8th Grade Math

Mathematics

Grade(s) 8th, Duration 1 Year, 1 Credit
Required Course

Course Overview

During the 8th grade year, students will learn about real numbers, exponents, and scientific notation, proportional and nonproportional relationships and functions, solving equations and systems of equations, transformational geometry, measurement and geometry, and statistics. Students will solve high-level thinking problems demonstrating their ability to apply mathematical learning in new situations to develop sound mathematical habits.

Scope And Sequence

Timeframe	Unit	Instructional Topics
22 Day(s)	1. Rigid Transformations and Congruence	1. Rigid Transformations 2. Properties of Rigid Transformations 3. Congruence 4. Angles in a Triangle
20 Day(s)	2. Dilations, Similarity, and Introducing Slope	1. Dilations 2. Similarity 3. Slope
16 Day(s)	3. Linear Relationships	1. Proportional Relationships 2. Representing Linear Relationships 3. Finding Slope 4. Linear Equations
30 Day(s)	Solving Equations and Systems of Equations	1. Solving Linear Equations 2. Solving Systems of Linear Equations
20 Day(s)	4. Linear Equations and Linear Systems	1. Linear Equations in One Variable 2. Systems of Linear Equations
27 Day(s)	5. Functions and Volume	1. Inputs and Outputs 2. Representing and Interpreting Functions 3. Cylinders and Cones 4. Dimensions and Spheres
Ongoing	Transformational Geometry	1. Transformations and Congruence 2. Transformations and Similarity
32 Day(s)	Proportional and Nonproportional Relationships and Functions	1. Proportional Relationships 2. Nonproportional Relationship 3. Writing Linear Equations 4. Functions
Ongoing	Measurement Geometry	1. Angle Relationships in Parallel Lines and Triangles 2. The Pythagorean Theorem 3. Volume
Ongoing	Statistics	1. Scatter Plots 2. Two-Way Tables
18 Day(s)	Real Numbers, Exponents, and Scientific Notation	1. Real Numbers 2. Exponents and Scientific Notation

Course Details

Unit: 1. Rigid Transformations and Congruence

Duration: 22 Day(s)

Unit Description

Rigid Transformations
Properties of Rigid Transformations
Congruence
Angles in a Triangle

Topic: Rigid Transformations

Duration: 7 Day(s)

Topic Description (short)

Moving in the Plane
Naming the Moves
Grid Moves
Making the Moves
Coordinate Moves

Describing Transformations

Learning Targets

I can describe how a figure moves and turns to get from one position to another.
I can identify corresponding points before and after a transformation
I know the difference between translations, rotations, and reflections.
I can decide which type of transformations will work to move one figure to another.
I can use grids to carry out transformations of figures.

Learning Targets linked to Priority Standard = ✙

Topic: Properties of Rigid Transformations **Duration:** 6 Day(s)

Topic Description (short)

No Bending or Stretching.
Rotation Patterns
Moves in Parallel
Composing Figures

Learning Targets

I can describe the effects of a rigid transformation on the lengths and angles in a polygon.
I can describe how to move one part of a figure to another using a rigid transformation.
I can describe the effects of a rigid transformation on a pair of parallel lines.
If I have a pair of vertical angles and know the angle measure of one of them, I can find the angle measure of the other.
I can find missing side lengths or angle measures using properties of rigid transformations.

Learning Targets linked to Priority Standard = ✙

Topic: Congruence **Duration:** 4 Day(s)

Topic Description (short)

What is the Same?
Congruent Polygons
Congruence

Learning Targets

I can decide visually whether or not two figures are congruent.
I can decide using rigid transformations whether or not two figures are congruent.
I can use distances between points to decide if two figures are congruent.

