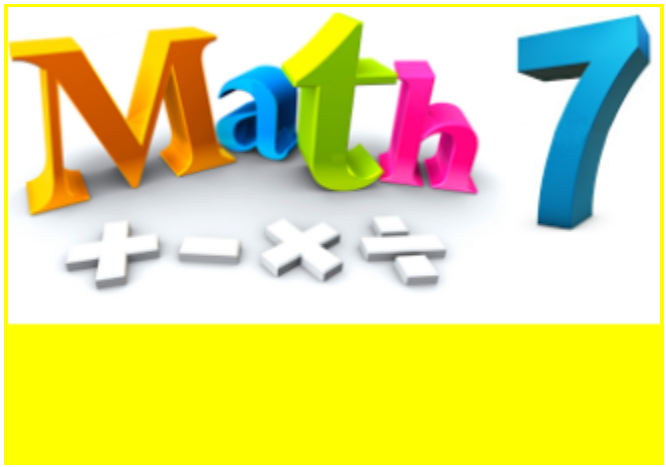
GRADE 7 MATH CURRICULUM



Grade Level(s): Grade 7

Curriculum Author(s): Cate Lyman, Jaime Peterson

Course Description: Math 7 continues to emphasize visual representations of mathematical situations to deepen conceptual understanding and support procedural understanding. Students explore more deeply the concepts of ratios and rates through the topics of scaled copies, proportional relationships, and percents. Students use tables, graphs, and equations to analyze proportional relationships and solve real-world and mathematical problems. Students investigate and develop the formulas for the circumference and area of a circle applying the knowledge of proportional and nonproportional relationships. Students build upon the introduction of integers in the 6th grade to include arithmetic with positive and negative numbers. Students then further the work started in 6th grade with expressions, equations, and inequalities to solve multi-step equations. In the final 2 units, students apply their arithmetic and algebraic skills to the study of triangles, angle relationships, volume and surface area of prisms, probability, and sampling.

Year At A Glance			
Unit Title	**Overarching Essential Question**	**Overarching Enduring Understanding**	**Vision of A Learner "I Can" Statements**
Unit 1: Scale Drawings	How can we use scale copies and scale drawings to represent real-world spaces and solve problems?	Scale copies and Scale drawings are mathematical models that maintain proportional relationships and allow for accurate representation and problem-solving involving real-life dimensions.	TI3(6-8), CCE3(6-8), TCC3(6-8), **AA2(6-8)**, **DE4(6-8)**, P1(6-8)
Unit 2: Proportional Relationships	What does it mean for two quantities to be in a proportional relationship?	Proportional relationships express a constant multiplicative comparison between quantities and can be represented in multiple equivalent ways.	**TCC2(6-8)**, **CCE1(6-8)**, **CCE4(6-8)**, TI3(6-8), AA2(6-8), P3(6-8), DE4(6-8)
Unit 3: Measuring Circles	How do we measure and calculate attributes of circles, and why is it useful?	Understanding the consistent relationship between a circle's dimensions allows us to calculate circumference and area, which are essential for solving real-world problems involving circular shapes.	TCC1(6-8), CCE3(6-8), DE4(6-8), **TI1(6-8)**, **AA2(6-8)**
Unit 4: Proportional Relationships and Percent	How can we use percent and proportional reasoning to solve	Percent problems are rooted in proportional reasoning and help us	**TCC3(6-8)**, TCC4(6-8), **CCE1(6-8)**, DE4(6-8), TI1(6-8), TI3(6-8), AA2(6-8)

