

First Nine Weeks

Grade: 8

Subject: Math

Year: 2017-2018 IN PROGRESS

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
1	<p><u>Computation and Estimation</u> The student will</p> <ul style="list-style-type: none"> determine whether a given number is a perfect square; and (8.5a) 	<ul style="list-style-type: none"> Identify the perfect squares from 0 to 400. Identify the two consecutive whole numbers between which the square root of a given whole number from 0 to 400 lies (e.g., $\sqrt{57}$ lies between 7 and 8 since $7^2 = 49$ and $8^2 = 64$). 		perfect square square root	<p>Determine L3 Identify L2 Define L1 Find L1</p>
1	<ul style="list-style-type: none"> find the two consecutive whole numbers between which a square root lies. (8.5b) 	<ul style="list-style-type: none"> Define a perfect square. Find the positive or positive and negative square roots of a given whole number from 0 to 400. (Use the symbol $\sqrt{\quad}$ to ask for the positive root and $-\sqrt{\quad}$ when asking for the negative root.) 			

Number and Number Sense

- The student will describe orally and in writing the relationships between the subsets of the real number system. (8.2)

- Describe orally and in writing the relationships among the sets of natural or counting numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.
- Illustrate the relationships among the subsets of the real number system by using graphic organizers such as Venn diagrams. Subsets include rational numbers, irrational numbers, integers, whole numbers, and natural or counting numbers.
- Identify the subsets of the real number system to which a given number belongs.
- Determine whether a given number is a member of a particular subset of the real number system, and explain why.

real numbers
irrational numbers
rational numbers
integers
whole numbers
natural/counting numbers
terminating decimal

Describe
L1
Illustrate L2
Determine L2
Identify L2
Determine L3
Recognize
L 1

7	<p><u>Number and Number Sense</u> The student will</p> <ul style="list-style-type: none"> • simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers; and (8.1a) • compare and order decimals, fractions, percents, and numbers written in scientific notation. (8.1b) 	<ul style="list-style-type: none"> • Simplify numerical expressions containing: 1) exponents (where the base is a rational number and the exponent is a positive whole number); 2) fractions, decimals, integers and square roots of perfect squares; and 3) grouping symbols (no more than 2 embedded grouping symbols). Order of operations and properties of operations with real numbers should be used. • Compare and order no more than five fractions, decimals, percents, and numbers written in scientific notation using positive and negative exponents. Ordering may be in ascending or descending order. 		numerical expression exponent base evaluate/simplify order of operations commutative property associative property distributive property scientific notation identity property inverse property zero property of multiplication	Compare L4 Order L4 Simplify L4
4	<p><u>Number and Number Sense</u></p> <ul style="list-style-type: none"> • The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. (8.4) 	<ul style="list-style-type: none"> • Substitute numbers for variables in algebraic expressions and simplify the expressions by using the order of operations. Exponents are positive and limited to whole numbers less than 4. Square roots are limited to perfect squares. • Apply the order of operations to evaluate formulas. Problems will be limited to positive exponents. Square roots may be included in the expressions but limited to perfect squares. 		terms algebraic expression coefficient constant	Substitute L6 Apply L4

Number and Number Sense

The student will

- **solve** practical problems involving rational numbers, percents, ratios, and proportions; and **(8.3a)**
- **determine** the percent increase or decrease for a given situation. **(8.3b)**

BENCHMARK 1

- **Write** a proportion given the relationship of equality between two ratios.
- **Solve** practical problems by using computation procedures for whole numbers, integers, fractions, percents, ratios, and proportions. Some problems may require the application of a formula.
- **Maintain** a checkbook and check registry for five or fewer transactions.
- **Compute** a discount or markup and the resulting sale price for one discount or markup.
- **Compute** the percent increase or decrease for a one-step equation found in a real life situation.
- **Compute** the sales tax or tip and resulting total.
- **Substitute** values for variables in given formulas. For example, use the simple interest formula $I = prt$ to determine the value of any missing variable when given specific information.
- **Compute** the simple interest and new balance earned in an investment or on a loan for a given number of years.

ratio
interest
discount
balance
proportion
sales tax
tip
percent
percent of increase
percent of decrease
withdrawal
deposit
markup