Learning Targets linked to Priority Standard = ✙

Topic: Angles in a Triangle **Duration:** 3 Day(s)

Topic Description (short)

Alternate Interior Angles
Adding the Angles in a Triangle
Parallel Lines and the Angles in a Triangle
Rotate and Tessellate

Learning Targets

If I have two parallel lines cut by a transversal, I can identify alternate inter angles and use that to find missing angle measurements.
If I know two of the angle measures in a triangle, I can find the third angle measure.
I can explain using pictures why the sum of the angles in any triangle is 180 degrees.
I can repeatedly use rigid transformations to make interesting repeating patterns of figures.
I can use properties of angle sums to reason about how figures will fit together.

Learning Targets linked to Priority Standard = ✙

Unit: 2. Dilations, Similarity, and Introducing Slope **Duration:** 20 Day(s)

Unit Description

Students will determine if figures are scaled copies of each other, represent the figures in a diagram and represent them on a circular grid with radial lines. They will draw images of figures under dilations on and off square grids and the coordinate plane.

Dilations
Similarity
Slope

Topic: Dilations **Duration:** 6 Day(s)

Topic Description (short)

Projecting and Scale

Circular Grid
Dilations with No Grid
Dilations on a Square Grid

Learning Targets
I can decide if one rectangle is a dilation of another rectangle.
I know how to use a center and a scale factor to describe a dilation.
I can apply dilations to figures on a circular grid when the center of dilation is the center of the grid.
I can apply a dilation to a polygon using a ruler.
I can apply dilations to to figures on a square grid.
If I know the angle measures and side lengths of a polygon, I know the angles measures and side lengths of the polygon if I apply a dilation with a certain scale factor.
I can apply dilations to polygons on a rectangular grid if I know the coordinates of the vertices and of the center of dilation

Learning Targets linked to Priority Standard = ✣

Topic: Similarity **Duration:** 5 Day(s)

Topic Description (short)
Similarity
Similar Polygons
Similar Triangles
Side Length Quotients in Similar Triangles

Learning Targets
I can apply dilations to polygons on a rectangular grid if I know the coordinates of the vertices and of the center of dilation.
I can apply a sequence of transformations to one figure to get a smaller figure.
I can use a sequence of transformations to explain why two figures are similar.
I can use angle measures and side lengths to conclude that two polygons are not similar.
I know the relationship between angle measures and side lengths in similar polygons.
I know how to decide if two triangles are similar just by looking at their angle measures.
I can decide if two triangles are similar by looking at quotients of lengths of corresponding sides.
I can find missing side lengths in a pair of similar triangles using quotients of side lengths.

Learning Targets linked to Priority Standard = ✣

Topic: Slope **Duration:** 4 Day(s)

Topic Description (short)
Meet Slope
Writing Equations for Lines
Using Equations for Lines
The Shadow Knows

Learning Targets
I can draw a line on a grid with a given slope.
I can find the slope of a line on a grid.
I can decide whether a point is on a line by finding quotients of horizontal and vertical distances.
I can find an equation for a line and use that to decide which points are on that line.
I can model a real-world context with similar triangles to find the height of an unknown object.

Learning Targets linked to Priority Standard = ✣

Unit: 3. Linear Relationships **Duration:** 16 Day(s)

Unit Description
Proportional Relationships
Representing Linear Relationships
Finding Slopes
Linear Equations

Topic: Proportional Relationships **Duration:** 5 Day(s)

Topic Description (short)
Understanding Proportional Relationships
Graphs of Proportional Relationships
Representing Proportional Relationships
Comparing Proportional Relationships

Learning Targets
I can graph a proportional relationship from a story.

I can use the constant of proportionality to compare the pace of different animals.
I can graph a proportional relationship from an equation.
I can tell when two graphs are of the same proportional relationship even if the scales are different.
I can scale and label coordinate axes in order to graph a proportional relationship.
I can compare proportional relationships represented in different ways.

