



**Allamuchy Township School District  
Allamuchy, NJ**

**Math - Accelerated  
Grade 7**

**CURRICULUM GUIDE**

**August 26, 2019**

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**This curriculum may be modified through varying techniques,  
strategies and materials, as per an individual student's  
Individualized Education Plan (IEP).**

**Approved by the Allamuchy Board of Education  
At the regular meeting held on September 23, 2019  
And  
*Aligned with the New Jersey Core Curriculum Content Standards  
And Common Core Content Standards***

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## **Philosophy and Rationale**

This School Level Math Curriculum was designed to be consistent with the Common Core Standards for Mathematics and the NJDOE Model Curriculum Unit format. The content of each course; Grade 6 Math, Grade 7 Math, Grade 7 Accelerated Math, Grade 8 Math and Algebra 1 was designed in collaboration with representatives from the middle schools within the Hackettstown sending district cluster. The standards included in each course are organized by unit as recommended by the NJDOE. The curriculum provides a correlation between standards, officially adopted textbook resources and sample assessment items for each student learning objective.

## **Mission Statement**

Building on tradition and success, the mission of the Allamuchy Township School District is to foster a caring and creative environment where students grow as learners and citizens while developing 21st century skills. We provide a culture for social emotional learning that contributes to a positive school climate, increased academic success, and a sense of ownership within the community.

## **The Allamuchy Learner**

The Allamuchy Township School District pursues a holistic approach to encouraging the educational growth of every student. We consider each student as an individual with particular strengths and weaknesses, likes and dislikes and varying motivations. The goal of the Allamuchy educational program is to develop young people who are curious, well rounded, knowledgeable, caring, respectful and responsible so that they can evolve into self-sufficient and confident citizens and members of a diverse society.

## Unit 1

### Topic The Number System

Content Standards: 7.NS.1-3, 8.NS.1-2  
8.EE.1, 3, 4

### Essential Questions

1. How do negative and positive numbers help in describing the situation?
2. What will integer operations tell about a problem?
3. What models would help in showing the relationships in the problem situation?
4. How are irrational numbers and areas of squares related?
5. How can I estimate the square root of a number?
6. How do you convert a rational number into a decimal?
7. How do you use a number line to compare the size of two irrational numbers?
8. How do you evaluate a numerical expression with integer exponents?
9. What are the numbers that are perfect squares and non-perfect squares?
10. How do you use scientific notation?
11. What are the laws of exponents?

### Enduring Understandings

1. Positive or negative numbers and their opposites are additive inverses.
2. Commutative Property, Distributive Property and the order of operations makes solving expressions easier.
3. Algorithms for integer operations explain the relationships between positive and negative numbers.
4. Perfect squares yield whole number square roots.
5. Irrational numbers can be estimated on a number line.
6. Know that there are numbers that are not rational, and approximate them by rational numbers
7. Work with radicals and integer exponents.

### Knowledge and Skills (SWBAT embedded course proficiencies)

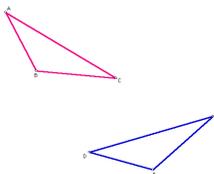
1. Describe and model, on a horizontal and vertical number line, real-world situations in which rational numbers are combined.
2. Apply the additive inverse property to subtraction problems and develop the argument that the distance between two points is the absolute value of the difference between their coordinates.
3. Explain why a divisor cannot be zero and why division of integers results in a rational number.
4. Model the multiplication and division of signed numbers using real-world contexts, such as taking multiple steps backwards.
5. Convert a rational number to a decimal using long division and explain in oral or written language why the decimal is either a terminating or repeating decimal.
6. Apply properties of operations as strategies to add, subtract, multiply, and divide rational numbers.
7. Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of rational numbers.
8. Compare rational and irrational numbers to demonstrate that the decimal expansion of irrational numbers do not repeat; show that every rational number has a decimal expansion which eventually repeats and convert such decimals into rational numbers.