	practical problems?	make sense of financial and everyday contexts.	
Unit 5: Operations with Rational Numbers	How do operations with rational numbers help us solve problems involving real-world quantities?	Operations with rational numbers follow consistent rules and allow us to model and solve problems involving gains, losses, changes, and comparisons.	**TCC3(6-8)**, CCE1(6-8), P3(6-8), **DE4(6-8)**
Unit 6: Expressions, Equations and Inequalities	How can algebraic reasoning help us represent and solve real-world problems?	Expressions, equations, and inequalities model relationships and can be used to find unknowns and describe real-world scenarios efficiently.	TCC1(6-8), TCC3(6-8), TCC4(6-8), CCE3(6-8), TI4(6-8), **P3(6-8)**, **AA1(6-8), AA2(6-8),** DE4(6-8)
Unit 7: Geometry and Angles	How do geometric relationships help us understand and solve spatial problems?	Geometric relationships and properties allow us to analyze, measure, and model two- and three-dimensional figures in both mathematical and real-life contexts.	**TCC4(6-8)**, CCE1(6-8), CCE4(6-8), TI1(6-8), TI3(6-8), P3(6-8), DE4(6-8)
Unit 8: Probability and Statistics	How can we use probability and data to make predictions and informed decisions?	Probability models and data analysis help us describe uncertainty, make predictions, and draw conclusions based on evidence.	CCE1(6-8), TI3(6-8), **AA2(6-8)**, AA4(6-8), DE4(6-8)

Unit 1 - Scale Drawings

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

7.G.A.1: Solve problems involving scale drawings of geometric figures.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

- TI3 (6-8): I can compose specific questions that are relevant to a task that support my learning.
- CCE3 (6-8): I can participate in collaborative conversations by listening, formulating questions, making connected comments and providing various types of feedback to my peers.
- TCC3(6-8): I can combine new information with my own ideas to generate solutions.
- **AA2(6-8)**:I can identify past successful strategies and apply them independently.
- **DE4(6-8)**:I can be respectful and responsible and build positive relationships with all members of the school community.
- P1(6-8) I can build my personal tool-box to identify my personal strengths and challenges and develop strategies to practice overcoming any obstacles.

Understandings: Students will understand that…	**Essential Questions:**

• A scaled copy preserves angle measures and side relationships using a constant scale factor. • The scale factor determines the proportional relationship between the side lengths of the original figure and its scaled copy. • Scale drawings use a constant ratio to represent length across dimensions.	• What features must remain consistent for a copy to be considered a scaled copy? • How can we determine the scale factor between two figures? • In what ways does a scale factor affect the size and shape of a figure? • How can scale drawings represent real-world spaces accurately? • What effect does changing the scale factor have on side lengths?
Students will know… • A scaled copy maintains the same shape as the original figure by preserving angle measures and proportional side lengths. • The scale factor is the multiplier applied to each side length to produce a scaled copy. • How to distinguish between a scaled and non-scaled copy by examining side length ratios and angle measures. • That a scale factor greater than 1 produces an enlargement, while a scale factor less than 1 produces a reduction. • Definitions: scale factor, original vs. copy, corresponding angles/segments.	**Students will be able to…** • Identify whether a figure is a scaled copy of another using side ratios and angle measures. • Determine the scale factor between two figures. • Create scaled copies using a given scale factor, both on grid paper and using geometric tools. • Explain why a figure is or isn't a scaled copy using precise mathematical language. • Reason proportionally to solve problems involving scaled figures and drawings. • Identify and draw scaled copies of figures. • Construct and interpret scale drawings (e.g., maps, floor plans). • Calculate actual lengths from scale drawings and vice versa.
Key Vocabulary: scale factor, original, scale drawing, corresponding, actual, reciprocal	

Assessment Evidence

Performance Tasks:
AA2, DE4
Summative Assessment:

- Identifying corresponding sides and angles
- Working with scale factors
- Creating scaled copies of figures
- Converting between actual and scale measurements
- Working with different units (yards, cm, km)
- Using maps with different scales
- Creating and interpreting floor plans
- Solving multi-step problems with scale drawings

Other Evidence:
Checkpoint A- Scaled copies
Exit Ticket requiring creation of a scale drawing
Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
What is a Scaled Copy?	Sort images into scaled vs. non-scaled groups and justify classifications.	7.G.A.1	TI3, CCE3, TCC3, DE4, P1
Drawing Scaled Copies	Use grids to draw scaled copies with given scale factors.	7.G.A.1	TI3, CCE3, TCC3, AA2, DE4, P1
Understanding Scale Factor	Match scale factors with scale drawings and explain relationships.	7.G.A.1	TCC3, CCE3, AA2, DE4, P1
Scaling Perimeter and Area	Investigate how perimeter changes with scale using cutouts.	7.G.A.1	TCC3, TI3, AA2, DE4, P1
Using Scale Diagrams	Interpret and apply scales to solve real-world problems.	7.G.A.1	TI3, CCE3, TCC3, AA2, DE4, P1