Learning Targets linked to Priority Standard = ✙

Topic: Representing Linear Relationships **Duration:** 4 Day(s)

Topic Description (short)
Introduction to Linear Relationships
More Linear Relationships
Representations of Linear Relationships
Translating to y=mx+b

Learning Targets
I can find the rate of change of a linear relationship by figuring out the slope of the line representing the relationship.
I can interpret the vertical intercept of a graph of a real-world situations.
I can match graphs to the real-world situations they represent by identifying the slope and the vertical intercept.
I can use patterns to write a linear equation to represent a situation.
I can write an equation for the relationship between the total volume in a graduated cylinder and the number of objects added to a graduated cylinder.
I can explain where to find the slope and vertical intercept in both and equation and its graph.
I can write equations of lines using y = mx + b.

Learning Targets linked to Priority Standard = ✙

Topic: Finding Slope **Duration:** 3 Day(s)

Topic Description (short)
Slopes Don't Have to be Positive
Calculating Slope
Equations of All Kinds of Lines

Learning Targets
I can give an example of a situation that would have a negative slope when graphed.
I can look at a graph and tell if the slope is positive or negative and explain how I know.
I can calculate positive and negative slopes given two points on the line.
I can describe a line precisely enough that another student can draw it.
I can write equations of lines that have a positive or a negative slope.
I can write equations of vertical and horizontal lines.

Learning Targets linked to Priority Standard = ✙

Topic: Linear Equations **Duration:** 3 Day(s)

Topic Description (short)
Solutions to Linear Equations
Using Linear Relations to Solve Problems

Learning Targets
I know that the graph of an equation is a visual representation of all the solutions to the equation
I understand what the solution to an equation in two variables is.
I can find solutions (x, y) to linear equations given either the x or the y value to start from.
I can write linear equations to reason about real-world situations.

Learning Targets linked to Priority Standard = ✙

Unit: Solving Equations and Systems of Equations **Duration:** 30 Day(s)

Unit Description
Students will learn about solving equations with variables on both sides with rational number coefficients and constants. Also, students will learn about solving systems of equations by graphing, substitution, or elimination.

Enduring Understandings (Knowledge & Skills)
How can you use equations with the variable on both sides to solve real-world problems?
How can you solve systems of linear equations by graphing, substitution, or elimination?

Academic Vocabulary
algebraic expression
coefficient
common denominator

constant
equation
integers
least common multiple
operations
solution
variable
linear equation
ordered pair
slope
slope-intercept form
x-axis
x-intercept
y-axis
y-intercept
solution of a system of equations
systems of equations

Topic: Solving Linear Equations **Duration:** 15 Day(s)

Topic Description (short)
Equations with the variable on both sides
Equations with rational numbers
Equations with the distributive property
Equations with many solutions or no solution

Learning Targets
algebraic expression
coefficient
common denominator
constant
equation
integers
least common multiple
operations
solution
variable

Formative Assessment
Bell Ringers
Exit slips
Teacher observation

Learning Targets
Students will represent and solve equations with the variable on both sides.
Assessment: problems from lesson 7.1 pages 200-201
Students will solve equations with rational number coefficients and constants.
Assessment: problems from lesson 7.2 pages 206-208
Students will solve and give examples of equations with a given number of solutions.
Assessment: problems from lesson 7.4 pages 218-220
Students will solve equations with the variable on both sides and with rational number coefficients and constants.
Assessment: problems from lesson 7.1 pages 200-202
problems from lesson 7.2 pages 206-208
problems from lesson 7.3 pages 212-213

Learning Targets linked to Priority Standard = ✠

Topic: Solving Systems of Linear Equations **Duration:** 15 Day(s)

Topic Description (short)
Solving systems of linear equations by:
graphing
substitution
elimination
elimination with multiplication
Solve Special Systems

Learning Targets
linear equation
ordered pair

slope
slope-intercept form
x-axis
x-intercept
y-axis
y-intercept
solution of a system of equations
system of equations

Formative Assessment
Bell ringer
exit slip
teacher observation

Learning Targets
Students will learn how to solve systems of two linear equations in two variables using graphing, elimination, and substitution.

Students will learn how to analyze special systems that have no solution or an infinite number of solutions.