9. Use rational numbers to approximate and locate irrational numbers on a number line and estimate the value of expressions involving irrational numbers.
10. Apply the properties of integer exponents to simplify and write equivalent numerical expressions.
11. Use scientific notation to estimate and express the values of very large or very small numbers and compare their values (how many times larger/smaller is one than the other).
12. Perform operations using numbers expressed in scientific notation, including problems where both decimals and scientific notation are used (interpret scientific notation generated when technology has been used for calculations).
13. In real-world problem solving situations choose units of appropriate size for measurement of very small and very large quantities.

## **Stage 2: Evidence of Understanding, Learning Objectives and Expectations**

### **Benchmarks** (embedded student proficiencies)

1. The temperature is  $-3^{\circ}\text{F}$  at 7:00 A.M. The temperature increases  $21^{\circ}\text{F}$  in 4 hours. Show what the new temperature is on a number line.
2. Show the distance between the two numbers on a number line; 8.4 and  $-2.2$ . Use the additive inverse property to show the distance between the two values.
3. Use a model to answer the following. Is  $12 \div 0$  possible? Why or why not? What about  $0 \div 12$ ?
4. Draw a picture to model how many 0.75-lb packages you can make with 6 pounds of sunflower seeds.
5. Write the rational number  $5/11$  as a decimal using long division. How do you know if the decimal is terminating or repeating?
6. An investor owns three stocks. In one week, Stock A had an overall change of  $-180.23$ , stock B  $127.65$  and stock C  $-285.91$ . What is the mean change in value of the stocks?
7. Your bank account balance is  $-\$20.85$ . You deposit  $\$15.30$ . Two days later, you deposit another  $\$23.71$ . What's your new balance?
8. Write the repeating decimal as a fraction:  $-0.23(23 \text{ repeats})$ . Show that such decimals will eventually repeat and convert into a rational number. Would  $\pi$  be considered an irrational or rational number? How do you know?
9. Prove that the two scalene triangles shown below are congruent by using rotation, reflections or translations. Identify the corresponding sides and angles using labels.



10. Evaluate the following expressions:

$$\frac{2^2}{2^6}$$

$$2^4 \bullet 2^5$$

11. Express the following information in scientific notation. Explain what this value represents. The diameter of a human hair is 0.000099 meter.
12. How many times greater is the diameter of the Sun ( $1,400,000 \text{ km}$ ) than the diameter of the Earth ( $1.28 \times 10^4 \text{ km}$ )?

13. The circumference of Mars is 55,100,000 meters. Name a unit of measurement that would be more appropriate for the circumference. Explain your choice. Write the number in scientific notation.

Assessment: Assessments may include, but are not limited to homework, class discussions, internet practice utilities (such as IXL.com) and mid unit quizzes as forms of formative assessment. End of unit tests and projects are the primary form of summative assessment.

### **Stage 3: Learning Plan**

A To show evidence students may complete the following assessment:

- Projects
- Homework
- Classwork
- Open-Ended questions
- Class discussions

B Instructor will provide differentiated instruction through any and all of the following strategies:

- Readiness/ability
- Adjusting questions
- Compacting Curriculum
- Tiered Assignments
- Acceleration/Deceleration
- Peer teaching

C Students will reflect, rethink, revise, and refine by:

- Assessment corrections
- Group work

**Time Allotment:** 15 Class Meetings

**Resources**    Big Ideas Math    Chapter 1 Lessons 1-5  
Chapter 2 Lessons 1-4  
Chapter 14 Lesson 4  
Chapter 16 Lessons 1-7

- Teacher created resources
- Rulers
- Graph paper
- Colored pencils
- Pennies
- Small paper cups
- Strips of paper
- Watches
- String
- Square tiles
- Unit cubes

Technology:

- Online graphing utility and scientific calculator
- SmartBoard
- Online textbook

## Unit 2

### Topic Expressions and Equations

Content Standards 7.EE.1-4, 8.EE.5-7

#### Essential Questions

1. What relationships are linear?
2. How can a linear relationship be represented?
3. How do you find solutions of linear equations?
4. What kind of equation will express this relationship?
5. How can I use the equation to answer questions about the relationship?
6. How can the relationship be detected in a table, graph, or equation?
7. What equation models the data in the table?
8. What equation models the pattern in the graph?

