PUBLIC SCHOOLS OF EDISON TOWNSHIP
DIVISION OF CURRICULUM AND INSTRUCTION

LLD MATH

Length of Course:	Full Year
Elective/Required:	Required
School:	Middle Schools
Student Eligibility:	Grades 6-8
Credit Value:	N/A
Date Approved:	8/24/15

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Modifications will be made to accommodate IEP mandates for classified students.

Statement of Purpose

This course of study has been designed for students in special education who struggle significantly with basic computation and problem solving. The course is modified to the child's level with appropriate materials. The resources included will be math software programs, games, manipulatives, and modified supplemental workbooks. Students use the promethean board to manipulative money, calculate totals, and change. Community Based instruction is another component to the class. Students engage in the community with local business to do hands on math learning.

Course Objectives

The student will be able to:

- add and subtract whole numbers with regrouping
- multiply and divide single digits
- problem solving with whole numbers

The student will be able to solve operations with decimals:

- add and subtract 4 digits with regrouping
- multiply and divide decimals
- problem solve with decimals

The student will be able to solve simple one step algebra equations:

- add and subtract one step equations
- multiply and divide
- problem solve algebra equations

The student will be able to measure using standard linear measurements:

- measure using a ruler, measuring tape

The student will be able to compute area and perimeter problems of quadrilaterals and triangles.

- area of quadrilaterals
- area of triangles

The student will identify quadrilaterals and triangles

- name quadrilaterals based upon sides and angles
- name triangles based upon sides and angles

The students will find the rate and unit rates.

The students will identify 3d figures based upon faces, bases, and edges.

The student will be able to: read and understand literature at their level through the use of several reading comprehension strategies.

Timeline

MP 1: Unit 1 Number operations: (solve word problems, area and perimeter, reading and interpreting graphs)

Unit 2: Decimals (addition, subtraction, multiplication, division, and problem solving.)

Calculate money totals and change.

MP2: Unit 3 Numerical operations (addition, subtraction, multiplication, division) Area and perimeter

Unit 4 algebra: writing algebra expressions

Unit 5 Solving algebra equations (solve simple algebra equations with one variable.)

MP 3

Unit 6: Measurement and Geometry

Measurement: linear measurement, Plotting points on Coordinate plane,

Geometry: polygons, name quadrilaterals, name triangles, lines and angles, area and perimeter

Unit 7: Numerical operations

MP 4

Unit 8: Numerical operations: Ratios, rates, and unit rates

Name 3d figures

Find volume and surface area

Whole Numbers, Algebra, Statistics (Chapter 1)

Targeted State Standards: Numerical Operations

Unit Objectives/Enduring Understandings: The student will be able to use whole number operations to simplify expressions and solve equations.

Essential Questions: How do we determine if a number is prime, composite, or neither? How can we apply prime factorization to real life problems?
Why are order of operations rules important?
What is meant by the area of figure?

Unit Assessment: Chapter 1 Extended Response Assessment Chapter 1 Resource Masters, page 53,

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4. 1. 6. A .7 (1,2,3,4) Develop and apply number theory concepts in problem solving situations ● Prime , factors, multiples ● Common Multiples ● Common factors 4.1.6.B1 (1,&7) Recognize the appropriate use of each arithmetic operation in problem solving situations 4.1.6. B.5 (4) Find the squares and cubes of whole numbers 4.1.6.B.6 (7) Check for reasonableness of results of computation 4.1.6B.8 (5,6) Understand and apply the standard algebraic order	1. Solve problems using the 4 step plan 2. Utilize their knowledge of divisibility of numbers to solve real life problems. 3. Find the prime factorization of a number. 4. Determine if a number is prime or composite. 5. Use powers and exponents in expressions. 6. Evaluate expressions using the order of operations. 7. Evaluate algebraic expressions 8. Solve equations by using mental math and the guess and check strategy**.** 9. Find the area of a rectangle and label answers appropriately.	Test for divisibility Choose the correct operation to solve a word problem Identify numbers as even/odd Create factor trees Calculate area of rectangles	Read book “More or Less” Test for divisibility of easy numbers 2, 5, 10 Use colored pencils 100’s chart for divisibility Create noteables for divisibility rules Create prime posters Create composite posters Create graphic organizer of math vocabulary words to problem solve Create factor tree for fill in blank model	IXL.com: prime and composite lesson, order of operations, area and perimeter lessons: check students score Teacher made tests and quizzes Ticket out problems Teacher –check 5- problem mini quiz Open-ended response

Whole Numbers, Algebra, Statistics (Chapter 1) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
of operations for the basic operations including appropriate use of parentheses . 4.1.6. C .4 (7) Determine whether a given estimate is an overestimate 4.2.6.E.2 (8) Develop and apply strategies and formulas for finding perimeter and area: triangle , square, rectangle, parallelogram, and trapezoid. 4.3.6 D 1Solve simple linear equations with manipulatives and informally. 4.3.6D.3 (5,6) Evaluate numerical expressions			Complete order of operations problems with check off list as reference Create own mneumonic for order of operations Use interlocking cubes for area and perimeter Use enlarged graph paper for area and perimeter Tape out rectangle on classroom floor and calculate area and perimeter Use graham crackers to build rectangles and calculate area and perimeter Play game Build an equation Use simple numbers for equations	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Square tiles, graph paper Crayons, markers, Calculators Counters Interlocking cubes Index cards			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Keep a math notebook of key vocabulary words. Use a calculator Use 100's Chart Use masking tape to create rectangle on floor. Let students walk inside to experience area.	

Whole Numbers, Algebra and Statistics (Chapter 2)

Targeted State Standards: Data Analysis, Probability , and Discrete Math Processes

Unit Objectives/Enduring Understandings: Students will be able to analyze and represent statistical information in the form of charts and graphs.

Essential Questions: How can we best understand and represent data? Is a given representation accurate or misleading?