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 1
- Family-facing video summaries of each block (Vimeo/YouTube)
- Paper, tracing paper, and patty paper, index cards
- Coordinate grid handouts and rulers
- IXL
- Delta Math

Unit 2 - Proportional Relationships

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

7.RP.A.2, 7.RP.A.2a/b/c: Recognize and represent proportional relationships via ratios, tables, graphs.

7.RP.A.3: Solve multi-step ratio & percent problems using proportional reasoning.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

TCC2(6-8): I can evaluate data gathered from multiple perspectives and draw conclusions.
CCE1(6-8): I can contribute to discussions with my peers/teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully as I apply new knowledge to my thinking.
CCE4 (6-8): I can express my thoughts and ideas, both verbally and in writing, in order to defend my perspective. I can do this via essays, performance-based projects, whole group, and/or small group discussions.
TI3(6-8): I can compose specific questions that are relevant to a task to support my learning.
AA2 (6-8): I can identify past successful strategies and apply them independently.
P3(6-8): I can receive and provide constructive feedback and understand the need to adjust my goals/learning journey.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.

Understandings: Students will understand that… • Proportional relationships have a constant ratio (unit rate). • Representations (table, graph, tape, algebraic) are equivalent. • Many real-world problems can be solved with proportional reasoning.	**Essential Questions:** • What makes a relationship proportional? • How does the constant of proportionality describe the relationship between two quantities? • How do equations, tables, and graphs show the same proportional relationship? • How can we use proportional reasoning for real-world problems?
Students will know… • Equivalent ratios, scale factor • Unit rate / constant of proportionality, proportional relationship • There are multiple equivalent representations of proportional relationships (tables, graphs, equations) • Interpreting the constant of proportionality/unit rate in context • The difference between proportional and non-proportional relationships.	**Students will be able to...** • Use tape diagrams, tables, double number lines to model ratios. • Identify a proportional relationship by analyzing tables, graphs and equations. • Calculate and interpret unit rates/constant of proportionality. • Identify proportional vs. non-proportional relationships. • Solve contextual problems involving recipes and speed.
Key Vocabulary: ratio, proportion, unit rate, constant of proportionality, scale factor, fraction, decimal, percent, equivalent,origin, coordinate plane	
Assessment Evidence	
Performance Tasks: **TCC2, CCE1, CCE4** Summative Assessment: • Identifying and representing proportional relationships in graphs, tables, and equations	**Other Evidence:** CER responses Checkpoint A-Proportional Relationships with Tables Interim Assessment-Proportional Relationships with Equations Checkpoint C-Proportional vs Non Proportional Relationships

• Understanding that proportional relationships pass through origin • Interpreting points on proportional graphs • Solving problems with constant speed • Calculating and interpreting unit rates • Comparing rates using graphs • Completing proportional tables • Finding missing values in proportional relationships • Analyzing temperature conversion formulas for proportionality • Creating and labeling graphs • Writing equations to represent proportional relationships	Checkpoint D-Proportional Relationships with Graphs Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
What Is a Proportional Relationship?	Explore everyday examples using double number lines and tape diagrams.	7.RP.A.2	TCC2, CCE1,TI3, P3, DE4
Representing Proportions with Tables	Create and extend tables to identify and apply constant of proportionality.	7.RP.A.2a	TCC2, CCE1, CCE4, TI3, AA2, P3, DE4
Using Equations to Model Proportions	Write equations to represent proportional relationships.	7.RP.A.2c	TCC2, CCE4, TI3
Comparing Relationships	Compare different representations (tables, graphs, equations) of relationships and identify which representation is most helpful for different situations.	7.RP.A.2a–c	TCC2, CCE4, TI3, CCE1, AA2, P3
Graphing Proportional Relationships	Plot data from tables and identify the origin and unit rate.	7.RP.A.2b	CCE4, TCC2, TI3, AA2
Connecting Representations	Choose and work with appropriate	7.RP.A.2	TCC2, TI3, AA2, CEE4

	representations (tables, equations,graphs) to solve proportional relationships in real world contexts.		