#### Enduring Understandings

1. Linear relationships can be modeled by a table, graph or equation
2. Linear equations can be solved algebraically or by analyzing a table or graph.
3. Slope of a line represents the rate of change.
4. Linear and nonlinear patterns can be recognized in tables and graphs
5. Data patterns can be described using words and symbols
6. Equations express patterns appearing in tables, graphs, and problems

#### Knowledge and Skills (SWBAT embedded course proficiencies)

1. Apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (including additive and multiplicative inverse, distributive, commutative, and associative properties).
2. Use equivalent expressions to demonstrate the relationship between quantities and determine simpler solutions to a problem, such as  $a + 0.05a = 1.05a$  means that "increase by 5%" is the same as "multiply by 1.05."
3. Solve multi-step real life and mathematical problems with rational numbers in any form (fractions, decimals, percents) by applying properties of operations and converting rational numbers between forms as needed, and then assess the reasonableness of results using mental computation and estimation strategies.
4. Use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems. *Equations of the form  $px + q = r$  and  $p(x + q) = r$  and inequalities of the form  $px + q > r$  or  $px + q < r$ , where  $p$ ,  $q$ , and  $r$  are specific rational numbers.*
5. Fluently solve equations and inequalities and graph the solution set of the inequality; interpret the solutions in the context of the problem.
6. Graph and analyze the different representations of proportional relationships and interpret the unit rate as the slope of the graph which indicates the rate of change.
7. Derive the equation of a line ( $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ ) and use similar triangles to explain why the slope ( $m$ ) is the same between any two points on a non-vertical line in the coordinate plane.

8. Solve linear equations in one variable with rational number coefficients that might require expanding expressions using the distributive property and/or combining like terms, including examples with one solution, infinite solutions, or no solution.

**Stage 2: Evidence of Understanding, Learning Objectives and Expectations**

Benchmarks (embedded student proficiencies)

1. Simplify the algebraic expression:

$$2/5y - 4 + 7 + 9/10y$$

$$4p - 6(p + 4)$$

2. A basket holds “a” apples. You pick  $4n - 2$  apples and your friend picks  $n + 5$  apples. Write an equivalent expression that represents the number of apples you and your friend picked.
3. A basket holds “a” apples. You pick  $4n - 2$  apples and your friend picks  $n + 5$  apples. Write an equivalent expression that represents the number of apples you and your friend picked.
4. Construct an equation to find the width of a rectangle that has a perimeter of 54 cm and a length of 6 cm.
5. As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.
6. Compare the scenarios to determine which represents a greater speed. Explain your choice including a written description of each scenario. Be sure to include the unit rates in your explanation.

Scenario 1:  $y = 55x$ ;

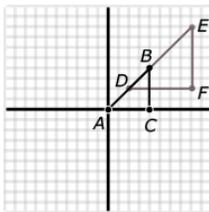
Scenario 2:

X	1	4	5
y	60	240	300

x is time in hours

y is distance in miles

7. Explain why  $\triangle ACB$  is similar to  $\triangle DFE$ , and deduce that  $\overline{AB}$  has the same slope as  $\overline{BE}$ . Express each line as an equation.



8. Solve the following equations. Explain what the solution means:

$$5 - 6x = -8 - 6x$$

$$1/4(8x - 12) = 2x + 3$$

$$m - 4 = 2m$$

Assessment: Assessments may include, but are not limited to homework, class discussions, internet practice utilities (such as IXL.com) and mid unit quizzes as forms of formative assessment. End of unit tests and projects are the primary form of summative assessment.

