of solutions a system of equations has.
20	14: Strategic Solving, part 2 *(Solving more systems of eqns)*	• I can solve a system of linear equations.
21	End of Unit Assessment	

Unit 4 Reflection: Notes to my future forgetful self

Math 7/8 Unit 5: Functions

Math 7- 8 (new)

Standards

Define, evaluate, and compare functions. (8.F.A)
Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (8.F.A.1)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change*. (.8.F.A.2)

Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line*. (8.F.A.3)

Use functions to model relationships between quantities. (8.F.B)
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (8.F.B.4)

Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. (8.F.B.5)

Concepts	Skills
Function Input/Output Graph of Ordered Pairs Algebraic/Graphic/Numeric/Verbal Descriptions Linear Relationships Rate of Change Initial Value	- Understand what a function is. - Graph a function. - Compare functions represented in different ways. - Interpret y = mx + b, including the rate of change (m) and initial value (b). - Describe a function by analyzing a graph. -

Learning Progressions/Concept Development

1. Determine whether a relationship is a function.
2. Determine which graph represents different scenarios.
3. Analyze data from a graph using linear models.

Unit Acc7.5: Functions and Volume

(20 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Introduction to Functions	
1	1: Turtle Crossing *(Make sense of graphs)*	• I can make connections between situations and the graphs that represent them.
2	2: Guess My Rule *(Introduction to functions)*	• I can write rules for producing outputs from inputs.
3	3: Function or Not? *(Graphs of functions and non-functions)*	• I can justify whether a graph represents a function.
	**** Concept Development Check Point: Students should be able to determine whether a relationship is a function***	
4	4: Dependence Day *(Functions and equations)*	• I can identify independent and dependent variables in a situation.
	Sub-Unit 2 – Representing and Interpreting Functions	
5	5: The Tortoise and the Hare *(Interpret graphs of functions)*	• I can draw a graph of a function from a description.
6	6: Graphing Stories *(Create graphs of functions)*	• I can draw the graph of a function that represents a real-world situation.
	**** Concept Development Check Point: Students should be able to determine which graph represents a scenario.***	
7	7: Comparing Linear Functions *(Compare representations of functions)*	• I can determine whether a situation can be represented by a linear function in the form y = mx + b.
8	8: Charge! *(Model with linear functions)*	• I can model a real-world situation with a linear function.
	**** Concept Development Check Point: Students should be able to analyze data from a graph using linear models***	
9	Sub-Unit Assessment	

Unit 5 Reflection: Notes to my future forgetful self

Math 7/8 Unit 6: Associations in Data

Standards

Investigate patterns of association in bivariate data. (8.SP.A)
Construct and interpret scatter plots for bivariate measurement data to inate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. (8.SP.A.1)

Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. ((8.SP.A.2)

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. ((8.SP.A.3)

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? (8.SP.A.4)

Concepts	Skills
Associations Bivariate data Scatter plots Linear association Linear model Slope Patterns Categorical data Two-way tables	- Construct and interpret scatter plots. - Describe patterns and associations. - Informally fit a line of straight line (linear model) to a scatter plot. - Use the equation of a linear model. - Interpret the slope and y-intercept of a linear model. - Display categorical data in a frequency and relative frequency two-way table. - Use relative frequencies to describe possible associations.

Learning Progressions/Concept Development

1. Create scatter plots from data and identify whether the association is linear or non-linear.
2. Create a line of best fit and use it to make predictions.
3. Use representations (two-way tables) of categorical data to identify possible associations.

Unit Acc7.6: Associations in Data

(12 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Organizing Numerical Data	
1	1: Click Battle *(Organize data)*	• I can organize data to notice patterns more clearly
2	2: Wingspan *(Plot data)*	• I can plot points to represent data.
**** Concept Development Check Point: Students should be able to create scatterplots from tables of data***		
3	3: Robots *(What a point on a scatter plot means)*	• I can plot a point on a scatter plot given a table or a description.
4	4: Dapper Cats *(Linear models and outliers)*	• I can use a linear model to predict values not in the data.
5	5: Interpreting Scatter Plots *(Show patterns in data)*	• I can create a scatter plot from a table of data. • I can describe connections between data in various representations
6	6: Find the Fit *(Fit a line to data)*	• I can fit a line to data in a scatter plot.
7	7: Interpreting Slopes *(The slope of a linear model)*	• I can explain whether data in a scatter plot has a positive association, a negative association, or neither.
8	8: Scatter Plot City *(Observing more patterns in scatter plots)*	• I can use a scatter plot to decide if two variables have a linear association. • I can identify clusters in data on a scatter plot.
**** Concept Development Check Point: Students should be able to identify if a scatterplot is linear or non-linear.***		
9	9: Animal Brains *(Analyzing bivariate data)*	• I can create a scatter plot, draw a line to fit the data, and identify outliers that appear in the data.
**** Concept Development Check Point: Students should be able to create a line of best fit and use it to make predictions.***		
	Sub-Unit 2 – Categorical Data	
10	10: Tasty Fruit *(Two-way tables and bar graphs)*	• I can identify and represent the same data in bar graphs and in two-way tables.
11	11: Finding Associations *(Use data displays to find associations)*	• I can use relative frequencies in tables and in segmented bar graphs to decide if there is an association between two variables.
**** Concept Development Check Point: Students should be able to use representations of categorical data to identify possible associations between the variables.***		
12	End of Unit Assessment	

Unit 6 Reflection: Notes to my future forgetful self

Unit 7: Volume and Surface Area

Standards

Draw construct, and describe geometrical figures and describe the relationships between them. (7.G.A)
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2)

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids (7.G.A.3)

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)
Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5)

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6)

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B.4)
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. (8.G.C.9)
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. (8.G.C.9)

Concepts	Skills
Volume Surface Area Right Prisms Cone Cylinder Cone Equations	- Solve real-world problems involving area, volume, and surface area. - Use variables to represent quantities. - Construct simple equations to solve problems. - Know and use formulas for volumes of cylinders, cones, and spheres.

Learning Progressions/Concept Development

1. Determine the volume of right rectangular prisms and right triangular prisms.
2. Calculate the surface area of a prism
3. Calculate the volume of cylinders.
4. Calculate and compare the volumes of a cone and a cylinder.
5. Calculate the volume of spheres.

Unit Acc7.7: Volumes and Surface Area

(12 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Prisms	
1	1: Slicing Solids *(Describe cross sections)*	• I can determine the shapes that result from a cross section
2	2: Simple Prisms *(Use base area to calculate volume)*	• I can determine the volume of right rectangular prisms and right triangular prisms
3	3: Complex Prisms *(Calculate volumes of right prisms)*	• I can calculate the volume of a prism with a complex base using a variety of area strategies.
**** Concept Development Check Point: Students should be able to determine the volume of right rectangular and triangular prisms..***		
4	4: Surface Area Strategies *(Surface area of right prisms)*	• I can calculate the surface area of a prism.
**** Concept Development Check Point: Students should be able to calculate surface area of a prism.***		
	Sub-Unit 2 – Cones, Cylinders, Spheres	
5	5: Volume Lab *(Explore Volume)*	• I can estimate the volumes of different solids.
6	6: Cylinders *(Volume of cylinders)*	• I can calculate the volume of a cylinder by building on my understanding of how to calculate the volume of a prism.
7	7: Scaling Cylinders *(Scale cylinders using functions)*	• I can analyze the relationship between the height or radius of a cylinder and its volume.
8	8: Cones *(Volumes of cones)*	• I can use a formula to calculate the volume of a cone.
**** Concept Development Check Point: Students should be able to compare and calculate the volume of a cone & cylinder.***		
9	9: Unknown Dimensions *(Determine cylinder and cone dimensions)*	• I can determine one dimension of a cylinder or cone using its volume and another dimension.
10	10: Spheres *(Volumes of Spheres)*	• I can use a formula to calculate the volume of a sphere.
**** Concept Development Check Point: Students should be able to calculate the volume of a sphere.***		
11	11: Popcorn Possibilities *(Apply volume & surface area)*	• I can calculate surface area and volume to answer questions about a real-world situation.
12	End of Unit Assessment	

Unit 7 Reflection: Notes to my future forgetful self

Math 7/8 Unit 8: Exponents and Scientific Notation

Standards

Expressions and Equations Work with radicals and integer exponents. (8.EE.A)
Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. (8.EE.A.1)

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*. (8.EE.A.3)

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. (8.EE.A.4)

Concepts	Skills
Expressions Integer Exponents Equivalent expressions Integer power of 10 Scientific Notation	- Apply properties of integer exponents to generate equivalent expressions. (Simplify) - Express a number as a single digit multiplied by a power of 10. - Perform operations with numbers expressed in scientific notation.

Learning Progressions/Concept Development

1. Generalize and use properties of exponents. (L1 – L6)
2. Write numbers as a single power of 10. (L7 – L8)
3. Apply operations with numbers expressed in scientific notation. (L9 – L13)

Unit Acc7.8: Exponents and Scientific Notation

(16 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Exponent Properties	
1	1: Circles *(Exponent review)*	• I can use exponents to describe repeated multiplication.
2	2: Combining Exponents *(Equivalent expressions w/exponents)*	• I can identify and write equivalent expressions with exponents, such as $6^3 \cdot 6^5$, $(6^4)^2$, and $2^8 \cdot 3^8$.
3	3: Power Pairs *(Multiply powers and powers of powers)*	• I can justify whether two expressions with exponents are equivalent.
4	4: Rewriting Powers *(Rewrite exponential expressions as a single power)*	• I can divide expressions with exponents that have the same base.
5	5: Negative and Zero Exponents *(Use patterns with negative/zero exponents)*	• I can explain what it means for a number to be raised to a negative or zero exponent. • I can determine if expressions with positive, negative, and zero exponents are equivalent.
6	6: Write a Rule *(Generalize exponent properties)*	• I can create rules for properties of exponents
**** Concept Development Check Point: Students should be able to generalize the properties of exponents***		
7	Quiz	
	Sub-Unit 2 – Scientific Notation	
8	7: Scales and Weights, part 1 *(Describe large numbers using powers of 10)*	• I can rewrite a large number as a combination of powers of 10
9	8: Scales and Weights, part 2 *(Describe small numbers using powers of 10)*	• I can rewrite a small number as a combination of powers of 10.
**** Concept Development Check Point: Students should be able to write numbers as powers of 10.***		
10	9: Specific and Scientific *(Definition of scientific notation)*	• I can decide whether a number is written in scientific notation. • I can rewrite large and small numbers in scientific notation.
11	10: Multiplying and Dividing *(Multiply & divide w/sci not)*	• I can multiply and divide numbers written in scientific notation.
12	11: Balance the Scale *(Multiply, divide & estimate w/sci not)*	• I can estimate how many times larger one very large or very small quantity is than another.
13	12: Use your Powers *(Applications of arithmetic w/sci not)*	• I can multiply and divide numbers written in decimal and scientific notation to answer questions about a situation.
14	13: City Lights *(Add & subtract w/sci not)*	• I can add and subtract numbers written in scientific notation.
**** Concept Development Check Point: Students should be able to apply operations with numbers in scientific notation.***		
15	14: Nothing but Net Worth *(Let's put it to work)*	• I can use scientific notation to compare different real-world quantities and answer questions about certain situations.
16	End of Unit Assessment	

Unit 8 Reflection: Notes to my future forgetful self

Math 7/8 Unit 9: The Pythagorean Theorem and Irrational Numbers

Standards

Work with radicals and integer exponents (8.EE.A)
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. (8.EE.A.2)

Understand and apply the Pythagorean Theorem. (8.G.B)
Explain a proof of the Pythagorean Theorem and its converse. (8.G.B.6)

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Solve $x^2 = p$ for any p. (8.G.B.7)

Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (8.G.B.8)

Know that there are numbers that are not rational, and approximate them by rational numbers (8.NS.A)
Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. (8.NS.A.1)

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. (8.NS.A.2)

Concepts	Skills
Square Root Cube Root Perfect Square/Cube Pythagorean Theorem Side Lengths in Rt. Triangle Rational/Irrational numbers Approximation Expansion Number Line	- Use square roots and cube root symbols - Explain a proof of the Pythagorean Theorem. - Apply the Pythagorean Theorem to find unknown sides. - Apply the Pythagorean Theorem to find the distance between points. - Understand that every number has a decimal expansion. - Use rational approximations of irrational numbers to compare the size.

Learning Progressions/Concept Development

1. Calculate and approximate values of square roots and cube roots.
2. Use the Pythagorean Theorem to determine missing sides of a right triangle, and determine whether a triangle is right.
3. Identify whether a number is rational or irrational.