Unit Assessment: Chapter 2 Resource Masters, word problems

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.3.6.C2 (2) Draw free hand sketches of graphs that model reals phenomena and use such graphs to predict and interpret events ● Changes over time ● Relations between quantities ● Rates of Change 4.4.6A1 (1,5, 7b) Collect generate, organize and display data ● Data generated from surveys 4.4.6A 2 (2a, 4, 6, 7) Read, interpret, select, construct, organize analyze, and generate questions about and draw inferences, form displays of data	Identify a bar graph, line graph, and circle graph from a given picture. Identify highest value for each given graph Identify lowest value from each given graph	Identify a line graph, bar graph, and circle graph from a given picture. Identify a given scale and name the interval Answer questions and make predictions based on graphs Identify highest data value Identify lowest data value	Cut and paste activity to label parts of a graph. Read story “Tally O’Mally” Create picture flash cards Provide students with data Model appropriate scales and intervals on sample graphs Provide students with survey question Provide bar graph template Create Mean, Median, Mode, Range posters.	Teacher made quiz/ IXL.com: lessons on mean, median, mode and range Vocabulary test Matching game/ Bingo game Ticket out problem What did I learn today…….. Worksheets, Homework Checks

Whole Numbers, Algebra and Statistics (Chapter 2) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4,.4.6.A3 (3) Respond to questions about data , generate their own hypotheses, and formulate strategies for answering their questions and testing their hypotheses 4.4.6.A4 (2a) Pose problems of various types and levels of ability. 4.5.6 D5 (8) Make and investigate mathematical conjectures. ● Counter examples as a means of disproving conjectures ● Verifying conjectures using informal reasoning or proofs. 4.5.6.F Use technology to gather , analyze, and communicate mathematical information			Create Mean, Median, Mode and Range flash cards	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Sample graphs as reference Computers Graph paper Crayons Rulers Construction paper			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use simple numbers for calculating Mean Provide lower level students Bar graph template Provide lower level students scale Provide age appropriate survey question	

Decimals

Targeted State Standards: Numerical operations

Unit Objectives/Enduring Understandings: The student will be able to compare, order, round, add, and subtract decimals.

Essential Questions: How can you tell if two decimals are equivalent to each other?
What is the difference between a whole number part and decimal parts?

Unit Assessment: Make Number Maps

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.6.A.1 Use real-life experiences physical materials and technology to construct meaning for numbers 4.1.6A.2 (2,3,4,5) Recognize the decimal nature of US currency and compute with money 4.1.6A.8 (2) Compare and order numbers 4.1.6.B 1.(5b) Recognize the appropriate use of each arithmetic operation in problem solving situations	Represent decimals in word form, standard form, and expanded form Identify the value of a given coin and dollar bill Compare and order decimals Round decimals Add and subtract decimals Solve word problems by choosing appropriate method of computation	Represent decimals in word form, standard form, and expanded form Identify the value of a given coin and dollar bill Find total of a given situation and calculate change Compare and order decimals Add and subtract decimals Solve word problems by choosing appropriate method of computation	"Menu Math Activities" "Hamburger Hut" Complete graphic organizers Do hands on lab with place value chart, money, and base ten blocks Use colored pencils to identify digit to round When adding and subtracting decimals use large graph paper to line up decimals. Sing Song for lining up decimals Matching Card game decimal to word form Use place value chart	Teacher made quiz and tests Ticket out Fill in concept map for given decimal What did I learn today…… Check homework daily

Decimals (con't)

Resources: Essential Materials, Supplementary Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings
Use real life receipts Use real life menus Poster paper Play money, Decimal models Place value chart	Use simpler decimal numbers for lower level Use grid paper Use decimal number line Use graph paper to line up decimals when adding and subtracting.

Numerical Operations (A)

Targeted State Standards: The student will be able to multiply and divide decimals, find the perimeter of squares and rectangles, and find the circumference of circle.

Unit Objectives/Enduring Understandings: How do you know that a product will be less than a whole number when multiplying a whole number by a decimal that is less than once?
Why do we move decimal points in division?
What is it meant by the words perimeter and circumference?
When dividing decimals when will the quotient be less than one?

Essential Questions:

Unit Assessment: Chapter 4 resource masters

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.5.A.1 (1a, 2a, 4a) Use real – life experiences , physical materials, and technology to construct meaning for numbers. 4.1.6B.1 Recognize the appropriate use of each arithmetic operation in problem situations. 4.1.6.B6 Check reasonableness of results of computations 4.2.6B.2 (5,6) Develop and apply strategies and formulas for finding perimeter and area	Where to place the decimal point when multiplying and dividing Perimeter is distance around polygon Circumference is distance around circle	Multiply a decimal by a whole number Divide decimals by whole numbers Solve word problem with multiplying and or dividing Find the perimeter of square and rectangles Find the circumference of a circle with calculator	Use calculator to multiply whole numbers and decimals Show promethean lesson on long division Use rulers to find perimeter of bulletin board Find perimeter with cubes and graph paper Read literature story “Sir Circumference”	Teacher made quizzes Tests Homework checks Ticket out problems 3- 5 question mini quiz

Numerical Operations (con't)

Resources: Essential Materials, Supplementary Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings
String Cookies Calculators Rulers Graph paper Colored pencils Teacher made formula sheet	Use cubes for perimeter Use large graph paper Use graphic organizer

Fractions (Chapter 5)

Targeted State Standards: Number and Numerical operations, Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to use number theory and decimal concepts to compare fractions and their representations in various forms.

Essential Questions: How many ways can we represent the same quantity?
How can we use our knowledge of factors and multiples to present fractions?

Unit Assessment: Make a number map using a fraction.

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.6A6 (3,6,7) Use whole numbers , fractions, and decimals to represent equivalent forms of the same number. 4.1.6 A7 (1,4) Develop and apply number theory concepts in problem solving situations. ● Primes , factors multiples, ● Common multiples common factors 4.1.6A 8 (5) Compare and order numbers. Construct , use and explain procedures for performing calculations with fractions and decimals using paper and pencil mental math calculator	Identify a fraction from a given picture Identify the numerator and denominator Create a picture for a given fraction	Identify a fraction from a given picture. Identify the numerator and denominator Create a picture for a given fraction Convert a fraction to a decimal by using calculator Fill in graphic organizer chart of fractions to decimals Memorize Benchmark fractions and equivalents. ½=50%=.50 Read decimals using correct	Use fraction tiles and circle tiles to compare and order fractions Fill- in fraction concept map Read “Hershey story” and do Hershey math activity Read “fraction fun story” Read Apple story/Model cutting apple in half and fourths Complete fraction pizza placemat activity. Compare fractions using paper plates Hands on activity divide 20	IXL.com fraction lessons : Teacher made quizzes and tests Interactive software game Fishy fractions Ticket out problems

Fractions (Chapter 5) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
		place values Separate a half of a candy bar	jellybeans for 4 people Fraction candy activity with M &M candies	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Fraction pizza placemat lesson materials Books Hershey book, Fraction Fun, and Apple fractions Paper plates Markers Index cards			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use fraction tiles Create visuals for each fraction Make picture fraction flash cards	

Fractions (Chapter 6) (A)

Targeted State Standards: Number and numerical operations , Geometry and Measurement , Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to gain an understanding about fractions to solve various problems, including real life situations.