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 2
- Family-facing video summaries of each block (Vimeo/YouTube)
- Coordinate grid handouts and rulers
- IXL
- Delta Math

Unit 3 - Measuring Circles

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

7.G.B.4: Know and apply formulas for circumference & area of circles.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

TCC1(6-8): I can ask relevant questions to evaluate possible solutions.
CCE3(6-8): I can participate in collaborative conversations by actively listening, formulating questions, making connected comments and providing various types of feedback to my peers.
TI1(6-8): I can create a plan with manageable steps to reach my goals.
AA2(6-8): I can identify past successful strategies and apply them independently.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.

Understandings: Students will understand that…	**Essential Questions:**
• Circumference ÷ diameter = constant π. • Area = π × radius².	• How is the circumference related to diameter and π? • Why is the area of a circle πr²?

• Circle formulas apply in contexts like circular tracks, wheels, gadgets.	• How can measurements in circles model real-world contexts?
Students will know… • Definitions of radius, diameter, chord, circumference, area. • The numerical value & significance of π (~3.14 or fraction). • Formulas for circumference ($C = \pi d$ or $2\pi r$) and area ($A = \pi r^2$).	**Students will be able to…** • Identify the appropriate formula and compute circumference & area in exercises and applied problems.
Key Vocabulary: circle, radius, diameter, chord, π, circumference, area, unit².	
Assessment Evidence	
Performance Tasks: **TI1, AA2** Summative Assessment: • Calculating circumference and area of circles • Understanding the relationship between radius and circumference (π) • Finding perimeter and area of composite shapes • Solving real-world problems involving circles • Distinguishing when to use circumference vs. area in context • Working with measurements and approximations • Multi-step problem solving with circles and composite figures	**Other Evidence:** Checkpoint A-Circumference of Circles Exit Slip on Area of Circles Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Exploring Circles	Identify parts of a circle (radius, diameter, chord, center) using diagrams.	7.G.B.4	TCC1, CCE3, DE4
Circumference Formula	Use measurements to justify C = πd and C = 2πr.	7.G.B.4	TCC1,TI1,AA2,CCE3
Radius, Diameter, and Area	Explore how changing radius affects area using sketches and formulas.	7.G.B.4	TCC1,TI1,AA2,CCE3
Understanding A = πr²	Use decomposition to understand and visualize the area formula.	7.G.B.4	TCC1,TI1,AA2,CCE3
Solving Area and Circumference Problems	Apply formulas in real-world problems involving wheels, pizzas, clocks.	7.G.B.4	TCC1,TI1,AA2,CCE3

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 3
- Family-facing video summaries of each block (Vimeo/YouTube)
- IXL
- Delta Math

Unit 4 - Proportional Relationships and Percent

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

- **7.RP.A.1** – Compute unit rates associated with ratios of fractions.
- **7.RP.A.2** – Recognize and represent proportional relationships between quantities.
- **7.RP.A.3** – Use proportional relationships to solve multistep ratio and percent problems.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)

TCC3(6-8): I can combine new information with my own ideas to generate solutions.
TCC4(6-8): I can apply my learning to new experiences, determine if it works, and adjust in the future.
CCE1(6-8): I can contribute to discussions with my peers/teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully as I apply new knowledge to my thinking.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.
TI1(6-8): I can create a plan with manageable steps to reach my goals.
TI3(6-8): I can compose specific questions that are relevant to a task to support my learning.
AA2(6-8): I can identify past successful strategies and apply them independently.