Unit Acc7.9: Pythagorean Theorem

(16 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Square Roots and Cube Roots	
1	1: Tilted Squares *(The areas of tilted squares)*	• I can calculate the area of a tilted square on a grid.
2	2: From Squares to Roots *(Side lengths and areas)*	• I can write the side length of a square using square root notation (like √ 3).
3	3: Between Squares *(Approximate square roots)*	• I can approximate a square root as a decimal.
**** Concept Development Check Point: Students should be able to approximate the value of a square root.***		
4	4: Root Down *(Reason about square roots)*	• I can plot square roots on a number line.
5	5: Filling Cubes *(Edge length, volumes, and cube roots)*	• I can plot cube roots on a number line
**** Concept Development Check Point: Students should be able to approximate the value of a cube root.***		
6	Quiz	
	Sub-Unit 2 – The Pythagorean Theorem	
	6: The Pythagorean Theorem *(Squares of side lengths)*	• I can explain what the Pythagorean theorem says.
	7: Pictures to Prove It *(A proof of the Pythagorean Theorem)*	• I can explain why the Pythagorean theorem is true for every right triangle.
	8: Triangle-Tracing Turtle *(Find unknown side lengths)*	• I can use the Pythagorean theorem to calculate an unknown side length of a right triangle
	9: Make it Right *(The Converse of the Pythagorean Theorem)*	• I can determine whether a triangle is a right triangle if I know its side lengths
**** Concept Development Check Point: Students should be able to use the Pyth. Thm. and prove whether a triangle is a right triangle.***		
	10: Taco Truck *(Applications of Pythagorean Theorem)*	• I can use the Pythagorean theorem to solve problems.
	11: Pond Hopper *(Find distance on the coordinate plane)*	• I can calculate the distance between two points on the coordinate plane.
	Sub-Unit 3 – Rational and Irrational Numbers	
	12: Decimal Deep Dive *(Decimal representation of rational numbers)*	• I can write a fraction as a decimal.
	13: Decimal to Fractions *(Infinite decimal expansions)*	• I can write a repeating or terminating decimal as a fraction.
	14: Hit the Target *(Rational and Irrational numbers)*	• I can justify whether a number is rational.
**** Concept Development Check Point: Students should be able to identify whether a number is rational or irrational.***		
	End of Unit Assessment	

Unit 9 Reflection: Notes to my future forgetful self.

Blank

Page

2026-2027

Math 8
Course Guide

#224 Math 8
#225A/225B MYP Math 8
#222 Basic Math 8

Math 8 Pacing (Days in Q1-43, Q2-38, Q3-47, Q4-49)

Semester 1		*Semester 2*	
Unit	*Days*	*Unit*	*Days*
Community & Identity through SMP	*4*	*Unit 5: Functions & Volume*	*20*
Unit 1: Rigid Transformations	*18*	*Unit 7: Exps & Sci Notation*	*19*
Unit 2: Dilation, Similarity, & Slope	*15*	*Flex Days (iReady Testing, school events, etc)*	*8*
Flex Days (iReady Testing, school events, etc)	*6*		
Be here by 10/17, the end of Q1		*Be here by 3/13, the end of Q3*	
Unit 3: Proportional & Linear Relationships	*18*	*Unit 8: Pyth Thm & Irrational Numbers*	*19*
Unit 4: Linear Equations & Linear Systems	*18*	*Unit 6: Associations in Data*	*16*
Flex Days (iReady Testing, school event,s etc)	*2*	*Flex Days (iReady Testing, school events, etc)*	*14*
Be here by 12/18, the end of Q2		*Be here by 6/5, the end of Q4*	

Unit 1: Rigid Transformations

Standards

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Lines are taken to lines, and line segments to line segments of the same length. (8.G.A.1.a)

Angles are taken to angles of the same measure. (8.G.A.1.b)

Parallel lines are taken to parallel lines. (8.G.A.1.c)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Concepts	Skills

Congruence
Rotations
Reflections
Translations
Sequence of transformations
Coordinates
Informal arguments about angles
Angle sum
Exterior angles
Parallel lines cut by a traversal
	- Describe rotation, reflections, and translations.
	- Determine type of transformation
	- Describe a sequence of transformations.
	- Determine coordinates of an image after a transformation on a coordinate plane.
	- Determine whether figures are congruent.
	- Determine values of angles using
	  o Angle sums
	  o Exterior angles
	- Parallel Lines cut by a traversal.

Learning Progressions/Concept Development

1. Perform a reflection, rotation, and translation (L1-L4)
2. Identify coordinates after a transformation. (L5-L6)
3. Describe a sequence of more than one transformation. (L7-L9)
4. Calculate the measure of a missing angle. (L10 – L12)

Unit 8.1: Rigid Transformations

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Rigid Transformations	
1	Pre-Check Unit 1 *(Assess and respond)*	
2	1: Transformations *(Describe movement)*	• I can identify ways to move figures. • I can describe how a figure moves and turns to get from one position to another
3	2: Spinning, Flipping, Sliding *(Name transformations)*	• I know what translations, reflections, and rotations are. • I can describe how translations, reflections, and rotations affect a figure.
4	3: Transformation Golf *(Sequence of transformations)*	• I can use a sequence of transformations to move one figure onto another
5	4: Moving Day *(Describe transformations precisely)*	• I can use grids to translate, reflect, or rotate figures
	**** Concept Development Check Point: Students should be able to perform a reflection, rotation, and translation.***	
6	5: Getting Coordinated, part 1 *(Coordinates of translations and reflections*	• I can determine the coordinates of a polygon after a translation or a reflection.
7	6: Getting Coordinated, part 2 *(Coordinates of transformations)*	• I can determine the coordinates of a polygon after a translation, reflection, or rotation.
	**** Concept Development Check Point: Students should be able to identify the coordinates after a transformation***	
8	Practice Day 1 *(review lessons 1-6)*	
9	Sub-Unit Assessment	
	Sub-Unit 2 - Congruence	
10	7: No Bending, No Stretching *(Rigid transformations)*	• I understand that rigid transformations preserve the side lengths and angle measures of a figure.
11	8: Are They the Same? *(Define congruence)*	• I know what it means for two figures to be congruent.
12	9: Are They Congruent? *(Rigid transformations and congruent figures)*	• I can use rigid transformations to determine whether two figures on a grid are congruent.
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
	Sub-Unit 3 – Angle Relationships	
13	10: Transforming Angles *(Angle measures in parallel lines)*	• I understand that rigid transformations move lines to lines and parallel lines to parallel lines.
14	11: Tearing It Up *(Angle sums in triangles)*	• I can observe that the measures of the three interior angles of any triangle have a sum of 180 degrees
15	12: Puzzling It Out *(Determine unknown angle measures)*	• I can use transformations and angle relationships to determine unknown angle measurements.
	**** Concept Development Check Point: Students should be able to calculate the measure of a missing angle.***	
16	13: Tessellate *(Use transformations to create art)*	• I can use rigid transformations to make interesting repeating patterns of figures.

17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Practice Day 1
7	Sub Unit Quiz 1
8	Lesson 7
9	Lesson 8 & 9
10	Lesson 10
11	Lesson 11
12	Lesson 12
13	Lesson 13
14	Practice Day 2
15	Test

Block Schedule Pacing Adjustment (9.5 days)

	(Pre-Check Unit 1 prior)
1	Lesson 1 + Lesson 2
2	Lesson 3 + Lesson 4
3	Lesson 5 + Lesson 6
4	Lesson 7 + Practice
5	Quiz + Lesson 8
6	Lesson 9 + Lesson 10
7	Lesson 11 + Lesson 12
8	Lesson 13 + Practice 2
9	Test + Pre-check Unit 2



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 1L)
- Combine Pre-Unit Check and Lesson 1
- Combine Lesson 5 & 6
- Combine Lesson 11 & 12
- Omit Lesson 13

Unit 1 Reflection: Notes to my future forgetful self

Unit 2: Dilations, Similarity, and Slope

Standards

Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)
Verify experimentally the properties of rotations, reflections, and translations: (8.G.A.1)

Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (8.G.A.2)

Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.A.3)

Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (8.G.A.4)

Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*. (8.G.A.5)

Understand the connections between proportional relationships, lines, and linear equations. (.8.EE.B)
Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. (8.EE.B.6)

Concepts	Skills
Dilation Sequence of Transformations Coordinates Similar Figures Similar Triangles Slope	- Perform dilations on a figure to produce a scaled copy. - Perform a sequence of transformations. - Dilate figures using a coordinate plane. - Justify why figures are similar, congruent, or neither. - Justify that two triangles are congruent using angle measures. - Use similar triangles to determine slope of a line.

Learning Progressions/Concept Development

1. Describe a sequence of transformations. (L1 – L3)
2. Apply dilations on a coordinate grid. (L4 – L5)
3. Determine if 2 triangles are similar. (L6 – L7)
4. Determine the slope of a line *on a plane*.* (L8 – L10)

*Students will explore slope at a much deeper level in the next unit(s).

Unit 8.2: Dilations, Similarity, and Slope

(15 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 - Dilations	
1	Reflect Unit 1 & Pre-Check Unit 2	
2	1: Sketchy Dilations *(Introduce dilations)*	• I know how dilations and scaled copies are connected.
3	2: Dilation Mini Golf *(Dilations with no grid)*	• I can identify the scale factor and the center of dilation. • I can describe strategies for dilating a point.
4	3: Transformations with Mini Golf *(Sequences of transformations)*	• I can use a sequence of transformations to move one figure onto another
	**** Concept Development Check Point: Students should be able to describe a sequence of transformations.***	
5	4: Match My Dilation *(Dilations on a square grid)*	• I can dilate figures on a grid using a center of dilation and a scale factor.
6	5: Dilations on a Plane *(Dilations with coordinates)*	• I can dilate figures on a coordinate plane.
	**** Concept Development Check Point: Students should be able to apply dilations on a grid***	
7	Practice Day 1 *(review lessons 1-5)*	
8	Sub-Unit Assessment	
	Sub-Unit 2 - Similarity	
9	6: Social Scavenger Hunt *(Similar figures, sides, & angles)*	• I know that two figures are similar if there is a sequence of transformations that moves one onto the other. • I can justify whether two figures are similar using a sequence of transformations.
10	7: Are Angles Enough? *(Similar triangles)*	• I know that two pairs of congruent corresponding angles are enough to determine that two triangles are similar. • I can justify that two triangles are similar using what I know about their angles.
	**** Concept Development Check Point: Students should be able to determine if two triangles are similar.***	
11	8: Shadows *(Side length relationships in similar triangles)*	• I understand the relationships between side lengths in similar triangles. • I can determine missing side lengths in similar triangles
	Sub-Unit 3 - Slope	
12	9: Water Slide *(Similarity and slope)*	• I can use similar triangles to determine the slope of a line.
13	10: Slope Challenges *(Developing fluency with slope)*	• I can use similar slope triangles to determine the slope of a line.
	**** Concept Development Check Point: Students should be able to determine the slope of a line on a plane.***	
14	Practice Day 2 *(review lessons 1-10)*	
15	End of Unit Assessment	

Math 8

4 classes/week Pacing Adjustment (12 days)

1	Pre-Check + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Practice Day 1
7	Sub Unit Quiz 1
8	Lesson 7
9	Lesson 8 & 9
10	Lesson 10
11	Practice Day 2
12	Test

Block Schedule Pacing Adjustment (8 days)

1	Lesson 1 + Lesson 2
2	Lesson 3 + Lesson 4
3	Lesson 5 + Practice
4	Quiz + Lesson 6
5	Lesson 7 + Lesson 8
6	Lesson 9 + Lesson 10
7	Practice 2
8	Test + Pre-check Unit 3



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 103L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 3
- Combine Lesson 9 & 10

Unit 2 Reflection: Notes to my future forgetful self

Unit 3: Proportional and Linear Relationships

Standards

Understand the connections between proportional relationships, lines, and linear equations. (8.EE.B)
Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. (8.EE.B.5)

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b. (8.EE.B.6)

Use functions to model relationships between quantities.(8.f.B)
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (8.F.B.4)

Concepts	Skills
Proportional Relationships Slope of a graph Similar Triangles y = mx y = mx + b function linear relationship rate of change (x, y) values Ordered pair (x,y) Linear function Graph Table of values	- Represent proportional relationships in multiple ways - Represent a solution to a problem as an ordered pair. - Write and graph equations of proportional relationships - Translate proportional relationships to create linear relationships (y = mx+b) - Calculate slope between 2 points. - Write and graph equations of linear functions. - Write and graph horizontal and vertical lines. - Write linear functions when given two points.