Essential Questions: Why and when would you round fractions in real –life situations?
How do you estimate the sums and differences of problems relating to fractions and mixed numbers?
Why and when would it be useful to add and subtract fractions in real –life situations?

Unit Assessment: Chapter 6 resource masters

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.6.A1 (1,2,3,4,5,6,) Use real-life experiences , physical materials , and technology to construct meanings for numbers. Add and subtract fractions Operations with mixed numbers	Identify a fraction from a given model Identify the numerator and denominator Create a visual model for a given fraction	Identify a mixed number from a picture Create a visual model for a given mixed number Add and subtract fractions with like denominators Simplify fractions / with calculator	Use circle tiles for fractions with mixed numbers / Demonstrate hands on activity with tiles Have students create visuals with candy bars and or pizzas for mixed numbers Have student create fraction monster with circle tiles and add only like fractions first and then with calculator for the total fraction Fill in picture graphic organizers Use paper plates to add fractions with same denominator	Teacher made quizzes Check homework Ticket out Interactive computer games Create math problems on index cards and have peers answer them.
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Use fraction tiles Use fraction circles Use fraction strips Paper plates Markers			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use fraction tiles and fraction strips for lower level students	

Algebra (Chapter 8)

Targeted State Standards: Numerical Operations (4.1)

Unit Objectives/Enduring Understandings: Students will be able to utilize integers to perform operations and solve problems.

Essential Questions: Where do integers exist in real world?
How do you perform arithmetic operations with integers?

Unit Assessment: Chapter 8 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
$.1.6A1 (1) Use real-life experiences, physical materials, and technology to construct meanings of numbers for all integers. Compare and order integers Graph ordered pairs on coordinate plane	Positive numbers are to the right of 0 Negative numbers are to the left of 0	Identify a positive integer vs Negative integer Find the warmest temperature from given data Find the coldest temperature from given data\ Order temperatures with number line from warmest to coldest. Plot points on coordinate plane	Use overhead of thermometer Use overhead of map with temperatures Use bank account activities withdrawal /deposit Use integer number line Track temperature on calendar during winter months Create vocabulary flash cards Plot points on Cartisan Cartoons/ Batman picture	Use integer software game Orbit Integers Teacher made tests /quizzes Homework Ticket out Who is correct problem? Mini quiz
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Newspaper Overhead of thermometer Use computer to track weather Index cards			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use number line	

Algebra: Solving Equations (Chapter 9)

Targeted State Standards: Patterns and Algebra

Unit Objectives/Enduring Understanding: Students will be able to solve algebraic equations and utilize that thinking to extend to functions.

Essential Questions: How can we look at arithmetic problems differently to make them easier to solve mentally?
How do you solve algebraic equations and how will this skill help in real-life types of problems?
How can graphing functions help you understand situations better?

Unit Assessment: Chapter 9 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.6B7 Understand and use the various relationships among operations and properties of operations. 4.3.6A1 Recognize, describe extend and create patterns involving whole numbers and rational numbers. Descriptions using tables, verbal rules, simple equations and graphs1	Methods to facilitate mental computations	Label the parts of an algebraic equation(variable, number, symbol) Solve simple one-step algebra equations Use manipulatives to solve simple one step algebra equations	Create picture flash cards of new vocabulary words Build an algebra equation activity Interactive computer game/Solving simple algebra equations Use balance scale and counters to model simple algebra equations	Teacher made tests and quizzes Ticket out problem Students create their own algebra equation and have peer solve. Homework check
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Counters Balance scale Build an equation activity Use calculator			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use calculator Graphic organizer Use simpler numbers	

Measurement and Geometry (Chapter 12-optional)

Targeted State Standards: Patterns and Algebra

Unit Objectives/Enduring Understandings: Students will be able to solve algebraic equations and utilize that thinking to extend to functions.

Essential Questions: How can we look at arithmetic problems differently to make them easier to solve mentally?
How do you solve algebraic equations and how will this skill help in real life types of problems?
How can graphing functions help you understand situations better?

Unit Assessment: Chapter 12 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.6.D1 (3,4) Select and use appropriate units of measure. 4.2.6.D3 (1,2,5,6) Convert measurements within a system of measurements 4.2.6.D.5 (3,4,6) Use measurements and estimates to describe and compare phenomena	What unit of measure is best to use in a problem situation The meaning of elapsed time	Measure a simple classroom item with ruler/ measuring tape Measure the height of a classmate Measure foot Solve time word problems Identify the best unit of measure. Add and subtract measures of time	Matching activity of clocks to exact time Ask questions about real life and time. For example What time do you wake up? What time does school end? Word problems with time/ Have students use hands on clocks to solve. Use measuring tape to measure foot and body parts. Have students Measure bulletin board and label dimensions.	IXL.com telling time lessons - Check students score Teacher made tests and quizzes Ticket out problems Homework check What did I learn today…..

Measurement and Geometry (Chapter 12-optional) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
			Use "Gallon Man " Activity to solve converting problems Pour liquids into Gallons, quarts, and pints activity.	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Clocks Containers of Gallons, Quarts, pints Measuring tape Rulers/ Tape measure			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Matching Clocks to time activity Use Gallon Man as reference sheet	

Measurement and Geometry (Chapter 13-optional)

Targeted State Standards: Geometry and Measurement

Unit Objectives/Enduring Understandings: The learner will be able to classify and identify angles and polygons.

Essential Questions: How do we know which scale on the protractor to use?
What strategies can be used to estimate an angle measure?
Why can't a right triangle be equilateral?
How can we tell if a figure has symmetry?