Understandings: Students will understand that…	**Essential Questions:**
• Increases and decreases can be represented as fractions of initial amounts • Proportional relationships involving percent often build upon reasoning with fractional quantities. • Percent represents a ratio out of 100 and can be modeled as a fraction or a decimal. • Percent problems can be solved using proportional reasoning. • Understanding how to work with percent enables informed decision-making in real-world scenarios involving comparisons, discounts, and increases.	• How are percent and proportional relationships connected? • What strategies can help solve multi-step percent problems? • In what ways does using percent help us describe relationships between quantities in everyday life?
Students will know…	**Students will be able to...**
• How to calculate unit rate and constant of proportionality with fractional quantities. • That percent means “per hundred” and can be represented as a fraction, decimal, or ratio. • How to represent percent situations using tables, equations, and tape diagrams. • That proportional reasoning can be extended to percent problems, even when quantities are fractional. • The differences between percent increase and decrease.	• Represent proportional relationships using tables, graphs, verbal descriptions, and equations with fractional quantities. • Use tables, tape diagrams, and double number lines to solve percent problems involving fractional values. • Write and solve equations to represent percent changes. • Explain their reasoning using multiple representations and mathematical language.
Key Vocabulary: Proportional relationship, Constant of proportionality, Unit rate, Percent increase / decrease, Discount, Markup, Tax, Tip	
Assessment Evidence	

Performance Tasks: **TCC3, CCE1** Summative Assessment: • Finding percentages of quantities • Working with percent increase • Calculating discounts and sales tax • Calculating and working with percentages • Finding percent change • Computing markups, discounts, and commissions • Solving multi-step percent problems (e.g., tax after discount)	**Other Evidence:** Interim on Proportional Relationships with Fractions Exit Slips on Percent Increase and Decrease Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Ratios and Unit Rates with Fractions	Students compute scale factors and unit rates associated with ratios of fractions. They solve problems involving constant speed where the distance traveled and elapsed time are both given as fractional values.	7.RP.A.1	TI2, TCC2
Representing and Comparing Proportional Relationships with Fractions	Review proportional relationships involving fractional quantities. Match and interpret tables, graphs, equations, and verbal descriptions of proportional scenarios with fractional	7.RP.A.1, 7.RP.A.2a–c, 7.EE.A.2	TCC3, CCE3

	values		
Introducing Percent	Use real-world contexts to define percent and connect to ratios.	7.RP.A.3	TCC3, CCE1,TI3, AA2, DE4
Percent Increase/Decrease	Solve and represent problems involving price changes.	7.RP.A.3	TI1, TCC4, TCC3, TI3, CCE1
Multi-step Percent Problems	Use strategies to solve problems involving multiple percents.	7.RP.A.3	TCC4, TI1, AA2, TCC3, TI3, CCE1
Real-World Percent Problems	Analyze and solve complex percent tasks involving reasoning.	7.RP.A.3	TCC4, TCC3, TI3, TI1, AA2, CCE1

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 4
- Family-facing video summaries of each block (Vimeo/YouTube)
- IXL
- Delta Math

Unit 5 - Operations with Rational Numbers

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

7.NS.A.1 – Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers.

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

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

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... ("I can" statements to be demonstrated)

TCC3(6-8): I can combine new information with my own ideas to generate solutions.
CCE1(6-8): I can contribute to discussions with my peers/teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully as I apply new knowledge to my thinking.
P3(6-8): I can receive and provide constructive feedback and understand the need to adjust my goals/learning journey.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.

Understandings: Students will understand that...	**Essential Questions:**
• Rational numbers include positive and negative numbers, including fractions and decimals.	• What makes a number rational?

• Rules for operations with integers extend to all rational numbers. • Rational number operations help us solve real-world problems involving gain/loss, credit/debt, elevation, temperature, and more.	• How do operations with rational numbers differ from operations with whole numbers? • How can visual models help us understand operations with negative numbers?
Students will know… • Definitions and examples of rational numbers. • How to add, subtract, multiply, and divide rational numbers, including signed fractions and decimals. • How to apply the properties of operations to rational numbers.	**Students will be able to...** • Use number lines and rules to solve problems involving signed numbers. • Solve real-world problems with rational numbers using all four operations. • Justify operations and solutions with models, equations, or reasoning.
Key Vocabulary: Rational number, Integer, Opposite, Absolute value, Additive inverse, Commutative, associative, distributive properties Product, quotient	
Assessment Evidence	
Performance Tasks: **TCC3, DE4** Summative Assessment: • Working with signed numbers (positive and negative) • Understanding and using the number line with rational numbers • Performing operations with signed numbers (including fractions) • Solving equations with negative numbers	**Other Evidence:** Integer Computation Assessment Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