Learning Progressions/Concept Development

1. Identify equivalent Scales on a coordinate plane. (L1-L2)
2. Graph and write equations of proportional relationships (L2 – L4)
3. Calculate the slope between two points. (L3 – L8)
4. Write an equation for a line. (L9 – L13)

Unit 8.3: Proportional and Linear Relationships

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Proportionality Revisited	
1	Reflect Unit 2 & Pre-Check Unit 3 *(Assess and respond)*	
2	1: Turtle Time Trials *(Understand proportional relationships)*	• I know that the unit rate of a proportional relationship is the slope of its line. • I can make connections between a situation and the features of its corresponding graph, equation, or table
3	2: Water Tank *(Graphs of proportional relationships)*	• I know that y = mx can represent any proportional relationship with slope m. • I can tell when two graphs represent the same proportional relationship, even if their scaled axes are different.
	**** Concept Development Check Point: Students should be able to identify equivalent scales.***	
4	3: Proportional Posters *(Compare proportional relationships)*	• I can compare proportional relationships represented in different ways.
	Sub-Unit 2 – Linear Relationships	
5	4: Flags *(Introduction to linear relationships)*	• I know that there are linear relationships that are not proportional.
6	5: Water Cooler *(Slopes don't have to be positive)*	• I can use repeated calculations to write an equation for a linear relationship with a negative slope. • I can identify the slope and vertical intercept in a graph, equation, and situation.
7	6: Ups and Downs *(Analyze linear relationships)*	• I can create and connect representations for linear relationships.
8	7: Stacking Cups *(More with linear relationships)*	• I can use a linear relationship to make a prediction.
9	8: Translations *(Translate y = mx + b)*	• I can translate the graph y = mx to y = mx + b, where b is the y-intercept.
	**** Concept Development Check Point: Students should be able to determine the slope between two points***	
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit Assessment	
	Sub-Unit 3 – Linear Equations and Points	
12	9: Landing Planes *(Calculate slope)*	• I can calculate the slope of a line that passes through two given points.
	**** Concept Development Check Point: Students should be able to write an equation for a line.***	
13	10: Coin Capture *(Horizontal and vertical lines)*	• I can write equations of horizontal and vertical lines.
14	11: Why Intercepts? *(Equations of all kinds of lines)*	• I can write an equation of a line given two points. • I can determine the y-intercept of a line using two points.
15	12: Solutions *(Solutions to linear equations)*	• I know that linear equations can be written in different forms.

		• I can write an equation so that a given point is a solution to that equation.
16	13: Pennies and Quarters *(Using linear relationships to solve problems)*	• I can connect situations with tables, equations, graphs, and solutions.
17	Practice Day 2 *(review lessons 1-13)*	
18	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (15 days)

1	Pre-Check + Lesson 1
2	Lesson 2 & 3
3	Lesson 4
4	Lesson 5
5	Lesson 6 & 7
6	Lesson 8
7	Practice Day 1
8	Sub Unit Quiz 1
9	Lesson 9
10	Lesson 10
11	Lesson 11
12	Lesson 12
13	Lesson 13
14	Practice Day 2
15	End of Unit Assessment

Block Schedule Pacing Adjustment (8 days)

1	Lesson 1 & 2
2	Lesson 3 & 4
3	Lesson 5 & 6
4	Lesson 7 & 8
5	Lesson 9 + Practice Day 1
6	Sub Unit Quiz 1 + Lesson 10
7	Lesson 11 & 12
8	Lesson 13 & Practice Day 2
9	Test + Pre-check Unit 3



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 187L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 3
- Omit Lesson 7

Unit 3 Reflection: Notes to my future forgetful self

Unit 4: Linear Equations and Linear Systems

Standards

Analyze and solve linear equations and pairs of simultaneous linear equations. (8.EE.C)
Solve linear equations in one variable. (8.EE.C.7)

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). (8.EE.C.7a)

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. (8.EE.C.7.b)

Analyze and solve pairs of simultaneous linear equations. (8.EE.C.8)

Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. (8.EE.C.8a)

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6*. (8.EE.C.8b)

Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*. (8.EE.C.8c)

Concepts	Skills
Linear Equation Equivalent Equation One solution No solution Infinitely many solutions System of two linear equations Points of intersection Solution of a system of equations Substitution Method Elimination Method	- Create equivalent equations. - Solve equations with one solution. - Solve equations with no or infinite solutions - Solve equations with rational number coefficients - Graph two linear equations simultaneously - Know the solution to a system of equations is the intersection point - Solve a system of equations algebraically and verify graphically.

Learning Progressions/Concept Development

1. Create equivalent equations by using and naming properties of numbers. (L1 – L4)
2. Solve and identify the number of solutions for a linear equation in one variable. (L5 – L8)
3. Solve and interpret the solution of a system of equation by graphing (L9 – L10)
4. Identify the number of solutions to a systems of equations (L11-L13)
5. Solve a system of equations using a variety of strategies, including substitution and elimination. (L14 – P.Day 2)

Unit 8.4: Linear Equations & Linear Systems

(18 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Solving Linear Equations	
1	Reflect Unit 3 & Pre-Check Unit 4 *(Assess and respond)*	
2	1: Number Machines *(Explore inputs and outputs)*	• I can determine the output of a number machine given its input.
3	2: Keep it Balanced *(Create equivalent equations)*	• I can write an equation to represent a hanger diagram.
4	3: Balanced Moves *(Create more equivalent equations)*	• I can connect balanced moves and equivalent equations to hanger diagrams.
5	4: More Balanced Moves *(Solving equations)*	• I can solve a linear equation.
6	5: Equation Roundtable *(Analyze unbalanced equations)*	• I can solve an equation where the variable terms appear on both sides of the equal sign.
	**** Concept Development Check Point: Students should be able to solve an equation in one-variable***	
7	6: All, Some, Or None?, part 1 *(How many solutions?)*	• I can recognize whether a linear equation has no solution, one solution, or infinitely many solutions.
8	7: Strategic Solving, part 1 *(Solve many types of equations)*	• I can solve a variety of linear equations with one variable.
9	8: When Will They Meet? *(Solve linear equations in context)*	• I can write one equation by setting two expressions equal to each other.
	**** Concept Development Check Point: Students should be able to solve and interpret an equation in context.***	
10	Practice Day 1 *(review lessons 1-8)*	
11	Sub-Unit Assessment	
	Sub-Unit 1 – Systems of Linear Equations	
12	9: On or Off the Line? *(Interpreting points on/off a line)*	• I can determine a point that satisfies two linear relationships using tables or graphs.
13	10: On Both Lines *(Represent systems of equations)*	• I can create a graph representing a situation and determine the point of intersection.
14	11: Make them Balance *(Graph systems of equations)*	• I can use hanger diagrams and graphs to determine the solutions to systems of equations.
15	12: Line Zapper *(Solve systems of equations)*	• I can solve systems of equations without using a graph.
	**** Concept Development Check Point: Students should be able to solve a system of equations.***	
16	13: All, Some, or None?, part 2 *(Systems with no, one, or many solutions)*	• I can identify the number of solutions a system of equations has.
*	*(optional)* 14: Strategic Solving, part 2 *(Solving more systems of eqns)*	• I can solve a system of linear equations.
17	Practice Day 2 *(review lessons 1-14)*	
18	End of Unit Assessment	

Math 8

4 classes/week Pacing Adjustment (14 days)

1	Pre-Check + Lesson 1
2	Lesson 2 & 3
3	Lesson 4
4	Lesson 5
5	Lesson 6 & 7
6	Lesson 8
7	Practice Day 1
8	Sub Unit Quiz 1
9	Lesson 9 + Lesson 10
10	Lesson 11
11	Lesson 12
12	Lesson 13
13	Practice Day 2
14	End of Unit Assessment

Block Schedule Pacing Adjustment (9days)

1	Reflect Unit 3 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 + Practice Day 1
6	Sub Unit Quiz 1
7	Lesson 9 + Lesson 11
8	Lesson 12 + Lesson 13
9	End of Unit Quiz



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 289L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 10

Unit 4 Reflection: Notes to my future forgetful self

Unit 5: Functions and Volumes

Math 8

Standards

Define, evaluate, and compare functions. (8.F.A)
Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (8.F.A.1)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change*. (.8.F.A.2)

Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line*. (8.F.A.3)

Use functions to model relationships between quantities. (8.F.B)
Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (8.F.B.4)

Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. (8.F.B.5)

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. (8.G.C.9)
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. (8.G.C.9)

Concepts	Skills
Function Input/Output Graph of Ordered Pairs Algebraic/Graphic/Numeric/Verbal Descriptions Linear Relationships Rate of Change Initial Value Volume of Cylinders/Cones/Spheres	- Understand what a function is. - Graph a function. - Compare functions represented in different ways. - Interpret y = mx + b, including the rate of change (m) and initial value (b). - Describe a function by analyzing a graph. - Know and use formulas for volumes of cylinders, cones, and spheres.

Learning Progressions/Concept Development

1. Determine whether a relationship is a function. (L1 – L3)
2. Determine which graph represents different scenarios. (L4 – L6)
3. Analyze data from a graph using linear models. (L7 – L9)
4. Calculate and compare the volume of cylinders and cones. (L8 – L13)
5. Calculate the volume of spheres. (L14 – L15)

Unit 8.5: Functions and Volume

(20 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Introduction to Functions	
1	Reflect Unit 2 & Pre-Check Unit 3 *(Assess and respond)*	
2	1: Turtle Crossing *(Make sense of graphs)*	• I can make connections between situations and the graphs that represent them.
3	2: Guess My Rule *(Introduction to functions)*	• I can write rules for producing outputs from inputs.
4	3: Function or Not? *(Graphs of functions and non-functions)*	• I can justify whether a graph represents a function.
	**** Concept Development Check Point: Students should be able to determine whether a relationship is a function***	
5	4: Window Frames *(Functions and equations)*	• I can identify independent and dependent variables in a situation.
	Sub-Unit 2 – Representing and Interpreting Functions	
6	5: The Tortoise and the Hare *(Interpret graphs of functions)*	• I can draw a graph of a function from a description.
7	6: Graphing Stories *(Create graphs of functions)*	• I can draw the graph of a function that represents a real-world situation.
	**** Concept Development Check Point: Students should be able to determine which graph represents a scenario.***	
8	7: Comparing Linear Functions *(Compare representations of functions)*	• I can determine whether a situation can be represented by a linear function in the form y = mx + b.
9	8: Charge! *(Model with linear functions)*	• I can model a real-world situation with a linear function.
10	9: Piecing it Together *(Model with functions)*	• I can model data sets with functions made of linear segments.
	**** Concept Development Check Point: Students should be able to analyze data from a graph using linear models***	
11	Practice Day 1 *(review lessons 1-9)*	
12	Sub-Unit Assessment	
	Sub-Unit 3 - Volume	
13	10: Volume Lab *(Explore Volume)*	• I can estimate the volumes of different solids.
14	11: Cylinders *(Volume of cylinders)*	• I can calculate the volume of a cylinder by building on my understanding of how to calculate the volume of a prism.
15	12: Scaling Cylinders *(Scale cylinders using functions)*	• I can analyze the relationship between the height or radius of a cylinder and its volume.
16	13: Cones *(Volumes of cones)*	• I can use a formula to calculate the volume of a cone.
	**** Concept Development Check Point: Students should be able to compare and calculate the volume of a cone & cylinder.***	

17	14: Unknown Dimensions *(Determine cylinder and cone dimensions)*	• I can determine one dimension of a cylinder or cone using its volume and another dimension.
18	15: Spheres *(Volumes of Spheres)*	• I can use a formula to calculate the volume of a sphere.
**** Concept Development Check Point: Students should be able to calculate the volume of a sphere.***		
19	Practice Day 2 *(review lessons 1-15)*	
20	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (16 days)

1	Reflect U4 Test + Pre-Check U5
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Lesson 7
7	Lesson 8 & 9
8	Practice Day 1
9	Sub-Unit Quiz 1
10	Lesson 10 & 11
11	Lesson 12
12	Lesson 13
13	Lesson 14
14	Lesson 15
15	Practice Day 2
16	End of Unit Assessment

Block Schedule Pacing Adjustment (11 days)

1	Reflect U4 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 & 9
6	Practice Day 1
7	Sub-Unit Quiz + Lesson 10
8	Lesson 11 & 12
9	Lesson 13 & 14
10	Lesson 15 & Practice Day 2
11	Test + Pre-check Unit 7



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 486L)
- Combine Pre-Unit Check and Lesson 1
- Omit Lesson 8 & 9
- Combine Lesson 10 & 11

Unit 5 Reflection: Notes to my future forgetful self.

Unit 7: Exponents and Scientific Notation

Standards

Expressions and Equations Work with radicals and integer exponents. (8.EE.A)
Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. (8.EE.A.1)

Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*. (8.EE.A.3)

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. (8.EE.A.4)

Concepts	Skills
Expressions Integer Exponents Equivalent expressions Integer power of 10 Scientific Notation	- Apply properties of integer exponents to generate equivalent expressions. (Simplify) - Express a number as a single digit multiplied by a power of 10. - Perform operations with numbers expressed in scientific notation.