Determine

L3

Write L3

Solve L6

Maintain L6

Compute L3

Substitute L6

Second Nine Wks

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
4	<p><u>Geometry</u></p> <p>The student will</p> <ul style="list-style-type: none"> • verify the Pythagorean Theorem; and (8.10a) • apply the Pythagorean Theorem. (8.10b) 	<ul style="list-style-type: none"> • Identify the parts of a right triangle (the hypotenuse and the legs). • Verify a triangle is a right triangle given the measures of its three sides. • Verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement. • Find the measure of a side of a right triangle, given the measures of the other two sides. • Solve practical problems involving right triangles by using the Pythagorean Theorem. 		<p>hypotenuse</p> <p>legs</p> <p>Pythagorean Theorem</p>	<p>Verify L6</p> <p>Apply L3</p> <p>Identify L1</p> <p>Find L2</p> <p>Solve L3</p> <p>Using L3</p>
15	<p><u>Patterns, Functions, and Algebra</u></p> <p>The student will</p> <ul style="list-style-type: none"> • solve multistep linear equations in one variable on one and two sides of the equation; (8.15a) • solve two-step linear inequalities and graph the results on a number line; and (8.15b) • identify properties of operations used to solve an equation. (8.15c) 	<ul style="list-style-type: none"> • Solve two- to four-step linear equations in one variable using concrete materials, pictorial representations, and paper and pencil illustrating the steps performed. • Solve two-step inequalities in one variable by showing the steps and using algebraic sentences. • Graph solutions to two-step linear inequalities on a number line. 		<p>equation</p> <p>inequality</p> <p>solve/solution</p>	<p>Solve L3</p> <p>Identify L2</p> <p>Use L3</p> <p>Illustrating L3</p> <p>Showing L2</p> <p>Graph L3</p>

		<ul style="list-style-type: none"> • Identify properties of operations used to solve an equation from among: <ul style="list-style-type: none"> • the commutative properties of addition and multiplication; • the associative properties of addition and multiplication; • the distributive property; • the identity properties of addition and multiplication; • the zero property of multiplication; • the additive inverse property; and • the multiplicative inverse property. 			
4	<p><u>Patterns, Functions, and Algebra</u></p> <ul style="list-style-type: none"> • The student will make connections between any two representations (tables, graphs, words, and rules) of a given relationship. (8.14) 	<ul style="list-style-type: none"> • Graph in a coordinate plane ordered pairs that represent a relation. • Describe and represent relations and functions, using tables, graphs, words, and rules. Given one representation, students will be able to represent the relation in another form. • Relate and compare different representations for the same relation. 		relation function	<p>Make L3 Connections L4 Graph L3 Describe L2 Represent L2 Relate L6 Compare L6</p>

4	<p><u>Patterns, Functions, and Algebra</u></p> <ul style="list-style-type: none"> The student will graph a linear equation in two variables. (8.16) 	<ul style="list-style-type: none"> Construct a table of ordered pairs by substituting values for x in a linear equation to find values for y. Plot in the coordinate plane ordered pairs (x, y) from a table. Connect the ordered pairs to form a straight line (a continuous function). Interpret the unit rate of the proportional relationship graphed as the slope of the graph, and compare two different proportional relationships represented in different ways. 		<p>linear equation ordered pairs x-axis y-axis</p>	<p>Graph L3 Construct L6 Substituting L6 Plot L3 Connect L3 Interpret L6 Compare L6</p>
4	<p><u>Patterns, Functions, and Algebra</u></p> <ul style="list-style-type: none"> The student will identify the domain, range, independent variable or dependent variable in a given situation. (8.17) 	<ul style="list-style-type: none"> Apply the following algebraic terms appropriately: <i>domain</i>, <i>range</i>, <i>independent variable</i>, and <i>dependent variable</i>. Identify examples of domain, range, independent variable, and dependent variable. Determine the domain of a function. Determine the range of a function. Determine the independent variable of a relationship. Determine the dependent variable of a relationship. 		<p>output domain input range independent variable dependent variable</p>	<p>Identify L2 Apply L3 Determine L3</p>

3

Probability and Statistics

- The student will **determine** the probability of independent and dependent events with and without replacement. (8.12)

BENCHMARK 2

- **Determine** the probability of no more than three independent events.
- **Determine** the probability of no more than two dependent events without replacement.
- **Compare** the outcomes of events with and without replacement.

Independent events
Dependent events
Probability

Determine
L3
Compare L2

Third Nine Weeks

# Days	SOL	Student Essential Knowledge and Skills	Resources	Vocabulary	Bloom's
4	<p><u>Measurement</u> The student will</p> <ul style="list-style-type: none"> verify by measuring and describe the relationships among vertical angles, adjacent angles, supplementary angles, and complementary angles; and (8.6a) measure angles of less than 360°. (8.6b) 	<ul style="list-style-type: none"> Measure angles of less than 360° to the nearest degree, using appropriate tools. Identify and describe the relationships between angles formed by two intersecting lines. Identify and describe the relationship between pairs of angles that are vertical. Identify and describe the relationship between pairs of angles that are supplementary. Identify and describe the relationship between pairs of angles that are complementary. Identify and describe the relationship between pairs of angles that are adjacent. Use the relationships among supplementary, complementary, vertical, and adjacent angles to solve practical problems. 		vertical angles complementary angles supplementary angles reflex angles adjacent angles	Verify L5 Describe L2 L2 Measure Use L3 Identify L1