• Interpreting signed numbers in real-world contexts • Understanding and calculating rates of change with signed numbers • Working with bank transactions and account balances	

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Rational Number Line	Place and compare rational numbers using a number line.	7.NS.A.1	TCC3, CCE1, P3, DE4
Adding/Subtracting Rationals	Model addition and subtraction with number lines and real-world contexts.	7.NS.A.1	TCC3, CCE1, P3, DE4
Multiplying Rational Numbers	Use patterning and models to discover rules for multiplication.	7.NS.A.2a	TCC3, CCE1, P3, DE4
Dividing Rational Numbers	Interpret division using story problems and numeric models.	7.NS.A.2b	TCC3, CCE1, P3
Multi-step Problems	Apply operations in context (banking, temperature, elevation).	7.NS.A.3	TCC3, CCE1, P3

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 5
- Desmos Integer Activities
- Family-facing video summaries of each block (Vimeo/YouTube)
- Number Lines
- IXL
- Delta Math

Unit 6 - Expressions, Equations and Inequalities

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

7.EE.A.1 – Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions.

7.EE.A.2 – Understand that rewriting an expression can reveal relationships between quantities.

7.EE.B.3 – Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers.

7.EE.B.4 – Use variables to represent quantities and construct simple equations and inequalities.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)

TCC1(6-8): I can ask relevant questions to evaluate possible solutions.
TCC3(6-8): I can combine new information with my own ideas to generate solutions.
TCC4(6-8): I can apply my learning to new experiences, determine if it works, and adjust in the future.
CCE3(6-8): I can participate in collaborative conversations by actively listening, formulating questions, making connected comments and providing various types of feedback to my peers.

TI4(6-8): I can identify my strengths and areas for growth, set goals toward improvement, and seek support as needed.
P3(6-8): I can receive and provide constructive feedback and understand the need to adjust my goals/learning journey.
AA1(6-8): I can implement different pathways to success and recognize the pros and cons of each.
AA2(6-8): I can identify past successful strategies and apply them independently.

Understandings: Students will understand that...

- Algebraic expressions can be used to represent and manipulate quantities.
- Equations and inequalities model relationships between variables and constants.
- Solving equations involves finding values that make statements true.

Essential Questions:

- How can expressions, equations, and inequalities represent real-world problems?
- What is the difference between solving and evaluating?
- How does rewriting an expression help you understand a situation?

Students will know…

- How to combine like terms and apply properties of operations.
- How to solve multi-step equations and inequalities.
- How to represent and reason about mathematical situations algebraically.

Students will be able to...

- Construct and manipulate algebraic expressions.
- Solve equations and inequalities involving rational numbers.
- Represent situations using symbols and justify their reasoning.

Key Vocabulary: Expression, Equation, Inequality, Variable, Coefficient, Constant, Inverse operation, Solution

Assessment Evidence

Performance Tasks:
P3, AA1, AA2
Summative Assessment:

- Expanding and factoring expressions
- Combining like terms
- Identifying equivalent expressions
- Finding and correcting errors in algebraic reasoning
- Writing inequalities to represent situations
- Solving inequalities
- Representing solutions on number lines
- Understanding inequality notation and meaning
- Modeling with expressions and inequalities
- Multi-step problems involving:
    - Financial situations (gift cards, purchases)
    - Temperature changes
    - Fuel consumption
    - Time-based scenarios

Key skills assessed include:

1. Converting between verbal and algebraic representations
2. Understanding and using negative coefficients
3. Interpreting solutions in context
4. Working with rational numbers in expressions