### **Stage 3: Learning Plan**

- A. To show evidence students may complete the following assessment:
- Projects
  - Homework
  - Classwork
  - Open-Ended questions
  - Class discussions
- B. Instructor will provide differentiated instruction through any and all of the following strategies:
- Readiness/ability
  - Adjusting questions
  - Compacting Curriculum
  - Tiered Assignments
  - Acceleration/Deceleration
  - Peer teaching
- C. Students will reflect, rethink, revise, and refine by:
- Assessment corrections
  - Group work

**Time Allotment:** 18 Class Meetings

**Resources**    Big Ideas Math    Chapter 3 Lessons 1-5  
Chapter 4 Lessons 1-4  
Chapter 6 Lesson 1, 2, 4  
Chapter 13 Lessons 1-7

- Teacher created resources • Rulers • Graph paper • Colored pencils • Pennies
- Small paper cups • Strips of paper • Watches • String • Square tiles • Unit cubes

Technology: • Online graphing utility and scientific calculator • SmartBoard  
• Online textbook

## Unit 3

### Topic Ratios and Proportions

Content Standards 7.RP.1-3  
7.G.1-2

#### Essential Questions

1. When quantities have different measurements, how can they be compared?
2. How can a unit rate be used to find the total cost of something?
3. Why is a ratio a good means of comparison?
4. What is the relationship between ratios and similar figures?
5. How can ratios be used in daily life to find unknown quantities or inaccessible measurements?
6. How can we use proportions to solve problems?

#### Enduring Understandings

1. Proportions are a good way to solve linear problems by scaling ratios up or down.
2. Unit rates make it easy to find any number of solutions.
3. Ratios make it easy to compare two quantities.
4. A straight line on a graph represents a proportional relationship.

#### Knowledge and Skills (SWBAT embedded course proficiencies)

1. Calculate and interpret unit rates of various quantities involving ratios of fractions that contain like and different units using real world examples such as speed and unit price.
2. Determine if a proportional relationship exists between two quantities e.g. by testing for equivalent ratios in a table or graph on the coordinate plane and observing whether the graph is a straight line through the origin.
3. Identify the constant of proportionality (unit rate) from tables, graphs, equations, diagrams, and verbal descriptions.
4. Write equations to model proportional relationships in real world problems.
5. Represent real world problems with proportions on a graph and describe how the graph can be used to explain the values of any point  $(x, y)$  on the graph including the points  $(0, 0)$  and  $(1, r)$ , recognizing that  $r$  is the unit rate.
6. Solve multistep ratio and percent problems using proportional relationships, including scale drawings of geometric figures, simple interest, tax, markups and markdowns, gratuities and commissions, and fees.
7. Use freehand, mechanical (i.e. ruler, protractor) and technological tools to draw geometric shapes with given conditions (e.g. scale factor), focusing on constructing triangles.

### **Stage 2: Evidence of Understanding, Learning Objectives and Expectations**

#### Benchmarks (embedded student proficiencies)

1. If a person walks  $\frac{1}{2}$  mile in each  $\frac{1}{4}$  hour, compute the unit rate per hour.
2. Determine whether  $x$  and  $y$  are proportional using the table:

# of birdhouses ( $x$ )

# Nails used ( $y$ )

$x$	1	2	4	6	8
$y$	12	24	48	72	?

3. Tell whether  $x$  and  $y$  show direct variation algebraically and graphically. Explain your reasoning and identify the constant of proportionality.  
 $\frac{1}{2}y = x$
4. A recipe that serves 6 people calls for  $2\frac{1}{2}$  cups of sugar. How much sugar is needed if you are serving only 2 people?
5. Two tickets for a concert cost \$26, five tickets for \$65 and nine tickets for \$117. Create a graph to represent the data. Find the constant of proportionality and explain what the point  $(0,0)$  represents. How much would it cost for 14 tickets? Plot the point on the graph.
6. A salesperson receives a 3% commission on sales. The salesperson receives \$180 in commission. What is the amount of sales?
7. Draw a triangle with a 3 cm side, a 4 cm side that meet at a  $20^\circ$  angle. Classify the triangle.

Assessment: Assessments may include, but are not limited to homework, class discussions, internet practice utilities (such as IXL.com) and mid unit quizzes as forms of formative assessment. End of unit tests and projects are the primary form of summative assessment.