Unit Assessment: Chapter 13 resource material

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.6.A .1 (1,3,4) Understand and apply concepts involving line and angles 4.2.6.A2 (4) Identify , describe , compare , and classify polygons and circles 4.2.6.A.3 (6) Identify similar figures 4.2.6.A.4 (5,6) Understand and apply the concepts of congruence and symmetry 4.2.6 E. 1 (5b) Use a translation, a reflection , or a rotation to map one figure onto another congruent figure	A triangle is a 3 sided figure Triangles have 3 angles Identify polygons	Identify different types of angles Measure angles using protractor Estimate measure of angles Name polygons according to number of sides	Read book "The Greedy Triangle" IXL.com- name the triangle lesson Classify Triangle lesson : Cute and paste triangle in correct category Measure angles in classroom with pipe cleaners/ fill-in graphic organizer acute, right, obtuse, or straight Paper plate wedges mini lab activity Use protractor to measure angles activity Polygon picture graphic organizer with definitions	IXL.com complete triangle lessons Teacher made quizzes/tests Homework check Mini quiz Ticket out

Measurement and Geometry (Chapter 13-optional) (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
			Create picture flash cards of polygons and definitions. Build Polygons with toothpicks and marshmallows	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Pipe cleaners Read book "The Greedy Triangle" Protractors			**Instructional Adjustments:**	

Numerical Operations (B)

Targeted State Standards: Numerical Operations

Unit Objectives/Enduring Understandings: Students will be able to implement a problem solving plan to solve problems with variables exponents , number operations and basic algebra concept.
Students will be able to solve numerical problems using exponents, variables, order of operations, and algebraic skills.

Essential Questions: Where do patterns exist in real world?
How can knowledge of patterns help in real –life situations?
How does a 4 –step plan help in problem solving?

Unit Assessment: Chapter 1 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7A1 (2) Extend understanding of the number system by constructing meanings for the following : rational numbers, whole numbers with exponents 4.1.7.A4 (2) Compare and order numbers of al named types 4.1.7A4 (2) Use exponent to find whole number powers of numbers 4.3.7D3 (3,4) Create , evaluate, and simplify algebraic expressions involving variables. Order of operations including appropriate use of parenthesis. Substitution of a number for a variable	Exponents are used as repeated multiplication Problems are to be solved using specific order know at the order of operations. Variables represent “unknown”	Solve simple order of operation problems Evaluate simple one –step algebra equations Solve exponents for standard form, expanded form, and exponential form	Exponent graphic organizer Use carrot button in calculator as “short –cut” Use mnemoic Please excuse my dear aunt sally Have students build algebra equations with index card activity Play interactive software games with alg. Equations Create an order of operations check off list	Teacher quizzes. / tests Homework checks Mini quiz Who is correct problem? What did I learn today?

Numerical Operations (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.5.7A3(1,2,3,4,5,7)7 Select and apply a variety of appropriate problem solving strategies to solve problems 4.5.7A3(1,2,3,4,5,7)7 4.5.7.B1 Use communication to organize and clarify their mathematical thinking. Reading and writing Discussion , listening , and questioning 4.5.7.C1(1,4,7) Recognize recurring themes across mathematical domains. 4.5. 7 C 4 Apply mathematics in practical situations and in other disciplines. 4.5. 7 C 4 4.5. 7 D 6 (3,5) Evaluate examples of mathematical reasoning and determine where they are valid. 4.5.7 F4 (2) Use calculators as problem solving tools.)			Create order of operations posters as reference.	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Computers Index cards Graphic organizers Calculators			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use calculators Use simple numbers	

Integers and Algebra (Chapter 3)

Targeted State Standards: Numerical Operations (Whole numbers) (4.1)

Unit Objectives/Enduring Understandings: Students will be able to utilize integers to perform operations and solve problems.

Essential Questions: Where do integers exist in real world?
How do you perform arithmetic operations with integers?
How can knowledge of a coordinate plane help in real –life situations?

Unit Assessment: Chapter 3 resources

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7.A7 (2) Compare and order numbers of all types. 4.1.7B3 (7) Understand and apply the standard algebraic order of operations, including appropriate use of parentheses. 4.2.7 C1 (3) Use coordinates in four quadrants to represent geometric concepts. 4.3.7 D1 (1,4,5,6) Use graphing techniques on a number line. Absolute value. 4.3.7D3 (1,4,5,6,7) Create, evaluate , simplify algebraic expressions involving variables. Order of operations, including appropriate use of parenthesis. Substitution of a number for a variable.	The existence and purpose of numbers less than zero Numbers have additive inverses A coordinate plane is the intersection of two number lines.	Identify a positive from a negative number Compare and order integers Add integers Plot and identify points on a coordinate plane	Play Interactive game “Orbit Integers” Bank account activity Balancing a Checkbook Given $100 for Holiday activity/project Use overhead of thermometer and discuss warm/cold temperatures. Interactive Computer Game “Catch the Fly” or “Locate the Alien” for coordinate plane lessons Play Battle ship lesson online Model adding integers with + and – counters	Teacher made tests/quizzes Homework check Ticket out problems Who is correct problem? What did I learn today?

Integers and Algebra (Chapter 3) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7.A7 (2) Compare and order numbers of all types. 4.1.7B3 (7) Understand and apply the standard algebraic order of operations, including appropriate use of parentheses. 4.2.7 C1 (3) Use coordinates in four quadrants to represent geometric concepts. 4.3.7 D1 (1,4,5,6) Use graphing techniques on a number line. Absolute value. 4.3.7D3 (1,4,5,6,7) Create, evaluate , simplify algebraic expressions involving variables. Order of operations, including appropriate use of parenthesis Substitution of a number for a variable. 4.3.7D4 (4,6) Understand and apply the properties of operations, numbers, equations, and inequalities. Additive inverse. 4.5.7A.3 (1,2,3,4,5,6,7,) Select and apply a variety of appropriate problem solving strategies to solve				

Integers and Algebra (Chapter 3) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
problems. 4.5.7 B2 (1,2,3,4,5,6,7) Communicate their mathematical thinking coherently and clearly to peers, teachers, and others both orally and in writing. 4.5.7 C5 (1) Trace the development of mathematical concepts over time and across cultures. 4.5.7.E1 (4,5,6,7) Create and use representations to organize, record, and communicate mathematical ideas. Concrete representations.				
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Play money Thermometer overhead Number line Bank account withdrawal and deposit tickets Enlarged Coordinate plane poster Calculator			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use number line and label positive numbers, and negative numbers. Enlarged graph paper	

Integers and Algebra (Chapter 4)

Targeted State Standards: Patterns and Algebra (4.3)

Unit Objectives/Enduring Understandings: Students will be able to solve algebraic equations and inequalities. Students will be able to utilize thinking skills to extend to graphing functions and determining slope.