Students will learn how to represent real-world situations using systems of equations.

Learning Targets linked to Priority Standard = ✚

Unit: 4. Linear Equations and Linear Systems

Duration: 20 Day(s)

Unit Description
Linear Equations in One Variable
Systems of Linear Equations

Topic: Linear Equations in One Variable

Duration: 9 Day(s)

Topic Description (short)
Keeping the Equation Balanced
Balanced Moves
Solving Any Linear Equation
Strategic Solving
All, Some, or No Solutions
How Many Solutions?
When Are They the Same?

Learning Targets
I can solve puzzle problems using diagrams, equations, or other representations.
I can add or remove blocks from a hanger and keep the hanger balanced.
I can represent balanced hangers with equations.
I can add, subtract, multiply, or divide each side of an equation by the same expression to get to a new equation with the same solution.
I can make sense of multiple ways to solve an equation.
I can solve an equation where the variable appears on both sides.
I can solve linear equations in one variable.
I can determine whether an equation has no solutions, one solution, or infinitely many solutions.
I can solve equations with different numbers of solutions.
I can use an expression to find when two things, like height, are the same in a real-world situation.

Learning Targets linked to Priority Standard = ✚

Topic: Systems of Linear Equations

Duration: 6 Day(s)

Topic Description (short)
On or Off the Line?
On Both of the Linde
Systems of Equations
Solving Systems of Equations
Writing Systems of Equations
Solving Problems with Systems of Equations

Learning Targets
I can identify ordered pairs that are a solution to an equation.
I can interpret ordered pairs that are solutions to an equation.
I can use graphs to find an ordered pair that two real-world situations have in common.
I can explain what a system of equations is.
I can explain what a system of equations is.

I can make graphs to find an ordered pair that two real-world situations have in common.
I can graph a system of equations.
I can solve systems of equations using algebra.
I can use the structure of equations to help me figure out how many solutions a system of equations has.
I can write a system of equations from a real-world situation.
I can use a system of equations to represent a real-word situation and answer questions about the situation.

Learning Targets linked to Priority Standard = ✙

Unit: 5. Functions and Volume

Duration: 27 Day(s)

Unit Description

Inputs and Outputs
Representing and Interpreting Functions
Linear Functions and and Rates of Change
Cylinders and Comes
Dimensions and Spheres

Topic: Inputs and Outputs

Duration: 3 Day(s)

Topic Description (short)

Inputs and Outputs
Introduction to Funtions

Learning Targets

I can write rules when I know input-output pairs.
I know how an input-output diagram represents a rule.
I know what a function is a rule with exactly one out for each allowable input.
I know that if a rule has exactly one output for each allowable input, then the output depends on the input.

Learning Targets linked to Priority Standard = ✙

Topic: Representing and Interpreting Functions

Duration: 5 Day(s)

Topic Description (short)

Equations for Functions
Tables, Equations, and Graphs of Functions
Graphs of Functions
Connecting Representations of Functions

Learning Targets

Students will learn how to use linear relationships to compare two functions.
Assessment: problems from lesson 6.3 pages 170-172
Students will learn how to represent and use functions by analyzing and interpreting graphs.
Assessment: problems from lesson 6.4 pages 176-178

Learning Targets linked to Priority Standard = ✙

Topic: Cylinders and Cones

Duration: 6 Day(s)

Topic Description (short)

Filling Containers
How Much Will Fit?
The Volume of a Cylinder
Finding Cylinder Dimensions
The Volume of a Cone
Finding Cone Dimensions

Learning Targets

Students will model the relationship between the volume of a cylinder and a cone having both congruent bases and height and connect that relationship to their volume formulas.
Students will represent and solve for the volumes of three-dimensional curved figures.
Students will solve for surface area of pyramids and find the volume of cones, spheres, pyramids, and cylinders.
Students will solve problems involving the volume of cylinders, cones, and spheres.