### Stage 3: Learning Plan

A To show evidence students may complete the following assessment:

- All-Similar Shapes Project – use ratios and proportions to draw conclusions about similar shapes

B Instructor will provide differentiated instruction through any and all of the following strategies:

- Readiness/ability
- Adjusting questions
- Compacting Curriculum
- Tiered Assignments
- Acceleration/Deceleration
- Peer teaching

C Students will reflect, rethink, revise, and refine by:

- Unit self-assessment
- Preparation reflection form
- Work corrections

Time Allotment: 16 Class Meetings

Resources Big Ideas Math Chapter 5 Lessons 1-6  
Chapter 6 Lessons 3-7  
Chapter 7 Lesson 4-5

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- Teacher created material • Graph paper • Construction paper • Crayons
  - Colored pencils • Rulers 15 • Calculator

Technology: • SmartBoard • Calculators • Internet websites

## Unit 4

### Topic Statistics and Probability

Content Standards : 7.RP.3  
7.SP.1-8

### Essential Questions

1. What is a random sample and how does it represent a population?
2. How does the probability of an event occurring affect the decisions that we make?

### Enduring Understandings

1. Random samples can be used to draw conclusions about a general population.
2. Probability is the chance that an event will occur.

### Knowledge and Skills (SWBAT embedded course proficiencies)

1. Solve multi-step ratio and percent problems using proportional relationships (*simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error*).
2. Distinguish between valid and invalid samples from a population by determining if the sample is representative of the subgroups within the population.
3. Use random sampling to produce a representative sample, develop valid inferences about a population with an unknown characteristic of interest, and compare the variation in estimates using multiple samples of the same and different size.
4. Visually and numerically compare the means and variations of two distinct populations (such as the mean height of different sports teams) to draw informal comparative inferences about measures of center and variability using graphical representations and statistical calculations.
5. Interpret and express the likelihood of a chance event as a number between 0 and 1, relating that the probability of an unlikely event happening is near 0, a likely event is near 1, and  $\frac{1}{2}$  is neither likely nor unlikely.
6. Conduct experimental probability events that are both uniform (*rolling a number cube multiple times*) and non-uniform (*tossing a paper cup to see if it lands up or down*) to collect and analyze data to make predictions for the approximate relative frequency of chance events.
7. Develop uniform and non-uniform theoretical probability models by listing the probabilities of all possible outcomes in an event, for instance, the probability of the number cube landing on each number being  $\frac{1}{6}$ . Then, conduct an experiment of the event using frequencies to determine the probabilities of each outcome and use the results to explain possible sources of discrepancies in theoretical and experimental probabilities.
8. Design a simulation of a compound probability event and determine the sample space using organized lists, tables, and tree diagrams, calculate the fractional probabilities for each outcome in the sample space, and conduct the simulation using the data collected to determine the frequencies of the outcomes in the sample space.

## **Stage 2: Evidence of Understanding, Learning Objectives and Expectations**

### Benchmarks (embedded student proficiencies)

1. A \$129.50 stereo is discounted 40%. The next month, the sale price is discount 60%. Is the stereo now “free”? If not, what is the sale price?

2. Determine whether the conclusion is valid and explain: You want to determine the # of students in your school who have visited a science museum. You surveyed 50 students at random. 20 have and 30 have not. So, you conclude that 40% of the students in your school have visited a science museum.
3. You want to know how residents of your town feel about a ban on texting while driving. Determine whether the conclusion is valid: After surveying 200 residents at random, 164 residents support the ban and 36 do not. So, you conclude that 82% of the residents of your town support the ban.
4. (Create chart with 8 different schools and 10 students). You want to know the mean number of hours students with part-time jobs work each week. You go to 8 different schools and randomly survey 10 students with part-time jobs. Compare the two means in a box-whisker plot and by finding the mean of each sample.
5. There is an 85% chance of thunderstorms tomorrow. Describe the likelihood of the event in a sentence.
6. It rains 2 out of the last 12 days in March. If this trend continues, how many rainy days would you expect in April? Find the experimental probability of a rainy day and make your prediction.
7. If a student is selected at random from a class of 16 females and 20 males, find the probability that Jane will be selected and the probability that a girl will be selected. Find the approximate probability that a spinning penny will land heads up. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?
8. You flip three nickels. Determine the fractional probabilities for each outcome. What is the probability of flipping two tails and one head? Create a tree diagram to show the sample space.