Learning Progressions/Concept Development

1. Generalize and use properties of exponents. (L1 – L6)
2. Write numbers as a single power of 10. (L7 – L8)
3. Apply operations with numbers expressed in scientific notation. (L9 – L13)

Unit 8.7: Exponents and Scientific Notation

(19 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Exponent Properties	
1	Reflect Unit 5 & Pre-Check Unit 7 *(Assess and respond)*	
2	1: Circles *(Exponent review)*	• I can use exponents to describe repeated multiplication.
3	2: Combining Exponents *(Equivalent expressions w/exponents)*	• I can identify and write equivalent expressions with exponents, such as $6^3 \cdot 6^5$, $(6^4)^2$, and $2^8 \cdot 3^8$.
4	3: Power Pairs *(Multiply powers and powers of powers)*	• I can justify whether two expressions with exponents are equivalent.
5	4: Rewriting Powers *(Rewrite exponential expressions as a single power)*	• I can divide expressions with exponents that have the same base.
6	5: Negative and Zero Exponents *(Use patterns to understand negative and zero exponents)*	• I can explain what it means for a number to be raised to a negative or zero exponent. • I can determine if expressions with positive, negative, and zero exponents are equivalent.
7	6: Write a Rule *(Generalize exponent properties)*	• I can create rules for properties of exponents
**** Concept Development Check Point: Students should be able to generalize the properties of exponents***		
8	Practice Day 1 *(review lessons 1-6)*	
9	Sub-Unit Assessment	
	Sub-Unit 2 – Scientific Notation	
10	7: Scales and Weights, part 1 *(Describe large numbers using powers of 10)*	• I can rewrite a large number as a combination of powers of 10
11	8: Scales and Weights, part 2 *(Describe small numbers using powers of 10)*	• I can rewrite a small number as a combination of powers of 10.
**** Concept Development Check Point: Students should be able to write numbers as powers of 10.***		
12	9: Specific and Scientific *(Definition of scientific notation)*	• I can decide whether a number is written in scientific notation. • I can rewrite large and small numbers in scientific notation.
13	10: Multiplying and Dividing *(Multiply & divide w/sci not)*	• I can multiply and divide numbers written in scientific notation.
14	11: Balance the Scale *(Multiply, divide & estimate w/sci not)*	• I can estimate how many times larger one very large or very small quantity is than another.
15	12: Use your Powers *(Applications of arithmetic w/sci not)*	• I can multiply and divide numbers written in decimal and scientific notation to answer questions about a situation.
16	13: City Lights *(Add & subtract w/sci not)*	• I can add and subtract numbers written in scientific notation.
**** Concept Development Check Point: Students should be able to apply operations with numbers in scientific notation.***		
17	14: Star Power *(Let's put it to work)*	• I can use scientific notation to compare different real-world quantities and answer questions about certain situations.
18	Practice Day 2 *(review lessons 1-14)*	
19	End of Unit Assessment	

Math 8

4 classes/week Pacing Adjustment (13 days)

1	Reflect U5 Test + Pre-Check U7
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Practice Day 1
7	Sub-Unit Quiz 1
8	Lesson 7 & 8
9	Lesson 9 & 10
10	Lesson 11 & 12
11	Lesson 13
12	Lesson 14 + Practice Day 2
13	End of Unit Assessment

Block Schedule Pacing Adjustment (8 days)

1	Reflect U5 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 & 9
6	Practice Day 1
7	Lesson 14 & Practice Day 2
8	Test + Pre-check Unit 8



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 603L)
- Combine Lesson 7 & 8
- Omit Lesson 12

Unit 7 Reflection: Notes to my future forgetful self

Unit 8: The Pythagorean Theorem and Irrational Numbers

Standards

Work with radicals and integer exponents (8.EE.A)
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. (8.EE.A.2)

Understand and apply the Pythagorean Theorem. (8.G.B)
Explain a proof of the Pythagorean Theorem and its converse. (8.G.B.6)

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Solve $x^2 = p$ for any p. (8.G.B.7)

Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (8.G.B.8)

Know that there are numbers that are not rational, and approximate them by rational numbers (8.NS.A)
Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; rational numbers show that the decimal expansions repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. (8.NS.A.1)

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. (8.NS.A.2)

Concepts	Skills
Square Root Cube Root Perfect Square/Cube Pythagorean Theorem Side Lengths in Rt. Triangle Rational/Irrational numbers Approximation Expansion Number Line	- Use square roots and cube root symbols - Explain a proof of the Pythagorean Theorem. - Apply the Pythagorean Theorem to find unknown sides. - Apply the Pythagorean Theorem to find the distance between points. - Understand that every number has a decimal expansion. - Use rational approximations of irrational numbers to compare the size.

Learning Progressions/Concept Development

1. Calculate and approximate values of square roots and cube roots.
2. Use the Pythagorean Theorem to determine missing sides of a right triangle, and determine whether a triangle is right.
3. Identify whether a number is rational or irrational.

Unit 8.8: Pythagorean Theorem

(19 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Square Roots and Cube Roots	
1	Reflect Unit 7 & Pre-Check Unit 8	
2	1: Tilted Squares *(The areas of tilted squares)*	• I can calculate the area of a tilted square on a grid.
3	2: From Squares to Roots *(Side lengths and areas)*	• I can write the side length of a square using square root notation (like $\sqrt{3}$).
4	3: Between Squares *(Approximate square roots)*	• I can approximate a square root as a decimal.
**** Concept Development Check Point: Students should be able to approximate the value of a square root.***		
5	4: Root Down *(Reason about square roots)*	• I can plot square roots on a number line.
6	5: Filling Cubes *(Edge length, volumes, and cube roots)*	• I can plot cube roots on a number line
**** Concept Development Check Point: Students should be able to approximate the value of a cube root.***		
7	Practice Day 1 *(review lessons 1-5*	
8	Sub-Unit Assessment	
	Sub-Unit 2 – The Pythagorean Theorem	
9	6: The Pythagorean Theorem *(Squares of side lengths)*	• I can explain what the Pythagorean theorem says.
10	7: Pictures to Prove It *(A proof of the Pythagorean Theorem)*	• I can explain why the Pythagorean theorem is true for every right triangle.
11	8: Triangle-Tracing Turtle *(Find unknown side lengths)*	• I can use the Pythagorean theorem to calculate an unknown side length of a right triangle
12	9: Make it Right *(The Converse of the Pythagorean Theorem)*	• I can determine whether a triangle is a right triangle if I know its side lengths
**** Concept Development Check Point: Students should be able to use the Pyth. Thm. and prove whether a triangle is a right triangle.***		
13	10: Taco Truck *(Applications of Pythagorean Theorem)*	• I can use the Pythagorean theorem to solve problems.
14	11: Pond Hopper *(Find distance on the coordinate plane)*	• I can calculate the distance between two points on the coordinate plane.
	Sub-Unit 3 – Rational and Irrational Numbers	
15	12: Fractions to Decimals *(Decimal representation of rational numbers)*	• I can write a fraction as a decimal.
16	13: Decimal to Fractions *(Infinite decimal expansions)*	• I can write a repeating or terminating decimal as a fraction.
17	14: Hit the Target *(Rational and Irrational numbers)*	• I can justify whether a number is rational.
**** Concept Development Check Point: Students should be able to identify whether a number is rational or irrational.***		

18	Practice Day 2 *(review lessons 1-14)*	
19	End of Unit Assessment *(Assess and respond)*	

4 classes/week Pacing Adjustment (15 days)

1	Reflect U7 Test + Pre-Check U8
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5
6	Practice Day 1
7	Sub-Unit Quiz 1
8	Lesson 6 & 7
9	Lesson 8
10	Lesson 9
11	Lesson 10
12	Lesson 11
13	Lesson 12 & 13
14	Lesson 14 & Practice Day 2
15	End of Unit Assessment

Block Schedule Pacing Adjustment (10 days)

1	Reflect U5 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 + Practice Day 1
5	Sub-Unit Quiz + Lesson 7
6	Lesson 8 & 9
7	Lesson 10 & 11
8	Lesson 12 & 13
9	Lesson 14 & Practice Day 2
10	Test + Pre-check Unit 8



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 707L)
- Combine Lesson 12 & 13

Unit 8 Reflection: Notes to my future forgetful self.

Unit 6: Associations in Data

Standards

Investigate patterns of association in bivariate data. (8.SP.A)
Construct and interpret scatter plots for bivariate measurement data to inate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. (8.SP.A.1)

Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. ((8.SP.A.2)

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. ((8.SP.A.3)

Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? (8.SP.A.4)

Concepts	Skills
Associations Bivariate data Scatter plots Linear association Linear model Slope Patterns Categorical data Two-way tables	- Construct and interpret scatter plots. - Describe patterns and associations. - Informally fit a line of straight line (linear model) to a scatter plot. - Use the equation of a linear model. - Interpret the slope and y-intercept of a linear model. - Display categorical data in a frequency and relative frequency two-way table. - Use relative frequencies to describe possible associations.

Learning Progressions/Concept Development

1. Create scatter plots from data and identify whether the association is linear or non-linear.
2. Create a line of best fit and use it to make predictions.
3. Use representations (two-way tables) of categorical data to identify possible associations.

Unit 8.6: Associations in Data

(16 days)

Day	Lessons (45 – minutes)	Success Criteria
	Sub-Unit 1 – Organizing Numerical Data	
1	Reflect Unit 8 & Pre-Check Unit 6	
2	1: Click Battle *(Organize data)*	• I can organize data to notice patterns more clearly
3	2: Wingspan *(Plot data)*	• I can plot points to represent data.
**** Concept Development Check Point: Students should be able to create scatterplots from tables of data***		
4	3: Robots *(What a point on a scatter plot means)*	• I can plot a point on a scatter plot given a table or a description.
	Sub-Unit 2 – Analyzing Numerical Data	
5	4: Dapper Cats *(Linear models and outliers)*	• I can use a linear model to predict values not in the data.
6	5: Interpreting Scatter Plots *(Show patterns in data)*	• I can create a scatter plot from a table of data. • I can describe connections between data in various representations
7	6: Find the Fit *(Fit a line to data)*	• I can fit a line to data in a scatter plot.
8	7: Interpreting Slopes *(The slope of a linear model)*	• I can explain whether data in a scatter plot has a positive association, a negative association, or neither.
9	8: Scatter Plot City *(Observing more patterns in scatter plots)*	• I can use a scatter plot to decide if two variables have a linear association. • I can identify clusters in data on a scatter plot.
**** Concept Development Check Point: Students should be able to identify if a scatterplot is linear or non-linear.***		
10	9: Animal Brains *(Analyzing bivariate data)*	• I can create a scatter plot, draw a line to fit the data, and identify outliers that appear in the data.
**** Concept Development Check Point: Students should be able to create a line of best fit and use it to make predictions.***		
11	Practice Day 1 *(review lessons 1-9*	
12	Sub-Unit Assessment	
	Sub-Unit 3 – Categorical Data	
13	10: Tasty Fruit *(Two-way tables and bar graphs)*	• I can identify and represent the same data in bar graphs and in two-way tables.
14	11: Finding Associations *(Use data displays to find associations)*	• I can use relative frequencies in tables and in segmented bar graphs to decide if there is an association between two variables.
**** Concept Development Check Point: Students should be able to use representations of categorical data to identify possible associations between the variables.***		
15	Practice Day 2 *(review lessons 1-14)*	
16	End of Unit Assessment	

Math 8

4 classes/week Pacing Adjustment (13 days)

1	Reflect U8Test + Pre-Check U6
2	Lesson 1 & 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 & 6
6	Lesson 7
7	Lesson 8
8	Lesson 9
9	Practice Day 1
10	Sub-Unit Quiz 1
11	Lesson 10
12	Lesson 11 & Practice Day 2
13	End of Unit Assessment

Block Schedule Pacing Adjustment (8 days)

1	Reflect U5 Test + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & 7
5	Lesson 8 & 9
6	Practice Day 1 + Quiz
7	Lesson 10 & 11
8	End of Unit Assessment



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 517L)
- Combine Lesson 1 & 2
- Omit lesson 9

Unit 6 Reflection: Notes to my future forgetful self.

Blank

Page

2026-2027

Algebra 1
Course Guide

#2201/2202 Algebra 1
#228 Middle School Algebra 1
#217A/217B MYP Algebra 1 S1/S2
#776 Accelerated Algebra 1
#7769/7770 Foundations in Algebra 1

Algebra 1 Pacing (Days in Q1-44, Q2-39, Q3-48, Q4-49)

Chapter - Topic	Days	Chapter - Topic	Days
1 – Patterns and Sequences	10	5 – Systems of Equations & Inequalities	18
2 – Linear Equations & Inequalities	23	6 – Exponential Functions	18
3 – Describing Data	12	7 – Quadratic Functions	21
4 – Describing Functions	22	8 – Quadratic Equations	26
Flex Days	9	Flex Days	9
Be here by end of Sem1 (76 days*)		Be here by end of Sem2 (92 days*)	

** Instructional days: does not include PD days, teacher workdays, ACT testing day or finals days (4)*

Algebra 1

Unit 1: Patterns and Sequences

Standards

Interpret the structure of expressions. (HSA.SSE.A)
Interpret expressions that represent a quantity in terms of its context.*(HSA.SSE.A.1)

Interpret parts of an expression, such as terms, factors, and coefficients. (HSA.SSE.A.1.a)

Build a function that models a relationship between two quantities. (HSF.BF.A)
Write a function that describes a relationship between two quantities.*(HSF.BF.A.1)

Determine an explicit expression, a recursive process, or steps for calculation from a context.(HSF.BF.A.1.a)

Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* (HSF.BF.A.2)

Construct and compare linear, quadratic, and exponential models and solve problems. (HSF.LE.A)
Distinguish between situations that can be modeled with linear functions and with exponential functions. (HSF.LE.A.1)

Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. (HSF.LE.A.1.a)

Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). (HSF.LE.A.2)

Concepts	Skills

Expressions
Context
Function
Relationship between two quantities
Explicit Expression
Recursive process
Arithmetic Sequence
Geometric Sequence
Explicit Formula
Graph
Description of Relationship
Input-Output Pairs
	- Interpret expressions in context
	- Interpret parts of an expression
	- Write a function
	- Write arithmetic and geometric sequences recursively
	- Write arithmetic and geometric sequences with an explicit formula.
	- Construct arithmetic and geometric sequences when given a
	  o Graph
	  o Description of the relationship
	  o Input-output pairs

Learning Progressions/Concept Development

1. Write a recursive definition for arithmetic and geometric sequences.
2. Write an explicit definition for arithmetic and geometric sequences.