Learning Targets linked to Priority Standard = ✙

Topic: Dimensions and Spheres

Duration: 6 Day(s)

Topic Description (short)

Scaling One Dimension
Scaling Two Dimensions

Estimating a Hemisphere
The Volume of a Sphere
Cylinders, Cones, and Spheres
Volume as a Function

Learning Targets
Students will represent and solve for the volumes of three-dimensional curved figures.
Students will solve for surface area of pyramids and find the volume of cones, spheres, pyramids, and cylinders.
Students will solve problems involving the volume of cylinders, cones, and spheres.

Learning Targets linked to Priority Standard = ✣

Unit: Transformational Geometry

Duration: Ongoing

Unit Description
Transformations and congruence
Transformations and Similarity

Enduring Understandings (Knowledge & Skills)
How can you use transformations and congruence to solve real-world problems?
How can you use dilations and similarity to solve real-world problems?

Topic: Transformations and Congruence

Duration: 8 Day(s)

Topic Description (short)
Properties of Translations, Reflections, and Rotations

Learning Targets
Center of Rotation
Congruent
Image
Line of Reflection
Preimage
Reflection
Rotation
Transformation
Translation

Formative Assessment
Bell work
Exit slip
Teacher observation
Fist of 5
Homework

Learning Targets
Students will use transformation geometry to represent the effect of translations, reflections, and rotations in a coordinate plane using an algebraic representation.
Students will be able to combine a series of transformations to understand congruence.
Students will use transformational geometry to represent properties of orientation and congruence of translations in a coordinate plane.
Students will use transformational geometry to represent properties of orientation and congruence of reflections in a coordinate plane.
Students will use transformational geometry to represent properties of orientation and congruence of rotations in a coordinate plane.

Learning Targets linked to Priority Standard = ✣

Topic: Transformations and Similarity

Duration: 5 Day(s)

Topic Description (short)
Properties of Dilations
Algebraic Representations of Dilations
Similar Figures

Learning Targets
Center of dilation
Dilation
Enlargement
Reduction
Scale Factor
Similar

Formative Assessment
Bell Ringer

Exit slip
Teacher observation
Fist of 5
Homework

Learning Targets
Students will use transformation geometry to compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane.
Students explore how transformations can be used to obtain similar figures.
Students use transformational geometry to represent algebraically the effect of a scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation.

Students use transformation geometry to compare and contrast attributes of a shape and its dilation(s) on a coordinate plane.
Learning Targets linked to Priority Standard = ✣

Unit: Proportional and Nonproportional Relationships and Functions

Duration: 32 Day(s)

Unit Description
Proportional relationships
Nonproportional relationships
Writing linear equations
Functions

Students will learn about proportional and nonproportional relationships, slope-intercept equations, and functions. Students will be able to solve and recognize proportional and nonproportional relationships, graph and write equations in slope-intercept form, and identify functions from various sources.

Enduring Understandings (Knowledge & Skills)
How can you use proportional and nonporportional relationships to solve real-world problems?
How can you write an equation to model a linear relationship?
How can you identify, represent, describe, compare, and analyze functions?

Academic Vocabulary
Constant of proportionality
proportional relationships
rate of change
slope
unit rates

Materials and Resources (optional)
Attached below

Topic: Proportional Relationships

Duration: 7 Day(s)

Topic Description (short)
Representing Proportional Relationships
Rate of Change and Slope
Interpreting the Unit Rate as Slope

Learning Targets
constant
equivalent ratios
proportion
rate
ratios
unit rates
constant of proportionality
proportional relationship
rate of change
slope

Formative Assessment
Bell work
quizzes
teacher observation
exit slip

Learning Targets
Students represent and solve problems involving proportional relationships by graphing proportional relationships.
Assessment: problems from lesson 3.3 pages 86-88