5	<p>Geometry The student will</p> <ul style="list-style-type: none"> • apply transformations to plane figures; and (8.8a) • identify applications of transformations. (8.8b) 	<ul style="list-style-type: none"> • Demonstrate the reflection of a polygon over the vertical or horizontal axis on a coordinate grid. • Demonstrate 90°, 180°, 270°, and 360° clockwise and counterclockwise rotations of a figure on a coordinate grid. The center of rotation will be limited to the origin. • Demonstrate the translation of a polygon on a coordinate grid. • Demonstrate the dilation of a polygon from a fixed point on a coordinate grid. • Identify practical applications of transformations including, but not limited to, tiling, fabric, and wallpaper designs, art and scale drawings. • Identify the type of transformation in a given example. 		transformations reflections translations rotations dilations scale factor horizontal vertical clockwise counterclockwise	Apply L3 Identify L1 Demonstrate L2 Applications L3
10	<p>Geometry</p> <ul style="list-style-type: none"> • The student will solve practical area and perimeter problems involving composite plane figures. (8.11) 	<ul style="list-style-type: none"> • Subdivide a figure into triangles, rectangles, squares, trapezoids and semicircles. Estimate the area of subdivisions and combine to determine the area of the composite figure. • Use the attributes of the subdivisions to determine the perimeter and circumference of a figure. • Apply perimeter, circumference and area formulas to solve practical problems. 		polygon composite figure perimeter area circumference	Solve L3 Use L3 Subdivide L4 Estimate L2 Combine L2 Determine L2 Apply L3 Solve L3

2	<p>Geometry</p> <p>The student will construct a three-dimensional model, given the top or bottom, side, and front views. (8.9)</p>	<ul style="list-style-type: none"> • Construct three-dimensional models, given the top or bottom, side, and front views. • Identify three-dimensional models given a two-dimensional perspective. 		<p>2D 3D</p>	<p>Construct L3 Identify L1</p>
---	---	---	--	------------------	---

Measurement

The student will

- **investigate** and **solve** practical problems involving volume and surface area of prisms, cylinders, cones, and pyramids; and **(8.7a)**
- **describe** how changing one measured attribute of the figure affects the volume and surface area. **(8.7b)**

- **Distinguish** between situations that are applications of surface area and those that are applications of volume.
- **Investigate** and **compute** the surface area of a square or triangular pyramid by finding the sum of the areas of the triangular faces and the base using concrete objects, nets, diagrams and formulas.
- **Investigate** and **compute** the surface area of a cone by calculating the sum of the areas of the side and the base, using concrete objects, nets, diagrams and formulas.
- **Investigate** and **compute** the surface area of a right cylinder using concrete objects, nets, diagrams and formulas.
- **Investigate** and **compute** the surface area of a rectangular prism using concrete objects, nets, diagrams and formulas.
- **Investigate** and **compute** the volume of prisms, cylinders, cones, and pyramids, using concrete objects, nets, diagrams, and formulas.

cone
square pyramid
cylinder
surface area
volume
rectangular prism

Investigate
L3
Describe L2
Distinguish
L3
Compute L3
Solve L3
Compare L2
Contrast L2

Probability and Statistics

The student will

- make comparisons, predictions, and inferences, using information displayed in graphs; and (8.13a)
- construct and analyze scatterplots. (8.13b)

BENCHMARK 3

- **Collect**, organize, and interpret a data set of no more than 20 items using scatterplots. Predict from the trend an **estimate** of the line of best fit with a drawing.
- **Interpret** a set of data points in a scatterplot as having a positive relationship, a negative relationship, or no relationship.

Scatterplot
Line of best fit

Make
L2
Comparisons
L4
Predictions
L5
Inferences
L4
Construct
L5
Analyze L4
Use L3
Collect L3
Organize L5
Estimate L3
Interpret L3

4th Nine Weeks

During the 4th nine weeks students must complete Interactive Achievement CIP Math 8 Individual quizzes for each SOL. Each student must have an 80% or better pass rate to proceed to the next SOL. On the first day the entire class starts with SOL 8.1 and with a pass rate of 80% students will begin review for the next SOL. Students who do not meet the 80% will meet with teacher for individualized remediation and complete a practice set with a score of 80% in order to retest. Students are not allowed to retest the same SOL in one day. Each student will move at his or her own pace until all SOLs are covered. Once all SOLs are addressed, students will begin to complete released SOL assessments.