Essential Questions: How do you solve algebraic equations and how will this skill help in real-life types of problems?
How can graphing functions and /or determining slope help you understand situations better?

Unit Assessment: Chapter 4 resources

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.7C1 (6,7) Use coordinates in four quadrants to represent geometric concepts	Integers on a thermometer Weather degrees	Read a thermometer and weather map	Play Billy the Bug Coordinate game on computers IXL.com Complete 15 problems and check Play Battle Ship board game Show coordinate plane lesson from promethean planet	IXL.com - complete 20 problems and record results Coordinate plane quiz Name the quadrant quiz
Resources: Essential Materials, Supplementary Materials, Links to Best Practices			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Fractions

Targeted State Standards: Number and Numerical Operations, (percents, fractions, and decimals)Mathematical processes

Unit Objectives/Enduring Understandings: Students will be able to apply their knowledge of fractions, decimals and percents to solve various problems, including real –life situations.

Essential Questions: When would you need to convert fractions into decimals and percents and vice versa in real –life situations?
What are two ways that you could find the least common multiple (LCM) in a set of numbers?
How do you compare and order fractions, decimals, and percents?

Unit Assessment: Chapter 5 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7.A1 (5,6,8) Extend understanding of the number system by constructing meanings for the following : Rational numbers, percents, whole numbers and exponents, 4.1.7 A 3 (5,6,8) Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations. 4.1.7 A 3(5,6,8) 4.1.7 A 3 (5,6,8) Use whole numbers fractions, decimals, and percents, to represent equivalent forms of the same number. 4.1.7.A6 Understand that all fractions can be represented as repeating or terminating decimals.	A terminating decimal vs. repeating decimal Bar notation is used for repeating decimals A ratio is a comparison of two numbers by division When a ratio compares a number to 100 it can be written as a percent. To write a percent as a decimal divide the percent by 100 and remove the percent sign To write a decimal as a percent , multiply the percent by 100 and add a percent sign.	Convert fractions to decimals by using calculator Convert decimal to percents by moving decimal point or x100 Create visual for fraction, decimal, and percent Compare and order fractions Write a ratio for a given visual	Hands-on activity have students separate 20 cookies for 4 people Use calculator to teach terminating and repeating decimals with graphic organizers Use pizza placemat activity / paper plates to represent fractions Students can compare and order pizza plates from least to greatest. M&M ratio lab activity Shade in 100’s grids to represent percents	Teacher made quizzes Tests Homework check Ticket out problems Shade in 25%, 50%, or 75% of circle problems.

Fractions (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7.B2 7 Use exponentiation to find whole number powers of numbers 4.5A1 (4,5,6,7,8) Learn mathematics through problem solving, inquiry, and discovery. 4.5 B1 (4,5,6,7,8) Use communication to organize and clarify their mathematical thinking. 4.5 C3 (4,5,6,7,8) Recognize that mathematics is used in a variety of contexts outside of mathematics.	**To write a decimal as a percent, multiply the percent by 100 and add a percent sign.**			
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Paper plates M &m Candies			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Calculator	

Fractions (Chapter 6) (B)

Targeted State Standards: Patterns and Algebra : Geometry and Measurement

Unit Objectives/Enduring Understandings: Students will be able to apply their knowledge of fraction operations to solve equations and geometric operations.

Essential Questions: How can we solve for variables within a fraction equation?
How can we describe and measure geometric figures?

Unit Assessment: Chapter 6 Resources

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.3.7.C1 (5) Use patterns, relations, symbolic algebra, and linear functions to model situations . Using manipulatives, tables, graphs, verbal rules, algebraic expressions/ equations/ inequalities 4.2.7.A1 (8) Understand and apply properties of polygons. Quadrilaterals , including squares, rectangles, parallelograms, trapezoids, rhombi, Regular polygons Develop and apply strategies for finding perimeter and area.	Solve simple algebra equations Find the perimeter s and areas of figures Find the circumference	Solve simple algebra equations Find the perimeter and area of squares and rectangles Label the correct vocabulary of a circle, diameter, radius, circumference	Read book “Sir Circumference” Find perimeter of classroom using measuring tape. Use enlarged graph paper and find area and perimeter of rectangles and squares Find perimeter of bulletin board and desk using measuring tape. Build rectangle and squares with interlocking cubes find area by counting inside of figure Label circle diagram and complete cookie lab with string to calculate circumference of a circle	Teacher made tests and quizzes Homework checks Ticket out problems
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Cubes Book sir circumference Graph paper			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Enlarged graph paper Create rectangles for lower students	

Proportional Reasoning (Chapter 7)

Targeted State Standards: Number and Numerical Operations, Geometry and Measurement, Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to gain an understanding about ratios, proportions, and percents to solve various problems, including real-life.

Essential Questions: Why and when would you use ratios, proportions, and percents to solve various problems, including real-life situations?
How do we determine whether ratios are equivalent to one another?
Why and when would it be useful to determine unit rates in real-life situations?

Unit Assessment: (To be determined)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7A1 (5,6,7,8) Extend understanding of the number system by constructing meanings for the following: Rational Numbers, Percents , Whole numbers. With exponents 4.1.7A3 (1,2,3,4,5,6,7,8,) Understand and use rations, proportions, and percents (including percents larger than 100 and less than 1) in a variety of situations 4.1.7.A5 (1,5,6) Use whole numbers fractions, decimals, and percents to represent equivalent forms of the same number.	A ratio compares two quantities A ratio can be written 3 ways A rate compares two different quantities	Define and name ratios 3 ways Define rates	Unit rate circular project Ratio skittle activity Set up school store in class and have students role play cashier and shopper. Have students model 3 pencils for $1.50 How much for 1?	Teacher made tests Quizzes Homework checks Ticket out problems What did I learn today
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Store circulars Calculators Scissors Tape Poster paper Use play money			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Use simple numbers for low level students 3 sodas for $3.00/ 1 soda $1.00	

Proportional Reasoning (Chapter 8)

Targeted State Standards: Number and Numerical Operations, Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to apply their knowledge of percents to solve various problems, including real-life situations?