Other Evidence:
Checkpoint A-Representing Situations
Checkpoint B-Solving Equations
Mid Unit Assessment
Interim on Inequalities
Interim on Writing Equivalent Expressions
Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Vocabulary of Expressions	Identify and define parts of algebraic	7.EE.A.1	TCC1, TCC3, CCE3, P3, DE4

	expressions.		
Writing Equations	Translate word problems into equations and expressions.	7.EE.B.3	TCC1, TCC3, CCE3, P3,TCC4, TI4, AA1, AA2
Solving Equations	Solve one- and two-step equations using inverse operations.	7.EE.B.4a	TCC1, TCC3, CCE3, P3,TCC4, TI4, AA1, AA2
Solving Inequalities	Represent and solve inequalities using number lines.	7.EE.B.4b	TCC1, TCC3, CCE3, P3,TCC4, AA2
Simplifying Expressions	Use properties to combine like terms and simplify expressions.	7.EE.A.1–2	TCC1, TCC3, CCE3, P3,TCC4, TI4, AA1, AA2

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 6
- Family-facing video summaries of each block (Vimeo/YouTube)
- IXL
- Delta Math

Unit 7 - Geometry and Angles

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

- **7.G.A.1** – Solve problems involving scale drawings.
- **7.G.A.2** – Draw geometric shapes with given conditions.
- **7.G.B.4–6** – Solve problems involving circles, area, surface area, and volume.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)

TCC4(6-8): I can apply my learning to new experiences, determine if it works, and adjust in the future.
CCE1(6-8): I can contribute to discussions with my peers/teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully as I apply new knowledge to my thinking.
CCE4(6-8): I can express my thoughts and ideas, both verbally and in writing, in order to defend my perspective. I can do this via essays, performance-based projects, whole group, and/or small group discussions.
TI1(6-8): I can create a plan with manageable steps to reach my goals.
TI3(6-8): I can compose specific questions that are relevant to a task to support my learning.
P3(6-8): I can receive and provide constructive feedback and understand the need to adjust my goals/learning journey.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.

Understandings: Students will understand that…	**Essential Questions:**
• Angle relationships—such as supplementary, complementary, vertical, and adjacent—help us find unknown angles and support logical reasoning. • Cross sections show the two-dimensional shapes formed when slicing three-dimensional figures and help build spatial understanding. • Geometry helps us describe and analyze real-world shapes and objects. • Area and volume formulas model real-life capacities and spaces.	• How can we use angle relationships to find unknown values? • What do cross sections reveal about three-dimensional figures? • How do geometric models represent real-world spaces? • What can you learn by exploring the properties of shapes? • How can we apply geometric reasoning to solve measurement problems?
Students will know…	**Students will be able to...**
• Types of angles and their relationships: adjacent, vertical, complementary, and supplementary. • Properties of triangles, including angle sums and relationships among parts. • The concept and geometric interpretation of cross sections of solids. • How to calculate area, surface area, and volume.	• Use angle relationships to find missing angle measures. • Determine if given side lengths create a triangle. • Describe and sketch the cross section formed by slicing a three-dimensional figure. • Solve problems involving area, surface area, and volume of two- and three-dimensional figures. • Use reasoning to justify geometric conclusions and communicate thinking.
Key Vocabulary: angle, adjacent, vertical, supplementary, complementary, triangle, cross section, area, surface area, volume, prism, pyramid	

Assessment Evidence

Performance Tasks:
TCC4
Summative Assessment:

- Understanding vertical angles
- Working with supplementary and complementary angles
- Using angle relationships to find missing values
- Understanding triangle conditions and constructions
- Analyzing cross-sections of 3D figures
- Working with pyramids and prisms
- Calculating surface area and volume

Other Evidence:
Checkpoint A-Angle Relationships
Interim on Volume and Surface Area
Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Angle Relationships	Explore and justify relationships among angles (vertical, supplementary).	7.G.B.5	TCC4, CCE4, TI3, TI1, CCE1, DE4
Constructing Triangles	Identify patterns of given side lengths that create triangles.	7.G.A.2	TCC4, CCE1, CCE4, TI1, TI3, P3
Area of 2D Figures	Apply formulas to find areas of triangles, trapezoids, circles.	7.G.B.4	TCC4, CCE1, CCE4, TI1, TI3, P3
Surface Area	Solve problems involving surface area of 3D figures.	7.G.B.6	TCC4, TI1, CEE4, TI3, P3
Volume of Prisms	Calculate volume of right prisms and connect to real-world contexts.	7.G.B.6	TCC4, CCE1, CCE4, TI1, TI3, P3