Assessment: Assessments may include, but are not limited to homework, class discussions, internet practice utilities (such as IXL.com) and mid unit quizzes as forms of formative assessment. End of unit tests and projects are the primary form of summative assessment.

### **Stage 3: Learning Plan**

A To show evidence students may complete the following assessment:

- Game Evaluation-evaluate the probability of all outcomes of a known game

B Instructor will provide differentiated instruction through any and all of the following strategies:

- Readiness/ability
- Adjusting questions
- Compacting Curriculum
- Tiered Assignments
- Acceleration/Deceleration
- Peer teaching

C Students will reflect, rethink, revise, and refine by:

- Class discussion
- Work corrections

**Time Allotment:** 18 Class Meetings

**Resources** Big Ideas Math Chapter 5 Lessons 1, 3  
Chapter 6 Lessons 3-7

## Chapter 10 Lesson 1-7

- Teacher created material
- Graph paper
- Crayons
- Colored pencils
- Rulers
- Calculator
- Dice
- Spinners
- Color-coded cubes
- Coins
- Paper cups

- Technology:
- SmartBoard
  - Calculators
  - Internet websites

## Unit 5

### Topic Geometry

Content Standards: 7.EE.3-4, 8.EE.2, 8.G.1-5, 9  
7.G.3, 6,

### Essential Questions:

1. How do two- and three-dimensional figures relate?
2. How are irrational numbers and areas of squares related?
3. How can I estimate the square root of a number?
4. How can I find the length of something without directly measuring it?
5. How can I use symmetry to describe the shapes and properties of figures in a design or a problem?
6. Which figures in a pattern are congruent?
7. What parts of a figure will be matched by a congruence transformation?

### Enduring Understandings:

1. Formulas can be used to find circumference, area, volume & surface area of many realworld shapes.
2. Irrational numbers can be estimated on a number line
3. Transformations can be used to construct figures with different kinds of symmetry
4. Symmetry transformations can be used to compare the size and shape of figures to see whether they are congruent
5. Properties of congruent triangles can be used to solve problems about shapes and measurements

### Knowledge and Skills (SWBAT embedded course proficiencies)

1. Use variables to represent quantities in a real-world or mathematical problem; write and fluently solve simple equations and inequalities, interpret the solutions in the context of the problem and graph the solution set on a number line. [Please note this unit addresses standard 7.EE.4 again to assess fluency.]
2. Use tools strategically to solve multi-step real-world and mathematical problems involving positive and negative rational numbers in any form (converting between forms as needed) and determine the reasonableness of the answers. [Please note this unit addresses standard 7.EE.3 again to assess fluency.]
3. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
4. Describe, using drawings or written descriptions, the 2-dimensional figures that result when 3-dimensional figures (right rectangular prisms and pyramids) are sliced from multiple angles given both concrete models and a written description of the 3-dimensional figure.
5. Evaluate square roots and cubic roots of small perfect squares and cubes respectively and use square and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$  where  $p$  is a positive rational number.
6. Identify  $\sqrt{2}$  as irrational.
7. Utilize the properties of rotation, reflection, and translation to model and relate pre-images of lines, line segments, and angles to their resultant image through physical representations and/or Geometry software.