Essential Questions: Why and when would you estimate percents by using fractions and decimal in real-life situations?
How do you use sampling to collect data ? What are some occupations that deal with sales tax, discounts, and simple interest?

Unit Assessment: (To be Determined)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7A1 (1,2,3,4,5,6,7) Extend understanding of the number system by constructing meanings for the following: Rational numbers, Percents, Whole numbers, with exponents. 4.17A3 (1,2,3,4,5,6) Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations. 4.1.7C1 (1) Use equivalent representations of fractions, decimals, and percents to facilitate estimation. 4.5 A1 (1,2,3,4,5,6,) Learn mathematics through problem solving inquiry , and discovery.	Various ways to estimate a percent, include using fractions and decimals	Find Simple percents off an item Benchmark fractions –percents ¼, ½, ¾	Hands-on set up classroom store and have items ½ =50%off Have students calculate discount with calculator and subtract from original amount Circular project find 3 items and find 50% off each item	Teacher made tests and quizzes Homework checks Project Ticket out Benchmark fraction quiz
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Circulars Calculators			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Play money	

Geometry and Measurement (Chapter 10)

Targeted State Standards: Geometry and Measurement Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to use inductive and deductive reasoning about angles and lengths to make conjectures about geometric figures. Students will use geometric tools such as protractors and compasses to visually represent data or geometric figures. Students will be able to perform transformations on a coordinate plane.

Essential Questions: How can we best classify geometric figures?
How can we use proven information to make conjectures or solve missing information or measurements?
How do transformations change the location of geometric figures on the coordinate plane?

Unit Assessment: Chapter 10 resource masters

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7A3 (6) Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations 4.2.7A 1(5,7) Understand and apply properties of polygons including quadrilaterals.	Measure angles Classify angles Classify parallel lines and discover angle relationships	Match vocabulary word with picture Classify angles by degrees Classify lines Measure angles using a protractor Sort and label triangles based upon sides and angles Name triangles Name quadrilaterals based upon angles and congruent sides	Measure angles with protractors/ Promethean Board Lesson Interactive angles Read the story “The Greedy Triangle” Create picture flash cards of vocabulary Use picture graphic organizer for triangles Sort Triangle activity based upon sides and angles. Use graphic organizer for quadrilaterals Sort quadrilateral activity based upon angles and sides	Teacher made quizzes/ tests Homework checks Ticket out problems

Geometry and Measurement (Chapter 10) (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
			Use raw spaghetti to make posters of parallel, intersecting, and perpendicular lines Have students draw square, rectangle, parallelogram, rhombus, . Review what the shapes should look like.	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Quadrilateral shape guide Protractors Manipulatives/ Index cards			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Color code Triangles	

Geometry and Measurement (Chapter 11)

Targeted State Standards: Geometry and Measurement : Mathematical Processes

Unit Objectives/Enduring Understandings: Students will be able to find the area of various figures and make connections between their formulas?

Essential Questions: How do you know how much space is in a figure?
How can you use information you know to solve a more complex problem?

Unit Assessment: Chapter 11 Resource Materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.7 B1 (1,2,6) Use and explain procedures for performing calculations with integers and all numbers types. 4.2.7 E1 94, 5a, 5, 7, 8) Perimeter and area of Geometric figures 4.5. 7 E1 (3,3a, 4, 5a, 5, 6) Create and use representations to organize, record, and communicate mathematical ideas . 4.5.7F4 (1,2,6) Use calculators as problem solving tools.	How to calculate perimeter of a square and rectangle Find the area of a square and rectangle	Find area and perimeter of squares and rectangles Label parts of triangle and parallelogram Find area of triangles	Read " The Greedy Triangle" Use enlarged graph paper to calculate area and perimeter of squares and rectangles Use interactive promethean board lesson on area of squares and rectangles. Tape a large rectangle on floor label sides, and calculate area and perimeter	Teacher made tests and quizzes Homework checks Ticket out problems
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Graph paper Calculators			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Geometry and Measurement (Chapter 12)

Targeted State Standards: Geometry and Measurement

Unit Objectives/Enduring Understandings: The student will be able to draw three dimensional figures and find the volume and surface area of rectangular prisms and cylinders.

Essential Questions: Why is surface area in square units and volume in cubic units?
What is the difference between surface area and volume and how do we know which one we will need?

Unit Assessment: Chapter 12 Resource Materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.7A 2 (1) Understand and apply the concept of similarity with models of 3 D objects 4.2.6 E .3 (2,3,4,5,) Develop and apply strategies and formulas for finding the surface area and volume of rectangular prisms and cylinders	Classify and name 3-D figures Draw 2-D figures Classify and name 2-D figures	Draw 3-D figures Name and classify 3-D figures Draw 2-D figures Classify and name 2-D figures	Build 3-D figures with toothpicks and marshmallows discuss new vocabulary. Fill-in picture vocabulary sheet for 3-D figures Bring in cans and models of 3-D shapes from home Create a 3-D museum in class	Teacher-made tests and quizzes Homework check Ticket outs
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Graph paper			**Instructional Adjustments:** Modifications, student difficulties, possible Toothpicks Marshmallows Graph paper misunderstandings	

Real Numbers and Algebra: Algebra and Integers (Chapter 1)

Targeted State Standards: Number and Numerical operations, patterns, and algebra, Mathematical processes.

Unit Objectives/Enduring Understandings: Integers are an important concept for present and future use in algebra.

Essential Questions: What do integers represent?
What strategies can be used to solve problems?