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 7
- Family-facing video summaries of each block (Vimeo/YouTube)
- Desmos
- IXL
- Delta Math

Unit 8 - Probability and Statistics

Desired Results - Goals, Transfer, Meaning, Acquisition

Established Goals:

- **7.SP.A.1–2** – Understand and use random sampling to draw inferences about populations.
- **7.SP.B.3–4** – Draw informal comparative inferences about two populations.
- **7.SP.C.5–8** – Investigate chance processes, calculate and interpret probabilities.

Standards for Mathematical Practice

- MP1: Make sense of problems and persevere in solving them.
- MP2: Reason abstractly and quantitatively.
- MP3: Construct viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP5: Use appropriate tools strategically.
- MP6: Attend to precision.
- MP7: Look for and make use of structure.
- MP8: Look for and express regularity in repeated reasoning.

Vision of A Learner Attributes: Students will be able to independently use their learning to... (“I can” statements to be demonstrated)
CCE1(6-8), TI3(6-8), **AA2(6-8)**, AA4(6-8)

CCE1(6-8): I can contribute to discussions with my peers/teachers about a variety of topics, respecting differing viewpoints, actively listening to others, and responding thoughtfully as I apply new knowledge to my thinking.
TI3(6-8): I can compose specific questions that are relevant to a task to support my learning.
AA2(6-8): I can identify past successful strategies and apply them independently.
AA4(6-8): I can seek opportunities to learn more and continue to push my thinking.
DE4(6-8): I can be respectful and responsible and build positive relationships with all members of the school community.

Understandings: Students will understand that…	**Essential Questions:**
• Probability helps describe the chance of events occurring. • Random samples support conclusions about larger populations. • Data can be used to compare groups and make informed decisions.	• How can we use data to make predictions? • What does probability tell us about outcomes? • How can random sampling lead to valid conclusions?
Students will know… • How to calculate probabilities and compare likelihoods. • How to use random sampling and understand variability. • How to compare data sets and draw informal inferences.	**Students will be able to...** • Analyze data using measures of center and variability. • Calculate and interpret probabilities of simple and compound events. • Use tools such as tables, lists, and tree diagrams to analyze chance processes.
Key Vocabulary: Probability, Sample space, Random sample, Compound event, Likelihood, Mean, median, and mode	
Assessment Evidence	
Performance Tasks: **AA2, AA4** Summative Assessments: • Understanding populations and samples • Evaluating sampling methods • Making inferences from samples • Recognizing sampling bias	**Other Evidence:** Interim on Single Step Probability Various Thinking Tasks solving systems using Building Thinking Classrooms instructional strategies.

- Estimating population proportions
- Interpreting dot plots and histograms
- Identifying representative samples
- Making predictions from data displays
- Understanding data distributions
- Working with measures of center (mean, median)
- Understanding variability (IQR)
- Comparing data sets using multiple measures
- Making conclusions about meaningful differences between groups

Learning Plan

Lessons	Activities	Standards	Vision Attributes
Understanding Probability	Use spinners and dice to explore probability and outcomes.	7.SP.C.5	CCE1, TI3, AA2, AA4, DE4
Theoretical vs. Experimental	Conduct probability experiments and compare results.	7.SP.C.6	CEE1, TI3, AA4, AA2
Compound Events	Explore compound probability with organized lists and tables.	7.SP.C.7	TI3, AA2, CCE1
Interpreting Data	Analyze collected data and describe likelihood with justification.	7.SP.A.1–2	AA4, TI3, CCE1, AA2

Teacher Resources:

- Illustrative Mathematics Teacher Guide, Unit 8
- Family-facing video summaries of each block (Vimeo/YouTube)
- IXL
- Delta Math