Algebra 1

	Unit 1: Patterns and Sequences (10 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
1	Meet & Greet + Pre-Unit check	
2	*Lesson 1.01:* Visual Patterns (Exploring Patterns)	• I can use tables and images to make predictions about a pattern. • I can describe patterns in a table and in an image
3	*Lesson 1.02:* Sequence Carnival (Introduction to Sequences)	• I can determine if a sequence has a constant difference or constant ratio. • I can determine a missing term in a sequence
4	*Lesson 1.03:* Recursion Machine (Recursive Definitions)	• I can define a sequence recursively to meet certain requirements.
5 P	*Lesson 1.04:* See the Sequence (Arithmetic and Geometric Sequences)	• I can determine whether a sequence is arithmetic, geometric, or neither. • I can make connections between tables, graphs, and recursive definitions of sequences. • I can compare arithmetic sequences and geometric sequences using tables and graphs.
**** Concept Dev. Check Point: Students should be able to write recursive formulas for arithmetic and geometric sequences.***		
6	*Lesson 1.05:* Paper Patterns (Explicit Expressions)	• I can represent situations using tables, graphs, and expressions. • I can explain what each part of an expression represents within a situation.
7 P	*Lesson 1.06:* More Visual Patterns (The "n"th term)	• I can write an explicit expression for an arithmetic sequence or geometric sequence. • I can explain what each part of an explicit expression represents. • I know that different explicit expressions can represent the same sequence.
**** Concept Dev. Check Point: Students should be able to write explicit definitions for arithmetic and geometric sequences.***		
8	*Lesson 1.07:* Tree-Mendous Models (Introduction to Modeling Situations)	• I can model situations using recursive definitions and explicit expressions to help solve real-world problems. • I can use math to make sense of issues in a community. • I can describe how to revise a model to incorporate new information.
9 P	*Practice Day*	*Review all success criteria from above*
10	*End-of-Unit Assessment*	

"P" *denotes paper lesson only, all other lessons can be done digitally or on paper in the student edition.*

Algebra 1

4 classes/week Pacing Adjustment (8 days)

1	Meet & Greet + Pre-Check 1
2	Lesson 1 + Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5
6	Lesson 6 *(omit lesson 7)*
7	Practice Day 1
8	End of Unit Assessment

Block Schedule Pacing Adjustment (5 days)

1	Pre-Check + Lesson 1
2	Lesson 2 & 3
3	Lesson 4 & 5
4	Lesson 6 & Practice Day 1 *(omit lesson 7)*
5	End of Unit Assessment + Pre-check Unit 2



Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 1L)
- Combine Lessons 1 and 2
- Omit Lesson 7

Unit 1 Reflection: Notes to my future forgetful self

Algebra 1

Unit 2: Linear Equations and Inequalities

Standards

Create equations that describe numbers or relationships. (HSA.CED.A)
Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*. (HSA.CED.A.1)

Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (HSA.CED.A.2)

Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*. (HSA.CED.A.3)

Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R*. (HSA.CED.A.4)

Solve equations and inequalities in one variable. (HSA.REI.B)
Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. (HSA.REI.B.3)

Represent and solve equations and inequalities graphically. (HSA.REI.D)
Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). (HSA.REI.D.10)

Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. (HSA.REI.D.12)

Concepts	Skills
Equations Inequalities Variables Constraints Formulas Linear Equations Linear Inequalities Solutions Solutions in the coordinate plane	- Create equations and inequalities - Rearrange formulas to highlight a quantity of interest - Solve linear equations and inequalities. - Understand graphs of an equation is the set of all its solutions plotted. - Graph solutions to a linear inequality.

Learning Progressions/Concept Development

1. Solve equations with one variable.
2. Solve multi-variable equations for a given variable. (literal equation)
3. Write and graph linear equations in two variables
4. Write and determine solutions, both graphically (number-line) and algebraic statements for linear inequalities.
5. Write and graph the solutions on a coordinate plane for two-variable inequalities.

Algebra 1

	Unit 2: Linear Equations and Inequalities (25 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 2.11: Absolute Value Solutions (solving absolute value equations and inequalities) - *highly recommend for MS alg* • Lesson 2.12: If the Screw Fits (Creating and solving absolute value equations and inequalities) - *highly recommend for MS alg*	
1	Reflect on Unit 1 and pre-check Unit 2	
2	*Lesson 2.01:* Working Backwards (Solving equations with inverse operations)	• I can use inverse operations to solve an equation. • I can describe strategies for solving multi-step equations
3 P	*Lesson 2.02:* Solving Strategies (More solving with one-variable equations)	• I can solve one-variable linear equations. • I can analyze other people's reasoning when solving linear equations. • I can justify that each step in solving a linear equation creates an equivalent equation with the same solution.
4	*Lesson 2.03:* Same Position (No solution and infinitely many solutions)	• I can describe the effect of dividing by a variable when solving an equation. • I can justify whether a one-variable equation has one solution, no solution, or infinitely many solutions.
5	***extra practice day – solving equations*	
**** Concept Dev. Check Point: Students should be able to solve equations with one variable***		
6	*Lesson 2.04:* Subway Seats (Representing situations with two-variable equations)	• I can represent limitations using two-variable equations, then interpret their solutions in a situation. • I can rearrange linear equations to highlight a specific variable. • I can describe what the different parts of equations mean in a situation.
7 P	*Lesson 2.05:* Various Variables (Solving multi-variable equations(literal))	• I can rearrange multi-variable equations to highlight a specific variable. • I can solve multi-variable equations for a specific variable. • I can explain how solving for a variable is similar to rearranging an equation to highlight a specific variable.
**** Concept Dev. Check Point: Students should be able to solve multivariable equations for a given variable. (literal equations)***		
8	*Lesson 2.06:* Shelly the Snail (Connecting graphs and linear equations)	• I understand that the graph of a linear equation represents all the solutions to that equation. • I can solve an equation for one of its variables and connect my new equation to its graph. • I can describe how the graph of a linear equation can be written in different and equivalent forms.
9 P	*Lesson 2.07:* Five Representations (Linear relationships in equations, tables, and graphs)	• I can write two linear equations to represent the same situation: one in standard form and one in slope-intercept form. • I can describe connections between equations, tables, descriptions, and graphs that represent the same linear relationship.
10	*** extra practice day – equations of lines*	
11	*** extra practice day – equations of lines*	
**** Concept Dev. Check Point: Students should be able to write and graph linear equations (slope-int & standard form)***		

Algebra 1

12 P	*Practice Day 1*	
13	*Sub-Unit Quiz*	
14	*Lesson 2.08:* Pizza Delivery (Representing situations with one-variable inequalities)	• I understand that solutions to an inequality are values that make the inequality true. • I can write one-variable inequalities that represent constraints. • I can describe what the solutions to a one-variable inequality mean in a situation.
15	*Lesson 2.09:* Graphing Inequalities (Inequalities on a number line)	• I can solve one-variable inequalities by reasoning. • I can graph solutions to a one-variable inequality on a number line. I can describe how to represent the solutions to a one-variable inequality on a number line.
16	*Lesson 2.10:* Solution and Sheep (Solving one-variable inequalities)	• I can solve a one-variable linear inequality by solving its matching equation and testing values. • I can describe a strategy for solving and graphing the solutions to an inequality.
17	*** extra practice day – solving inequalities*	
**** Concept Dev. Check Point: Students should be able to write an inequality and determine/graph their solutions. (1-variable)***		
18	*Lesson 2.13:* Bracelet Budget (Introduction to two-variable inequalities)	• I understand that the solutions to a two-variable inequality are points that make the inequality true. • I can interpret two-variable inequalities that represent constraints in a situation.
19	*Lesson 2.14:* All of the Solutions (Graphing solutions to two-variable inequalities)	• I can understand that the solutions to a two-variable linear inequality are represented on a graph as a half-plane. • I can graph the solutions to a two-variable linear inequality given the graph of its corresponding equation. • I can describe a strategy for graphing the solutions to a two-variable linear inequality.
20 P	*Lesson 2.15:* Charity Concerts (Graphing two-variable inequalities in context)	• I can graph the solutions to a two-variable linear inequality and interpret them in a situation. • I can write an inequality to represent a situation. • I can describe what a two-variable inequality and its solutions mean in a situation.
21 P	*Lesson 2.16:* Water Way (Using two-variable inequalities to make decisions)	• I can model real-world constraints and solutions using two-variable linear inequalities. • I can analyze two-variable linear inequalities in order to make sense of an issue in society.
**** Concept Dev. Check Point: Students should be able to write an inequality and determine/graph their solutions. (2-variable)*** *(note: didn't include extra practice day due to re-visiting in Unit 5)*		
22 P	*Practice Day 2*	
23	*End of Unit Assessment*	

Algebra 1

4 classes/week Pacing Adjustment (20 days)

1	Reflect Unit 1 + Pre-check Unit 2
2	Lesson 1 + Lesson 2
3	Lesson 3
4	Extra practice day – solving eqn
5	Lesson 4
6	Lesson 5
7	Lesson 6
8	Lesson 7
9	Extra practice day – eqns of lines
10	Practice Day
11	Sub Unit Quiz
12	Lesson 8 + Lesson 9
13	Lesson 10
14	Extra practice day – solving inequal.
15	Lesson 13
16	Lesson 14
17	Lesson 1
18	Lesson 16
19	Practice Day
20	End of Unit Assessment

Block Schedule Pacing Adjustment (13 days)

1	Reflect Unit 1 + Lesson 1
2	Lesson 2 + Lesson 3
3	Extra practice (solve eqn)
4	Lesson 4 + Lesson 5
5	Lesson 6 + Lesson 7
6	Extra practice day (eqn of lines)
7	Practice Day 1
8	Sub-Unit Quiz + Lesson 8
9	Lesson 9 + Lesson 10
10	Extra practice (solve inequal.) + Lesson 13
11	Lesson 14 + Lesson 15
12	Lesson 16 *(optional)* + Practice Day
13	End of Unit Assessment + Pre-Check Unit 3

Short on Time:

- Omit Pre-check and do lesson 2.01 (Reflect Unit 1/Lesson 2.01)
- Combine Lessons 11 and 12, or omit lesson 12.
- Omit Lesson 16

Unit 2: Notes to my future forgetful self

Algebra 1

Unit 3: Describing Data

Standards

Summarize, represent, and interpret data on a single count or measurement variable (HSS.ID.A)
Represent data with plots on the real number line (dot plots, histograms, and box plots). (HSS.ID.A.1)

Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. (HSS.ID.A.2)

Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). (HSS.ID.A.3)

Summarize, represent, and interpret data on two categorical and quantitative variables (HSS.ID.B)
Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. (HSS.ID.B.6)

> Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. (HSS.ID.B.6a)
>
> Fit a linear function for a scatter plot that suggests a linear association. (HSS.ID.B.6c)

Interpret linear models (HSS.ID.C)
Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. (HSS.ID.C.7)

Compute (using technology) and interpret the correlation coefficient of a linear fit. (HSS.ID.C.8)

Concepts	Skills
Data Plots Shape of the data Center (median, mean) Spread (IQR, standard deviation) Scatter Plot Linear Association Linear Model Correlation	- Represent data with graphical plots. - Use shape, center, spread to compare two sets of data. - Fit a linear function for a scatterplot - Interpret the slope and intercept of a linear model - Compute correlation coefficient - Interpret correlation coeffiecient

Learning Progressions/Concept Development

1. Create graphical displays of data.
2. Describe and compare sets of data using shape, centers, spread, and outliers.
3. Describe linear associations using correlation and lines of best fit.