Unit Assessment: Chapter 1 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.5.8 A2 Solve problems that arise in mathematics and in other contexts ● Open-ended problems ● Non-routine problems ● Problems with multiple solutions ● Problems that can be solved in several ways 4.5.8 A 3 Select and apply a variety of appropriate problem solving strategies to solve problems. 4.1.8 B 5 Understand and apply the standard algebraic order of operations, including appropriate use of parentheses. 4.3.8 D 4 Create, evaluate, and simplify algebraic expressions involving variables. ● Order of operations , including appropriate use of parentheses	Identify the integer that represents the given situation Order positive whole numbers Find the opposite for a given integer Order integers least to greatest with a number line Compare integers using >,<, or = signs.	Identify a positive integer from a negative integer Compare and order integers Solve simple order of operation problems Find the coldest temperature from a given data Find the warmest temperature from a given data	Use interactive promethean board lesson on integers Play interactive game “Orbit Integers” Use number line on floor to use hands on approach to positive and negative integers. Use overhead of thermometer Use map showing temperatures of colder and warmer states Use banking account lesson to model deposit and withdrawal	Teacher made tests and quizzes Bank account project Ticket out problems Who is correct problems?

Real Numbers and Algebra: Algebra and Integers (Chapter 1) (con't)

Targeted State Standards: Number and Numerical operation, patterns, and algebra, Mathematical processes.

Unit Objectives/Enduring Understandings: Integers are an important concept for present and future use in algebra.

Essential Questions: What do integers represent?
What strategies can be used to solve problems?

Unit Assessment: Chapter 1 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
• * Substitution of a number for a variable • Translation of a verbal phrase or sentence into an algebraic expression, equation, or inequality, and vice versa. 4.1.8B 1 Use and explain all procedures involving integers				
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Deck of playing cards Dice Number line			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Algebra Rational Numbers: Rational Numbers (Chapter 2)

Targeted State Standards: Patterns and algebra

Unit Objectives/Enduring Understandings: Students will understand that in basic algebra rational numbers are used to expression fractions and decimals.

Essential Questions: What is a rational number and how is it formed? When are rational numbers equivalent? What strategies can be used to solve fractional problems?

Unit Assessment: Chapter 2 Materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.8. 1 B 1 Use and explain procedures for performing calculations involving addition, subtractions, multiplication, division, and exponentiation with integers and all types of numbers with: ● Pencil and paper ● Mental Math 4.8.1B2 Use exponentiation to find whole number powers of numbers 4.3.8 A 1 Recognize, describe , extend and create patterns involving whole numbers, rational numbers, and integers * Arithmetic sequences Geometric sequences 4.3.8C2 Use patterns, relations, and symbolic algebra, and linear functions, to model situations.	Write benchmark fractions, as a decimal and percent Plot integers on a number line Compare and order integers on whole numbers Solve problems with exponents Add subtract like fractions	Write benchmark fractions as decimals, and percents Plot numbers on a number line Compare and order integers and whole numbers Evaluate expressions with powers and exponents Add and subtract fractions with like denominators Add and subtract fractions with unlike denominators using a calculator	Matching game fraction to decimals Create flash cards of fraction, decimal, and percent equivalent Use post –its and a large number line to plot numbers on the board Use Promethean lesson on integers compare and ordering Use interactive software games “Orbit Integers”	Teacher made tests and quizzes Homework check Ticket out problems

Algebra Rational Numbers: Rational Numbers (Chapter 2) (con't)

Resources: Essential Materials, Supplementary Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings
Use fraction tiles Number line Post –its notes Index cards	

Real Numbers and Algebra: Real Numbers and the Pythagorean Theorem (Chapter 3)

Targeted State Standards: Patterns, and Algebra, Geometry and Measurement

Unit Objectives/Enduring Understandings: Students will understand that evaluating and estimating square roots area essential skill to be used in algebra wok such as the Pythagorean Theorem.

Essential Questions: What is the relationship of squares and square roots? What is the difference between rational and irrational numbers? Who was Pythagoras and why is his theorem so important?

Unit Assessment: Chapter 3 Resource Materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.8A 1 Extend understanding of the number system by construction meaning for the following: Exponents Roots 4.1.8A2 Demonstrate a sense of the relative magnitude of numbers 4.1.8A7 Construct meanings for common irrational numbers such as pi and the square roots of 2 4.18 B 3 Find square and cube roots of numbers and understand the inverse nature of powers and roots. 4.1.8B 1 Use and explain procedure for performing calculations involving addition, subtraction, multiplication, division and exponentiation with integers	Name an integer Plot integers on a number line Compare and order integers with a number line provided	Graph real numbers on a number line Compare and order real numbers Estimate to nearest whole numbers Name the parts of a circle Calculate pi using calculator	Read short story “Sir Circumference” Use paper plates to measure pi / with string Use cookies to calculate pi, diameter, and radius Plot numbers on a number line and compare using >,<, or = Order integers with a number line provided Play interactive software games with comparing and ordering integers Add integers with colored counters Order integers from least to greatest on desk with index	Teacher made tests and quizzes Ticket out problems What did I learn today?

Real Numbers and Algebra: Real Numbers and the Pythagorean Theorem (Chapter 3) (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
and all types of numbers with: ● Pencil and paper ● Mental math 4.1.8C 1 Estimate square and cube roots of numbers 4.2.8 A2 Understand and apply the Pythagorean Theorem.			cards Play War game with integer cards	
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Playing cards Paper plates Index cards Number line			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Proportional Reasoning

Targeted State Standards: Number and Numerical Operations, Geometry and Measurement , Mathematical Processes

Unit Objectives/Enduring Understandings: Students will understand that ratios and proportions can be used to find missing lengths and perform indirect measurements.

Essential Questions: How can ratios and proportions be used to solve problems? What makes polygons mathematically similar?
Chapter 4 resources

Unit Assessment: (What is the authentic evidence that students have achieved the targeted standards/unit objectives?)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	Concepts *What students will know.*	Skills *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.8 BA5 Use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same number. 4.1.8 B 1Use and explain procedures for performing calculations involving addition, subtraction, multiplication, division and exponentiation, with integers and all number types named above with ● Pencil and paper ● Mental math ● Calculator 4.1.8 B 4 Solve problems involving proportions and percents 4.2.8A 4 Understand and apply the concept of similarity. Using proportions to find the missing measures Scale drawings	Define ratio Find the ratio for a given situation Write ratio 3 different ways Find a rate and unit rate	Express ratios as fractions Simplify ratios as fractions with calculator Find the ratio for a given situation Find simple rate and unit rates with a calculator	Skittle ratio activity Rate and unit rate circular project Interactive unit rate activities on computer Find the ratio computer games Promethean interactive lesson on ratios and unit rates	Bring in an item from circular and find the unit rate Teacher made tests and quizzes Ticket out problems

Proportional Reasoning (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.8 D 6 Solve problems that involve compound measurements units, such as speed (miles per hour) air pressure (pounds per square inch) and population density (persons per square mile) 4.5.8 B 3 Analyze and evaluate the mathematical thinking strategies of others.				
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Circulars Candies Manipulatives Calculators			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Proportional Reasoning: Percents (Chapter 5)

Targeted State Standards: Number and Numerical operations , Patterns and Algebra, Mathematical processes

Unit Objectives/Enduring Understandings: Students will understand that using percentages in various ways can help understand real world situations.