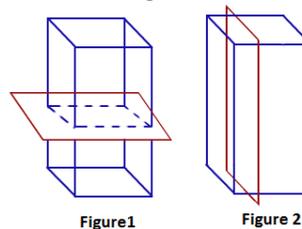
8. Apply an effective sequence of rotations, reflections, and translations to prove that two dimensional figures are congruent.
9. Use the coordinate plane to locate pre-images of two-dimensional figures and determine the coordinates of a resultant image after applying dilations, rotations, reflections, and translations.
10. Recognize dilation as a reduction or an enlargement of a figure and determine the scale factor.
11. Apply an effective sequence of transformations to determine similar figures in which corresponding angles are congruent and corresponding sides are proportional. Write similarity statements based on such transformations.
12. Justify facts about angles created when parallel lines are cut by a transversal.
13. Justify facts about the exterior angles of a triangle, the sum of the measures of the interior angles of a triangle and the angle-angle relationship used to identify similar triangles.
14. Know and apply the appropriate formula for the volume of a cone, a cylinder, or a sphere to solve real-world and mathematical problems.

**Stage 2: Evidence of Understanding, Learning Objectives and Expectations**

Benchmarks (embedded student proficiencies)

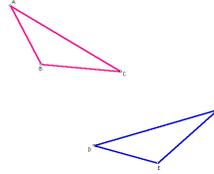
1. Mandy’s monthly earnings consist of a fixed salary of \$2800 and an 18% commission on all her monthly sales. To cover her planned expenses, Mandy needs to earn an income of at least \$6400 this month. Write an inequality that, when solved, will give the amount of sales Mandy needs to cover her planned expenses.
2. A basket holds “a” apples. You pick  $4n - 2$  apples and your friend picks  $n + 5$  apples. Write an equivalent expression that represents the number of apples you and your friend picked.
3. One can of frosting covers about 280 square inches. Your cake is 13 inches long, 9 inches wide and 3 inches high. Is one can of frosting enough to frost the cake? Explain.
- 4.

Describe the intersection of the plane and the solid for each figure below.



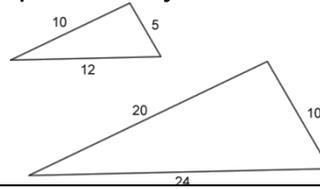
5.
  - a. Evaluate the following:
    - b.  $\sqrt{25}$
    - c.  $3^2$
    - d.  $-\sqrt{9/16}$
    - e.  $(1/3)^3$
    - f.  $\sqrt[3]{8}$
6. Explain why  $\sqrt{2}$  is classified as an irrational number.
7. You are asked to design a garden layout. You divide a grid into 4 quadrants and start by drawing a shape in one quadrant. Reflect, rotate, and translate the shape into the other three quadrants.
- 8.

Prove that the two scalene triangles shown below are congruent by using rotation, reflections or translations. corresponding sides and angles using labels.



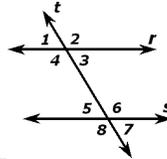
9. The vertices of a square are  $A(1, -2)$ ,  $B(3,-2)$ ,  $C(3,-4)$  and  $D(1,-4)$ . Draw the figure and image on the coordinate plane after translation 4 units left and 6 units up.
10. Rectangle  $WXYZ$  has vertices  $W(-4,-6)$ ,  $X(-4,8)$ ,  $Y(4,8)$ ,  $Z(4, -6)$ . Draw the image after a dilation with a scale factor of 0.5. Identify the type of dilation.
- 11.

Determine if the two triangles are similar figures. Explain how you know.



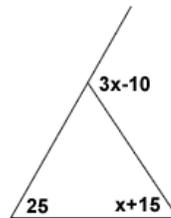
12.

Identify the corresponding angle pairs with the image below. Justify your reasoning.



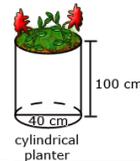
13.

Find the measure of the exterior angle of the triangle. What is true about the sum of the measures of the interior angles of a triangle? Would this help you when trying to find the exterior angle? Explain.



14.

James wanted to plant pansies in his new planter. He wondered how much potting soil he should buy. Use the measurements in the diagram below to determine the planter's volume.



Assessment: Assessments may include, but are not limited to homework, class discussions, internet practice utilities (such as IXL.com) and mid unit quizzes as forms of formative assessment. End of unit tests and projects are the primary form of summative assessment.