Algebra 1

	Unit 3: Describing Data (12 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 3.01: Survey Says (What kinds of data can I collect?) • Lesson 3.02: Hear Here (Two-way tables) **Also covered in Geometry* • Lesson 3.03: School Choice (Making decisions with frequency tables) **Also covered in Geometry* • Lesson 3.12: Dynamic Decades (Comparing data using measures of centers and spread) • Lesson 3.16: Residual Fruit (Residuals and residual plots) • Lesson 3.17: Penguin Populations (Using tech to generate lines of best fit) – *if time add first* • Lesson 3.18: Behind the Headlines (Causation vs. correlation) • Lesson 3.19: City Data (Using statistics to analyze relationships in society)	
1	Unit 2 Reflection + Pre-check Unit 3	
2	*Lesson 3.04:* Love it or Leave it (Revisiting dot plots and histograms)	• I can use technology to represent data with a dot plot or histogram. • I can describe the advantages of using a dot plot or a histogram to represent data.
3	*Lesson 3.05:* Better or Worse (Revisiting boxplots)	• I can use technology to construct a box plot. • I can use box plots to compare and contrast two different data sets. • I can explain what the parts of a box plot mean in a real-world situation.
**** Concept Dev. Check Point: Students should be able to use tech to create dot plots, histograms, and boxplots***		
4	*Lesson 3.06:* Shapes of Data (Describing data sets)	• I can describe the shape of a data set using terms like bimodal, bell-shaped, skewed, symmetric, and uniform.
5	*Lesson 3.07:* Quick Pick (Revisiting measures of center)	• I can use technology to calculate the measures of center (mean and median) for a data set. • I can explain how to calculate the mean and median and what these measures of center tell us about a data set. • I can explain the effect of extreme values on the mean and median.
6 L9 P	*Lesson 3.08:* Finding Desmos (Intro to Standard Deviation) *Lesson 3.09 (optional):* Wavering Weather (Comparing data using mean and standard deviation)	• I can understand that standard deviation is a measure of spread and can use technology to calculate the standard deviation for a data set. • I can compare and contrast data sets using standard deviation. • I can compare and contrast two data sets using the mean and standard deviation. (optional)
7	*Lesson 3.10:* Race Car (Comparing Data using median and IQR)	• I understand that the interquartile range (IQR) is a measure of spread and can calculate the IQR for a data set. • I can use the median and IQR to compare and contrast skewed data sets.
8	*Lesson 3.11:* Far Out (Identifying outliers)	• I can determine whether or not a data point is an outlier. • I can explain how outliers impact the mean or median of a data set.
**** Concept Dev. Check Point: Students should be able to use shape, center, spread, and outliers to compare 2 data sets.***		
9	*Lesson 3.13:* Correlation Coefficient (Intro to correlation coefficient) *Lesson 3.14 (optional)* How Hot is it? (Interpreting correlation coefficient in context)	• I can use technology to calculate the correlation coefficient of data on a scatter plot. • I can describe the relationship between two variables on a scatter plot using the correlation coefficient. • I can use the correlation coefficient to describe the strength and direction of a linear association. *(optional)*
10	*Lesson 3.15:* City Slopes (Interpreting slope and y-intercept in context)	• I can estimate unknown values using a line of fit on a graph. • I can describe what the slope and y-intercept for a line of fit represent in a situation.

Algebra 1

11P	*Practice Day 1*	*Review all success criteria from above*
12	*Sub Unit Quiz (supplement correlation coefficient and lines of best fit questions)*	
**** Concept Dev. Check Point: Students should be able to describe linear associations using the line of fit and correlation coefficient.***		

4 classes/week Pacing Adjustment (9.5 days)

1	Reflect Unit 2 + Pre-check
2	Lesson 4 + Lesson 5
3	Lesson 6 + Lesson 7
4	Lesson 8 + Lesson 9 *(optional)*
5	Lesson 10
6	Lesson 11
7	Lesson 12 + Practice Day
8	Sub-Unit Quiz
9	Lesson 13 + Lesson 14 *(optional)*
10	Lesson 15 + Pre-check Unit 4

Block Schedule Pacing Adjustment (6 days)

1	Reflect Unit 2 + Lesson 4
2	Lesson 5 + Lesson 6
3	Lesson 7 + Lesson 8 + Lesson 9 *(optional)*
4	Lesson 10 + Lesson 11
5	Practice Day + Quiz
6	Lesson 13 + Lesson 14*(optional)* + Lesson 15



Short on Time:

- Incorporate pre-check questions into specific lessons
- Combine Lessons 4 and 5
- Omit Lesson 7 (this was covered in 7th grade)
- Omit Lesson 12

Unit 3: Notes to my future forgetful self

Algebra 1

Unit 4: Describing Functions

Standards

Understand the concept of a function and use function notation. (HSF.IF.A)

Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*). (HSF.IF.A.1)

Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. (HSF.IF.A.2)

Interpret functions that arise in applications in terms of the context. (HSF.IF.B)

For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*[*] (HSF.IF.B.4)

Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*[*] (HSF.IF.B.5)

Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.[*](HSF.IF.B.6)

Analyze functions using different representations. (HSF.IF.C)

Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.[*] (HSF.IF.C.7)

> Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. (HSF.IF.C.7.b)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum*. (HSF.IF.C.9)

Concepts	Skills
Function/Function Notation Domain/Range Key Features of Graph Quantitative Relationship Average Rate of Change Piecewise Functions Absolute Value Functions	- Assign elements in domain to range - Evaluate functions using function notation - Sketch graphs showing key features. - Relate domain to a graph - Calculate and interpret average rate of change - Graph piecewise functions - Graph absolute value functions. - Compare properties of two functions.

Learning Progressions/Concept Development

1. Write and evaluate a function using function notation.
2. Calculate the average rate of change.
3. Graph and write piecewise functions.
4. Graph and write absolute value functions

Algebra 1

	Unit 4: Describing Functions (22 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 4.13: Recursion Excursion (Writing sequences in function notation) – *strongly encourage if time allows* • Lesson 4.14: Functions and Sequences (Using functions to model sequences) – *strongly encourage if time allows* • Lesson 4.18: Chip the Robot (Inverses, part 1) • Lesson 4.19: Inverse Machines (Inverses, part 2)	
1	Reflect Unit 3 + Pre-check Unit 4	
2	*Lesson 4.01:* Mystery Rule (What's a function?)	• I can decide whether or not a rule is a function. • I can explain that a function has only one output for every input.
3	*Lesson 4.02:* Pricing Pizzas (Introducing function notation)	• I can interpret what a statement written in function notation means in a situation.
4	*Lesson 4.03:* Toy Factory (Function notation and equations)	• I can evaluate a function written in function notation. • I can write an equation of a function using function notation. • I can describe what an equation written in function notation means in a situation.
**** Concept Dev. Check Point: Students should be able to write and evaluate functions using function notation.***		
5	*Lesson 4.04:* Function Carnival (Creating and interpreting graphs of functions)	• I can sketch a graph of a function to match a situation. • I can describe connections between situations and graphs.
6	*Lesson 4.05:* Craft-a-graph (Key features of graphs)	• I can use the key features of a function to build a graph of a function. • I can describe the key features of a graph using terms like positive, negative, maximum, minimum, increasing, and decreasing.
7	*Lesson 4.06:* Plane, Train, and Automobile (Average rate of change)	• I can calculate the average rate of change over an interval on a graph. • I can interpret what the average rate of change means for a given situation
8	*Lesson 4.07:* Space Race (Comparing graphs)	• I can interpret statements written in function notation and use them to compare graphs. • I can compare and contrast key features of graphs using statements written in function notation.
9 P	*Lesson 4.08:* Ins and Outs (Introducing domain and range)	• I can decide if a value is a possible input or output for a function in a given situation. • I can describe the domain and range of a function as the set of all possible inputs and outputs.
10	*** extra practice day – Functions and function notation*	
**** Concept Dev. Check Point: Students should be able to determine domain and range and calculate average rate of change.***		
11	*Lesson 4.09:* Elevator Stories (Describing domain and range with inequalities)	• I can write the domain and range of a function using inequalities. • I can interpret what the domain and range mean for a situation.
12	*Lesson 4.10:* Marble Slides (Graphing linear functions with restrictions)	• I can restrict the domain and range of a function using inequalities.
**** Concept Dev. Check Point: Students should be able to identify domains and range of functions using inequalities.***		
13 P	*Practice Day 1*	
14	*Sub-Unit Quiz*	

Algebra 1

15	*Lesson 4.11:* Pumpkin Prices (Piecewise functions defined – part 1	• I can read and understand a piecewise defined function. • I can evaluate a piecewise-defined function in function notation. • I can explain how a piecewise-defined function represents a situation.
16 P	*Lesson 4.12:* Doctor, Doctor (Piecewise functions defined – part 2) *(Optional: Omit lesson, spend another day on piecewise practice)*	• I can sketch a graph of piecewise-defined and step functions. • I can write an equation of piecewise-defined and step functions to represent a situation. • I can analyze the graph of a piecewise-defined or step function to make sense of situations
**** Concept Dev. Check Point: Students should be able to graph and evaluate piecewise functions.***		
17	*Lesson 4.15:* What's Your Score? (Absolute value functions, part 1)	• I can evaluate and interpret outputs for an absolute value function. • I can describe how an absolute value function is related to the distance from a number.
18	*Lesson 4.16:* Absolute Value Machines (Absolute value functions, part 2)	• I can graph an absolute value function. • I can analyze the key features of an absolute value function.
19	*** extra practice day – graphing absolute value functions*	
**** Concept Dev. Check Point: Students should be able to graph absolute value equations***		
20 P	*Lesson 4.17:* Our Math Story (Using functions to tell a story)	• I can create graphs of functions that represent real-life relationships. • I can describe and interpret real-life relationships using function tools.
21	*Practice Day 2*	
22	*End of Unit Assessment*	

4 classes/week Pacing Adjustment (17 days)

1	Reflect Unit 3 + Lesson 1
2	Lesson 2
3	Lesson 3
4	Lesson 4 + Lesson 5
5	Lesson 6
6	Lesson 7 + Lesson 8
7	Extra Practice Day
8	Lesson 9
9	Lesson 10
10	Practice Day 1
11	Sub-Unit Quiz
12	Lesson 11
13	Lesson 12
14	Lesson 15
15	Lesson 16
16	Extra Practice + Practice Day *(opt lesson 17)*
17	End of Unit Assessment

Block Schedule Pacing Adjustment (11 days)

1	Reflect Unit 3 + Lesson 1
2	Lesson 2 + Lesson 3
3	Lesson 4 + Lesson 5
4	Lesson 6 + Lesson 7
5	Lesson 8 + Extra Practice
6	Lesson 9 + Lesson 10
7	Practice Day 1 + Sub-Unit Quiz
8	Lesson 11 + Lesson 12
9	Lesson 15 + Lesson 16
10	Extra Practice + Practice Day *(opt lesson 17)*
11	End of Unit Assessment

Algebra 1

Short on Time:

- Incorporate pre-check questions into specific lessons
- Combine Lesson 13-14
- Combine Lessons 15-16
- Omit Lesson 17

Unit 4: Notes to my future forgetful self

Algebra 1

Unit 5: Systems of Linear Equations and Inequalities

Standards

Create equations that describe numbers or relationships. (HSA.CED.A)
Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*. (HSA.CED.A.3)

Solve systems of equations. (HSA.REI.C)
Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. (HSA.REI.C.5)

Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. (HSA.REI.C.6)

Represent and solve equations and inequalities graphically. (HSA.REI.D)
Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). (HSA.REI.D.10)

Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.* ((HSA.REI.D.11)

Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. (HSA.REI.D.12)

Concepts	Skills
Systems of Equations Systems of Inequalities Sum/multiple of an equation Exact Solution Approximate Solution Intersection Solution to linear inequality	- Create equations that describe relationships - Represent constraints by systems of equations. - Prove a system has the same solution when replaced by an equivalent equation. - Solve systems of equations exactly and approximately - Explain why the x-coordinate of an intersection is the solution to an equation. - Graph the solutions to a linear inequality.

Learning Progressions/Concept Development

1. Solve systems of linear equations using elimination.
2. Solve systems of linear equations using graphs and substitution.
3. Strategically select a method for solving systems of linear equations, then solve.
4. Solve and graph systems of linear inequalities.