Essential Questions: What is the relationship of ratios, fractions, decimals, and percents? How can ratios, fractions, decimals, and percents be applied to problem solving? What does a given percent of change represent?

Unit Assessment: (What is the authentic evidence that students have achieved the targeted standards/unit objectives?)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.1.8A 1 Extend understanding of number system by constructing meanings for the following ● Rational numbers ● Percents 4.1 8 A 3 Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations. 4.1 .8 A5 Use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same number. 4.1. 8 B1 Use and explain procedures for performing calculations involving addition, subtractions, multiplication division, and exponentiation with integers and all number types named above with ● Pencil and paper ● Mental math	Write ratios as fractions 50 shaded boxes means 50% Shade in percents from 100's grids	Write ratios as percents Write percents as fractions Find 50% off a n item Find 10% off an item	Students will shade in 100 grids to represent percents Circular Discount project Find 50% Holiday shopping Graphic organizers Read Hershey Fraction story Use paper plates to represent fractions and equivalents Play memory match game with a equivalent fraction, decimal and percent	Teacher made tests and quizzes Ticket out problems Show 50% represented as a visual What did I learn today?

Proportional Reasoning: Percents (Chapter 5) (con't)

	Core Content		Instructional Actions	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
• Calculator 4.1.8 B 4 Solve problems involving proportions and percents. 4.1.8C2 Use equivalent representations of numbers such as fractions, decimals, and percents to factilate estimation. 4.1.8C 3 Recognize the limitations of estimation and assess the amount of error resulting from estimation.				
Resources: Essential Materials, Supplementary Materials, Links to Best Practices 100's square grids Food shopping circular adds Calculators			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings	

Geometry (Chapter 6)

Targeted State Standards: Geometry and Measurement

Unit Objectives/Enduring Understandings: Students will understand that lines and line segments can be manipulated to form different geometric figures on a plane. Students will understand the effects of transformations on the orientation of a figure on the coordinate plane.

Essential Questions: How do lines and angles relate to each other? How does a polygon's classification relate to its sides and angles? How would you use symmetry, reflections, translations, and rotations?

Unit Assessment: Chapter 6 resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.2.8 A Understand and apply concepts involving lines, angles and planes. *Complementary angles and supplementary angles Vertical angles 4.2.8 a 3 Understand and apply properties of polygons ● Quadrilaterals including squares, rectangles, parallelograms, trapezoids, rhombi 4.2.8 A 3 Understand and apply properties of polygons ● Sum of measures of interior angles of a polygon ● Regular polygons ● 4.2.8 B1 Understand and apply transformations reflections,	Name and classify angles Name and classify triangles Name and classify quadrilaterals	Name and classify angles Name and classify triangles Name and classify quadrilaterals Measure angles with protractor Determine if a figure has line symmetry Calculate the missing angle measure	Read "The Greedy Triangle" Classify angles in room with pipe cleaners Make posters of angles Sort triangles according to sides and angles. Sort quadrilaterals according to pairs of parallel lines Measure angles with protractors Symmetry lesson on promethean board Calculate missing angle measure with calculator and written steps Make picture flash cards of new vocab.	IXL.com : lessons on triangles, quadrilaterals: Check students score online Teacher made tests and quizzes Ticket out problems What did I learn today Draw an acute equilateral triangle Draw a parallelogram

Geometry (Chapter 6) (con't)

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
rotations and translations, result in images congruent to the pre-image 4.2. 8 C 2 Use coordinate in four quadrants to model and quantify transformations				
Resources: Essential Materials, Supplementary Materials, Links to Best Practices Calculator The Greedy Triangle book Protractors Index cards			**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings Make picture flash cards of triangles Make picture flash cards of angles, and quadrilaterals	

Geometry and Measurement

Targeted State Standards: Geometry and measurement

Unit Objectives/Enduring Understandings: Students will understand difference between 2 D and 3 D geometric figures. Students will understand that formulas can be used to measure geometric figures.

Essential Questions: In general terms what is volume and how does it differ from area? Is there more than one way to find the area of an irregular figure? What are the basic strategies for using any formula? When would you need to find the surface area of a solid?

Unit Assessment: Chapter 7 Resource materials

	Core Content		**Instructional Actions**	
Cumulative Progress Indicators	**Concepts** *What students will know.*	**Skills** *What students will be able to do.*	**Activities/Strategies** Technology Implementation/ Interdisciplinary Connections	**Assessment Check Points**
4.5.8 B 3 Develop and apply strategies for finding perimeter and area. ● Geometric figures made by combining triangles, rectangles, and circles or parts of circles. ● Estimation or area using grids of various sizes Analyze and evaluate the mathematical thinking of others 4.2.8 A 1 Create and use representations to organize , record, and communicate mathematical ideas. Understand and apply concepts involving lines, angles, and planes. ● Parallel , perpendicular , and intersecting planes ● * intersection of plane with cube, cylinder , cone and sphere	Name and classify 2- D figures Name and classify 3- D figures The meaning of volume	Name and classify 2-D figures Name and classify 3 –D shapes The meaning of volume	Build 2- D shapes Build 3- D shapes with toothpicks and marsh mellows Picture graphic organizer of 3- D shapes Volume lab with gallon, pint, and quart, Promethean Board lesson on 3 – D shapes Create picture flash cards of new vocab	Teacher made tests and quizzes Ticket out problems Name that shape game What did I learn today?

Geometry and Measurement (con't)

Resources: Essential Materials, Supplementary Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, student difficulties, possible misunderstandings
Tooth picks Marsh mellows Models of shapes	