### **Stage 3: Learning Plan**

A To show evidence students may complete the following assessment:

- Projects
- Homework
- Classwork
- Open-Ended questions
- Class discussions

B Instructor will provide differentiated instruction through any and all of the following strategies:

- Readiness/ability
- Adjusting questions
- Compacting Curriculum
- Tiered Assignments
- Acceleration/Deceleration
- Peer teaching

C Students will reflect, rethink, revise, and refine by:

- Assessment corrections
- Group work

**Time Allotment:** 16 Class Meetings

<b><u>Resources</u></b>	<b><u>Big Ideas Math</u></b>	Chapter 3 Lessons 3-5 Chapter 4 Lessons 1-4 Chapter 6 Lessons 1, 2, 4 Chapter 8 Lesson 4 Chapter 9 Lessons 1, 2, 4, 5 Chapter 11 Lessons 1-7 Chapter 12 Lessons 1-4 Chapter 14 Lessons 1-5 Chapter 15 Lessons 1-4
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- Teacher created resources
- Rulers
- Graph paper
- Geoboards
- Scissors
- Straws
- Markers
- Tape
- Protractors
- Dot paper
- Tracing paper
- Mirrors

Technology:

- Online Graphing Utility and/or Scientific Calculators
- SmartBoard
- Online textbook
- Internet websites



## Modifications and Accommodations for all units:

### For students receiving services under IDEA:

- Models and/or manipulatives; Enlarged graph paper; Calculator; Multiplication and Division table
- Small group instruction
- Hands on activities
- Visual cues
- Highlighted instructions/keywords and/or computation signs
- Reworded questions in simpler language
- Provision of calculator for math tests
- Word bank of choices for answers to test questions
- Modified workload or length of assignments/tests
- Modified time demands
- Pass/no pass option
- Modified grades based on IEP

### For students receiving services under Section 504 or Students at Risk:

- Models and/or manipulatives; Enlarged graph paper; Calculator; Multiplication and Division table
- Small group instruction
- Hands on activities
- Visual cues
- Highlighted instructions/keywords and/or computation signs
- Reworded questions in simpler language
- Provision of calculator and/or number line for math tests
- Word bank of choices for answers to test questions
- Modified workload or length of assignments/tests
- Modified time demands
- Pass/no pass option
- Modified grades based on IEP

### For English Language Learner students:

- Simplified Instruction (written and verbal)
- Simplified directions
- Provide notes in advance
- Online Dictionary
- Manipulatives
- Use lots of visuals
- Use physical activity; model, role-play
- Teacher modeling
- Partner talk
- Repeat/Rephrase often
- Alternate Responses / Nonverbal responses
- Prompts
- Vocabulary banks
- Extended Time
- Use lower level materials when appropriate

### For Gifted and Talented students:

- Differentiated curriculum for the gifted learner.
- Flexible groupings of students to facilitate differentiated instruction and curriculum.
- Centers / Interest centers
- Small group enrichment instruction or activities
- Active classroom discussion
- Challenging problem solving situations
- Independent, innovative oral and written presentations
- Independent writing and research
- Learning log
- Extension activities

## New Jersey Core Curriculum and Common Core Content Standards

<http://www.state.nj.us/education/cccs/>

### **Integration of 21<sup>st</sup> Century Theme(s)**

The following websites are sources for the following 21<sup>st</sup> Century Themes and Skills:

<http://www.nj.gov/education/code/current/title6a/chap8.pdf>

<http://www.p21.org/about-us/p21-framework> .

<http://www.state.nj.us/education/cccs/standards/9/index.html>

### **21<sup>st</sup> Century Interdisciplinary Themes (into core subjects)**

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

### **Learning and Innovation Skills**

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

### **Information, Media and Technology Skills**

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy

### **Life and Career Skills**

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

### **Integration of Digital Tools**

- Classroom computers/laptops/Chromebooks
- Technology Lab
- Voice amplification device
- Other software programs