Algebra 1

	Unit 5: Systems of Linear Equations and Inequalities (17 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
1	Reflect Sem1 + Pre-Check Unit 5	
2	*Lesson 5.01:* Shape it Up (Introduction to systems of equations)	• I can use reasoning to solve a shape puzzle. • I can explain a strategy for solving a shape puzzle.
3	*Lesson 5.02:* Eliminating Shapes (Introduction to Elimination)	• I can solve a system of equations by adding or subtracting the equations to eliminate a variable. • I can identify when to use addition or subtraction to eliminate a variable
4 P	*Lesson 5.03:* Process of Elimination (Elimination using equivalent equations)	• I can solve a system of equations using an elimination strategy. • I can explain how replacing an equation in a system with one that is equivalent creates a new system that has the same solution.
**** Concept Dev. Check Point: Students should be able solve systems using the elimination method.***		
5	*Lesson 5.04:* Solution by Substitution (Solving systems using substitution)	• I can solve a system of equations using substitution. • I can describe how to use substitution to solve a system of equations.
6	*Lesson 5.05:* Lizard Lines (Graphing systems of linear equations)	• I can solve a system of linear equations using a graph. • I can analyze equations to justify whether the system has zero, one, or infinitely many solutions.
7 P	*Lesson 5.06:* City Development (Solving graphically and symbolically)	• I can solve a system of equations graphically and symbolically. • I can interpret what the solution to a system of equations means in real-world situations.
**** Concept Dev. Check Point: Students should be able to solve systems using graphs and the substitution method***		
8 P	*Lesson 5.07:* Bus Systems (Writing and solving systems of equations)	• I can represent a situation with a system of equations. • I can solve a system of equations graphically and symbolically. • I can explain how to use a system of equations and its solutions to make recommendations for a situation.
9	*Lesson 5.08:* Electric Line Zapper (Strategically solving systems of linear equations)	• I can solve a system of equations using substitution and elimination.
10	*** Extra Practice Day – Solving systems of equations strategically*	
11P	*Practice Day 1*	
12	Sub-Unit 1 Quiz	
13	*Lesson 5.09:* Quilts (Introduction to systems of inequalities)	• I can determine if a point is a solution to a system of inequalities using a graph. • I can describe how ordered pairs relate to constraints in a situation
14	*Lesson 5.10:* Seeking Solutions (Solutions to systems of inequalities)	• I can determine the solution region of a system of inequalities given the boundary lines. • I can describe how to determine the solution region of a system of inequalities on a graph.
15 P	*Lesson 5.11:* Boundaries and Shading (Graphing systems of inequalities)	• I can graph the solution region to a system of inequalities. • I can write a system of inequalities when given a graph. • I can describe a strategy for graphing the solution region to a system of inequalities.
**** Concept Dev. Check Point: Students should be able to solve and graph a system of linear inequalities***		

Algebra 1

16 P	*Lesson 5.12:* Community Meals (Using systems of inequalities to make decisions)	• I can write a system of inequalities to represent constraints in a situation. • I can interpret what the solutions to a system of inequalities mean in real-world situations in order to make decisions.
17 P	*Practice Day 2*	
18	*End of Unit Assessment*	

4 classes/week Pacing Adjustment (14 days)

1	Reflect Sem1 + Pre-check
2	Lesson 1 + Lesson 2
3	Lesson 3
4	Lesson 4
5	Lesson 5 + Lesson 6
6	Lesson 7
7	Lesson 8 + Extra Practice
8	Extra Practice + Practice Day 1
9	Sub-Unit Quiz
10	Lesson 9 + Lesson 10
11	Lesson 11
12	Lesson 12
13	Practice Day 2
14	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Reflect Sem1 + Lesson 1 *(optional)* + Lesson 2
2	Lesson 3 + Lesson 4
3	Lesson 5 + Lesson 6
4	Lesson 7 + Lesson 8
5	Extra Practice Day + Practice Day 1
6	Sub-Unit Quiz + Lesson 9
7	Lesson 10 + Lesson 11
8	Lesson 12 *(optional*) + Practice Day 2
9	End of Unit Assessment + Pre-Check Unit 6

Short on Time:

- Incorporate pre-check questions into specific lessons
- Omit Lesson 12

Unit 5: Notes to my future forgetful self

Algebra 1

Unit 6: Exponential Functions

Standards

Interpret the structure of expressions. (HSA.SSE.A)
Interpret expressions that represent a quantity in terms of its context.* (HSA.SSE.A.1)

Interpret parts of an expression, such as terms, factors, and coefficients. (HSA.SSE.A.1a)

Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P*. (HSA.SSE.A.1b)

Construct and compare linear, quadratic, and exponential models and solve problems. (HSF.LE.A)
Distinguish between situations that can be modeled with linear functions and with exponential functions. (HSF.LE.A.1)

Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. (HSF.LE.A.1a)

Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. (HSF.LE.A.1b)

Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. (HSF.LE.A.1c)

Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). (HSF.LE.A.2)

Interpret expressions for functions in terms of the situation they model. (HSF.LE.B)
Interpret the parameters in a linear or exponential function in terms of a context. (HSF.LE.B.5)

Build a function that models a relationship between two quantities. (HSF.BF.A)
Write a function that describes a relationship between two quantities.* (HSF.BF.A.1)

Determine an explicit expression, a recursive process, or steps for calculation from a context. (HSF.BF.A.1a)

Concepts	Skills
Structure of Expression Factors Coefficients $P(1+r)^n$ Linear Functions Exponential Functions Parameters	- Interpret expressions in context - Interpret parts of expressions, including coefficients, factors, and constants. - Prove linear functions grow by equal differences - Prove exponential functions grow by equal factors - Write/construct exponential functions.

Learning Progressions/Concept Development

1. Compare linear and exponential functions, algebraically, graphically, and numerically.
2. Evaluate Exponential Functions.
3. Interpret and write exponential functions that represent growth and decay, including percent increase and decrease.

Algebra 1

	Unit 6: Exponential Functions (18 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 6.11: Thinking Rationally (Writing expressions using radical/rational exponents) • Lesson 6. 12: Writing Radicals (Writing equivalent expressions using rational exponents and radicals) • Lesson 6.15: Credit Card Compounding (Different Compounding Intervals) • Lesson 6.16: Detroit's Population, Part 1 (Modeling Data and Goodness of Fit) • Lesson 6.17: Detroit's Population, Part 2 (Modeling exponential data)	
1	Reflect Unit 5 + Pre-check Unit 6	
2	***Extra Practice Day – light review exponent rules (mastery not required – not included on assessment)*	
3	*Lesson 6.01*: Carlos's Fish (Equations of exponential relationships)	• I can use an equation of the form $y = a \cdot bx$ to solve a problem in a situation. • I can interpret what each part of an equation means in a situation
4	*Lesson 6.02*: Growing Globs (Patterns of growth)	• I can identify a function that grows by a constant difference as a linear function and a function that grows by a constant ratio as an exponential function. • I can compare functions that grow by constant differences and by constant ratios.
5	*Lesson 6.03*: Going Viral (Graphs of exponential relationships)	• I can write an exponential function to represent a graph or a situation. • I can compare and contrast the graph of an exponential and a linear function in a situation.
6 P	*Lesson 6.04*: Return of the Globs (Connecting representations of linear and exponential functions)	• I can create a function, table, and graph of a linear and an exponential relationship. • I can describe connections between the function, table, graph, and situation that represent an exponential or a linear relationship.
**** Concept Dev. Check Point: Students should be able to compare linear and exponential functions in multiple representations***		
7	*Lesson 6.05*: Carlos and Corals (Evaluating exponential functions)	• I can evaluate an exponential function with a positive, zero, or negative input. • I can describe the domain of an exponential function that represents a situation.
**** Concept Dev. Check Point: Students should be able to evaluate exponential functions for positive and negative inputs.***		
8 P	*Lesson 6.06*: Differences and Factors (Changes over equal intervals)	• I can prove that a linear function grows by an equal difference over equal intervals and an exponential function grows by an equal factor over equal intervals. • I can explain how linear functions change by a difference and exponential functions change by a factor.
9	*Lesson 6.07*: Growing Mold (Percent increase and decrease, part 1)	• I can model repeated percent increase with an exponential function. • I can interpret what a and b represent in the exponential function $f(x) = a \cdot bx$.
10 P	*Lesson 6.08*: At a Loss (Percent increase and decrease, part 2)	• I can calculate the percent change of an exponential function from a graph. • I can write equivalent functions that represent exponential

Algebra 1

		decay. • I can compare and contrast equivalent equations of a function that represents exponential decay.
11 P	*Lesson 6.09*: Lake Desmosia (Solving problems involving percent inc/decr)	• I can use an exponential function to solve a problem in a situation. • I can interpret what a, b, and k represent in exponential functions $f(x) = a \cdot bx$ or $f(x) = a \cdot bx + k$ for a situation.
**** Concept Dev. Check Point: Students should be able to write and interpret exponential functions to model percent increase and percent decrease (growth/decay)***		
12	*Lesson 6.10*: Marbleslides: Exponentials (Translation of exponential Functions)	• I can write a function of the form $f(x) = a \cdot bx + k$ or $f(x) = a \cdot b(x - h)$ to meet specified criteria. • I can describe the effect of a vertical or horizontal translation on the graph of an exponential function.
13 P	*Practice Day 1*	
14	*Sub-Unit Quiz*	
15	*Lesson 6. 13*: Bank Accounts (Introducing simple and compound interest)	• I can use a graphing calculator to solve problems involving linear and exponential functions. • I can describe connections between simple and compound interest, linear and exponential functions.
16	*Lesson 6. 14*: Payday Loan (Revisiting compound interest)	• I can write an exponential function that represents a situation involving compound interest. • I can interpret the meaning of an equivalent expression in a situation using the properties of exponents.
17 P	*Practice Day 2*	*Review all success criteria from above*
18	*End-of-Unit Assessment* **need to rewrite question 6 due to opt. lesson 6.15*	

4 classes/week Pacing Adjustment (15 days)

1	Reflect Unit 5 + Pre-check Unit 6
2	Extra Practice Day – exponent rules
3	Lesson 1 + Lesson 2
4	Lesson 3
5	Lesson 4
6	Lesson 5 + Lesson 6
7	Lesson 7
8	Lesson 8
9	Lesson 9
10	Lesson 10
11	Practice Day 1
12	Sub-Unit Quiz
13	Lesson 13 + Lesson 14
14	Practice Day
15	End of Unit Assessment

Block Schedule Pacing Adjustment (9 days)

1	Reflect Unit 5 + Extra Practice – exponent rules
2	Lesson 1 + Lesson 2
3	Lesson 3 + Lesson 4
4	Lesson 5 + Lesson 6
5	Lesson 7 + Lesson 8
	Lesson 9 + Practice Day 1
6	Sub-Unit Quiz + Lesson 10 (no ques. on quiz from L10)
7	Lesson 13 + Lesson 14
8	Practice Day 2
9	End of Unit Assessment + Pre-Check Unit 7

Algebra 1

Short on Time:

- Incorporate pre-check questions into specific lessons.
- Omit Lesson 9
- Combine Lessons 13 and 14

Unit 6: Notes to my future forgetful self

Algebra 1

Unit 7: Quadratic Functions

Standards

Build a function that models a relationship between two quantities. (HSF.BF.A)
Write a function that describes a relationship between two quantities.*(HSF.BF.A.1)

Determine an explicit expression, a recursive process, or steps for calculation from a context. (HSF.BF.A.1a)

Build new functions from existing functions. (HSF.BF.B)
Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. (HSF.BF.B.3)

Interpret functions that arise in applications in terms of the context. (HSF.IF.B)
For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.* (HSF.IF.B.4)

Analyze functions using different representations. (HSF.IF.C.7)
Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* (HSF.IF.C.7)

Graph linear and quadratic functions and show intercepts, maxima, and minima. (HSF.IF.C.7.a)

Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. (HSF.IF.C.8)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum*. (HSF.IF.C.8)

Construct and compare linear, quadratic, and exponential models and solve problems. (HSF.LE.A)
Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. (HSF.LE.A.3)

Concepts	Skills
Quadratic Functions Key Features (x-/y-int, vertex, axis of symmetry) Equivalent Forms Representations of Functions Graphs and Tables	- Write quadratic functions - Graph quadratic functions - Interpret quadratic functions in terms of context - Identify the effect on a graph (f(x)+k, f(x-h), kf(x)) - Compare properties of two functions represented differently

Learning Progressions/Concept Development

1. Compare, contrast, and identify linear, exponential, and quadratic functions.
2. Identify key features of graphs of quadratic functions (x-intercepts, y-intercept, vertex, and axis of symmetry)
3. Evaluate quadratic expressions to make tables and graphs of functions.
4. Graph quadratic functions in standard form.
5. Graph and write quadratic functions in vertex form.

Algebra 1

	Unit 7: Quadratic Functions (23 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 7.17: Reasonable Rent (Putting it all together) • Lesson 7.18: Predicting Diseases (Linear, exponential, and quadratic modeling)	
1	Reflect Unit 6 + Pre-check Unit 7	
2	*Lesson 7.01:* Revisiting Visual Patterns (A new type of pattern)	• I can analyze patterns to determine the output value for a given input value. • I can describe a pattern using words or expressions. • I can compare and contrast linear and non-linear relationships.
3	*Lesson 7.02:* Quadratic Visual Patterns (Expression for quadratic patterns)	• I can write an expression for a quadratic relationship from a pattern. • I can explain that a quadratic expression contains a squared term.
4 P	*Lesson 7.03:* Sorting Relationships (Comparing linear, exponential, quadratic relationships)	• I can determine whether a pattern represents a linear, quadratic, or exponential relationship. • I can observe that a quantity that increases exponentially eventually exceeds a quantity that increases linearly or quadratically. • I can explain that a quadratic relationship has a constant second difference.
**** Concept Dev. Check Point: Students should be able to compare, contrast, and identify linear, exponential, and quadratic relationships***		
5	*Lesson 7.04:* On the Fence (Quadratics in context)	• I can create a table and a graph to model a situation that represents a quadratic relationship. • I understand that a parabola is symmetrical around a line of symmetry. I can justify whether a table or graph represents a quadratic relationship.
6	*Lesson 7.05:* Stomp Rockets (Projectiles and predictions)	• I can use a table and a graph to determine values in a quadratic relationship that represents a situation. • I can compare and contrast the graphs of different quadratic relationships in a situation.
7	*Lesson 7.06:* Plenty of Parabolas (Key features of parabolas)	• I can create the graph of a parabola from a description. • I can describe the key features of a parabola from its graph.
8 P	*Lesson 7.07:* Robot Launch (Key features of graphs in context)	• I can compare properties of a quadratic function represented in different ways. • I can describe connections between the equation, table, description, and graph that represent the same quadratic function.
**** Concept Dev. Check Point: Students should be able to identify key features of quadratic functions (x-int, y-int, vertex, axis of symmetry)***		
9 P	*Lesson 7.08:* What's my graph? (Creating graphs of quadratics)	• I can create the graph of a parabola by evaluating its function at different x-values. • I can describe a strategy to determine if a point is on the graph of a quadratic function
**** Concept Dev. Check Point: Students should be able to evaluate quadratic expressions to make tables and graphs.***		
10 P	*Lesson 7.09:* Two for One (Standard form and factored form)	• I can determine whether a quadratic function is written in standard form, factored form, or neither.

Algebra 1

		• I can create a table and graph from a quadratic function written in standard or factored form. • I can compare and contrast the equation, table, and graph of different quadratic functions written in standard or factored form.
11	*Lesson 7.10:* Interesting Intercepts (Intercepts in factored and standard form)	• I can identify the x- and y-intercepts of a quadratic function from its equation written in factored or standard form. • I can explain how to determine the x- and y-intercepts of a quadratic function written in factored or standard form.
12	*Lesson 7.11:* Parabola Zapper (Graphing parabolas in factored form)	• I can graph a quadratic function written in factored form using its key features. • I can explain how to determine the vertex of a parabola given its equation in factored form.
**** Concept Dev. Check Point: Students should be able to graph quadratic functions from factored form.***		
13	*Lesson 7.12:* Break Through Parabolas (Building quadratics in factored form)	• I can write a quadratic function in factored form given its graph. • I can describe what the value of a in $y = a(x - m)(x - n)$ tells us about a parabola.
14 P	*Lesson 7.13:* Sneaker Drop (Exploring revenue)	• I can compare the key features of quadratic functions represented in a table, equation, and graph. • I can interpret what the key features of a quadratic function mean in a situation.
15 P	*Practice Day 1*	
16	*Sub-Unit Quiz*	
17	*Lesson 7.14:* Vertex Form (Translating Quadratic Functions)	• I can identify the vertex of a quadratic function written in vertex form. • I can write an equation in vertex form for a quadratic function. • I can describe the effect of vertical and horizontal translations on the graph of a quadratic function
18	*Lesson 7.15:* Scaled It! (Vertical scales and vertex form)	• I can describe how scaling vertically changes the graph of a quadratic function. • I can describe how a quadratic equation shows the vertical scale of its parabola.
19	*Lesson 7.16:* Through the Gates (Writing equations of quadratic functions)	• I can write a quadratic function in vertex form or factored form if I'm given its vertex and/or intercepts. • I can describe the key features of a quadratic function written in vertex or factored form.
**** Concept Dev. Check Point: Students should be able to graph write equations of quadratic functions in vertex form***		
20 P	*Practice Day 2*	*Review all success criteria from above*
21	*End-of-Unit Assessment*	

Algebra 1

4 classes/week Pacing Adjustment (18 days)

1	Reflect Unit 6 + Pre-check Unit 7
2	Lesson 1 + Lesson 2
3	Lesson 3
4	Lesson 4 + Lesson 5
5	Lesson 6
6	Lesson 7
7	Lesson 8
8	Lesson 9
9	Lesson 10
10	Lesson 11
11	Lesson 12 + Lesson 13 (optional)
12	Practice Day 1
13	Sub-Unit Quiz
14	Lesson 14
15	Lesson 15
16	Lesson 16
17	Practice Day 2
18	End of Unit Assessment

Block Schedule Pacing Adjustment (12 days)

1	Pre-Check Unit 7 + Lesson 1
2	Lesson 2 + Lesson 3
3	Lesson 4 + Lesson 5
4	Lesson 6 + Lesson 7
5	Lesson 8 + Lesson 9
6	Lesson 10 + Lesson 11
7	Lesson 12 + Practice Day 1 + *(optional) lesson 13*
8	Sub-Unit Quiz
9	Lesson 14 + Lesson 15
10	Lesson 16
11	Practice Day 2
12	End of Unit Assessment

Short on Time:

- Incorporate pre-check questions into specific lessons (see teacher edition pg. 1L)
- Combine Lessons 4 and 5
- Omit lesson 9 (spend time discussing differences between standard and factored form in other lessons)
- Omit Lesson 13
- Omit lesson 17

Unit 7: Notes to my future forgetful self

Algebra 1

Unit 8: Quadratic Equations

Standards

Solve equations and inequalities in one variable. (HSA.REI.B)

Solve quadratic equations in one variable. (HSA.REI.B.4)

Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. (HSA.REI.B.4a)

Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. ~~Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.~~ (HSA.REI.B.4b)

Represent and solve equations and inequalities graphically. (HSA.REI.D)

Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). (HSA.REI.D)

Write expressions in equivalent forms to solve problems. (HSA.SSE.B)

Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* (HSA.SSE.B.3)

Factor a quadratic expression to reveal the zeros of the function it defines. (HSA.SSE.B.3a)

Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. (HSA.SSE.B.3b)

Analyze functions using different representations. (HSF.IF.C.8)

Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. (HSF.IF.C.8)

Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.(HSF.IF.C.8a)

Concepts	Skills
Quadratic Equations Factor Complete the Square Quadratic Formula Equivalent Forms Zeros Symmetry and Vertex	- Factor a quadratic expression - Solve quadratic equations - Transform quadratic expressions using completing the square - Derive the quadratic formula - Solve equations graphically - Explain properties of parts of an expression - Use the process of factoring and completing the square to show key aspects.

Learning Progressions/Concept Development

1. Add, subtract, multiply linear and quadratic expressions.
2. Use factoring to solve quadratic equations and determine x-intercepts of quadratic functions.
3. Use completing the square to solve quadratic equations and rewrite quadratic functions in vertex form.
4. Use the quadratic formula to solve quadratic equations.

Algebra 1

	Unit 8: Quadratic Equations (24 days)	
Day	**Lessons (45 – minutes)**	**Success Criteria**
*	*These lessons are optional* • Lesson 8.17: Sums and Products (exploring sums and products of rational and irrational numbers) • Lesson 8.18: Star Systems (Solving systems of linear and quadratic equations)	
1	Reflect Unit 7 + Pre-check Unit 8	
2	*Lesson 8.01:* Sums and Differences (adding and subtracting quadratic expressions)	• I can add and subtract quadratic and linear expressions. • I can explain what types of expressions can be created when adding and subtracting quadratic and linear expressions.
3	*Lesson 8.02:* Two-Factor Multiplication (Rewriting factored form expressions in standard form)	• I can rewrite a factored-form quadratic expression in standard form. • I can multiply two linear factors. • I can describe connections between factored form, standard form, and area models
4	*Lesson 8.03:* Standard Feature (Patterns in factored-form and standard form expressions)	• I can identify the a-, b-, and c-values in a standard-form quadratic expression. • I can use a factored-form expression to predict what an equivalent expression in standard form will look like.
5	***Extra Practice Day – multiplying polynomials*	
**** Concept Dev. Check Point: Students should be able to add, subtract, and multiply linear/quadratic expressions***		
6 P	*Lesson 8.04:* X-Factor (factoring quadratic expressions)	• I can factor to rewrite a standard-form quadratic expression in factored form. • I can describe strategies for factoring and explain whether a factoring attempt is correct.
7 P	*Lesson 8.05:* Form Up (More factoring quadratic expressions)	• I can factor quadratic expressions in standard form. • I can analyze the structure of an expression in standard form to make predictions about its equivalent expression in factored form.
8	*** Extra Practice Day - factoring*	
9	*Lesson 8.06:* Shooting Stars (Determining x-intercepts of quadratic functions)	• I can determine the x-intercepts of a quadratic function written in factored form or standard form. • I can explain why the x-intercepts of a quadratic function are the same when it is written in different equivalent factored forms.
**** Concept Dev. Check Point: Students should be able to solve quadratic equations by factoring.***		
10	*Lesson 8.07:* Make It Zero (Solving quadratic equations using the zero-product property)	• I understand the zero-product property: if the product of two or more factors is 0, then at least one of its factors is 0. • I can solve a quadratic equation by factoring and using the zero-product property.
11	*** Extra Practice Day – solving by zero product property*	
12 P	*Practice Day 1*	
13	*Sub-Unit Quiz*	
14	*Lesson 8.08:* Zero, One, or Two? (Solving equations by reasoning)	• I can solve a quadratic equation by reasoning. • I can analyze the structure of a quadratic equation to determine if it has zero, one, or two solutions.

Algebra 1

15	*Lesson 8.09:* Graph to Solve (Solving quadratics by graphing)	• I can solve a quadratic equation by graphing. • I can identify the number of solutions to a quadratic equation using its graph.
16	*** Extra Practice Day – Simplify Radicals*	
17 P	*Lesson 8.10:* Couldn't Square Less (Solving by taking the square root)	• I can use square roots to determine the exact solutions of a quadratic equation. • I can write the irrational solutions of a quadratic equation in the form $a \pm \sqrt{b}$
18	*Lesson 8.11:* Square Dance (Perfect square expressions)	• I can determine missing values to make perfect square quadratic expressions.
19	*Lesson 8.12:* Square Tactic (Solving by completing the square)	• I can solve quadratic equations by completing the square. • I can compare and contrast different strategies for solving quadratic equations.
**** Concept Dev. Check Point: Students should be able to solve quadratic equations using square roots and completing the square.***		
20 P	*Lesson 8.13:* Back and Forth (Rewriting quadratic expressions in vertex form)	• I can determine key features of a quadratic function using its equation. • I can complete the square in order to reveal the vertex of a quadratic function.
**** Concept Dev. Check Point: Students should be able to complete the square to reveal the vertex of a quadratic function.***		
21 P	*Practice Day 2*	
22	*Lesson 8.14:* Formula Foundations (Introducing the quadratic formula)	• I can use the quadratic formula to solve quadratic equations written in standard form. • I understand that the quadratic formula is based on the process of completing the square.
23 P	*Lesson 8.15:* Formula Fluency (Solving quadratic equations using the quadratic formula)	• I can use the quadratic formula to solve a quadratic equation.
**** Concept Dev. Check Point: Students should be able to solve quadratic equations using the quadratic formula.***		
24	*Lesson 8.16:* Stomp Rockets in Space (Solving quadratic equations in context)	• I can write a quadratic equation to represent a situation. • I can solve a quadratic equation for a situation
25	*Practice Day 3*	*Review all success criteria from above*
26 P	*End-of-Unit Assessment*	

Algebra 1

4 classes/week Pacing Adjustment (21 days)

1	Reflect Unit 7 + Pre-check Unit 8
2	Lesson 1
3	Lesson 2
4	Lesson 3 + Extra Practice
5	Lesson 4
6	Lesson 5 + extra practice
7	Lesson 6
8	Lesson 7
9	Extra Practice
10	Practice Day 1
11	Sub-Unit 1 Quiz
12	Lesson 8
13	Lesson 9
14	Extra Practice + Lesson 10
15	Lesson 11
16	Lesson 12
17	Lesson 13 + Practice Day 2
18	Lesson 14
19	Lesson 15 + Lesson 16 *(optional)*
20	Practice Day 3
21	End of Unit Assessment

Block Schedule Pacing Adjustment (13 days)

1	Reflect Unit 7 + Lesson 1
2	Lesson 2 + Lesson 3
3	Extra Practice + Lesson 4
4	Lesson 5 + Extra Practice
5	Lesson 6 + Lesson 7
6	Extra Practice + Practice Day 1
7	Sub-Unit Quiz + Extra practice (review simplify radicals – day 16)
8	Lesson 8 + Lesson 9
9	Lesson 10 + Lesson 11
10	Lesson 12 + Lesson 13 *(move practice day 2 to end)*
11	Lesson 14 + Lesson 15 *(omit lesson 16)*
12	Practice Day 2 + Practice Day 3
13	End of Unit Assessment

Short on Time:

- Incorporate pre-check questions into specific lessons
- Combine lessons 2 and 3
- Combine lessons 6 and 7

Unit 8: Notes to my future forgetful self