Students represent and solve problems involving proportional relationships by interpreting the unit rate as the slope of the line that models the relationship.
Assessment: problems from lesson 3.3 pages 86-88
Students will represent and solve problems involving proportional relationships by representing linear proportional situations with tables, graphs, and equations.
Assessment: problems from lesson 3.1 pages 74-76
Students will learn how to compare functions using slopes to compare unit rates.
Assessment: problems from lesson 3.3 pages 86-88
Students will learn how to represent proportional relationships, find slope, and interpret unit rate.
Assessment: problems from 3.1 pages 74-76
problems from 3.2 pages 80-82
problems from 3.3 pages 86-88

Learning Targets linked to Priority Standard = ✙

Topic: Nonproportional Relationship **Duration:** 7 Day(s)

Topic Description (short)
Representing Linear Nonproportional Relationships
Determining Slope and y-intercept
Graphing Linear Nonproportional Relationships using slope and y-intercept
Proportional and Nonproportional Situations

Learning Targets
proportional relationship
rate of change
slope
linear equation
slope-intercept form of an equation

Formative Assessment
bell work
quizzes
teacher observation
exit slip
fist of 5

Learning Targets
Students will learn how to represent linear nonproportional situations with tables, graphs, and equations in the form of y = mx + b.
Assessment: problems from lesson 4.2 pages 104 -106
Students represent and solve problems involving proportional and nonproportional relationships by distinguishing between proportional and nonproportional situations using tables, graphs, and equations in the form y = kx and y = mx + b, where b does not equal 0.
Assessment: problems from lesson 4.4 page 117-118
Students will represent linear nonproportional situations from tables, graphs, and equations.
Assessment: problems from lesson 4.1 pages 98-100
Students will graph a line using the slope and y- intercept.
Assessment: problems from lesson 4.3 pages 110-112
Students will learn how to recognize between proportional and nonproportional relationships by using the slope-intercept form equation and recognizing if a function has a constant rate of change.
Assessment: problems from lesson 4.4 pages 118-120
Students will learn how to graph slope-intercept form equations.
Assessment: problems from lesson 4.3 pages 110-112
Students will learn how to recognize proportional and nonproportional relationships.
Assessment: problems from lesson 4.4 pages 118-120

Learning Targets linked to Priority Standard = ✙

Topic: Writing Linear Equations **Duration:** 9 Day(s)

Topic Description (short)
Writing Linear Equations from Situations and Graphs
Writing Linear Equations from a Table
Linear Relationships and Bivariate Data

Learning Targets
linear equation
proportional relationship
rate of change
slope
slope-intercept form
bivariate data

nonlinear relationship

Formative Assessment
bell work
quizzes
teacher observation
fist of 5
exit slip

Learning Targets
Students represent and use linear relationships by writing an equation in the form y = mx + b to model a linear relationship between two quantities.
Assessment: problems from lesson 5.1 pages 130-132
problems from lesson 5.2 pages 136-138
Students will learn how to contrast linear and nonlinear sets of bivariate data.
Assessment: problems from lesson 5.3 pages 144-145
Students will learn how to contrast linear and nonlinear sets of bivariate data.
Assessment: problems from lesson 5.3 pages 144-145
Students will recognize patterns in the bivariate data.
Assessment: problems from lesson 3.3 pages 144-146

Learning Targets linked to Priority Standard = ✙

Topic: Functions **Duration:** 9 Day(s)

Topic Description (short)
Identifying and Representing Functions
Describing Functions
Comparing Functions
Analyzing Graphs

Learning Targets
function
input
output

Formative Assessment
bell work
exit slip
quizzes
teacher observation
fist of 5

Learning Targets
Students will learn how to use tables, graphs, and equations to compare functions.
Assessment: problems from lesson 6.3 pages 170-172
Students will learn how to identify functions using sets of ordered pairs, tables, mappings, and graphs.
Assessment: problems from lesson 6.1 pages 158-160
Students will learn how to use functions to describe functions.
Assessment: problems from lesson 6.2 pages 164-166
Students will use tables, graphs, and equations to compare functions.
Assessment: problems from lesson 6.3 pages 170-172
Students will learn how to describe functions as linear or nonlinear.
Assessment: problems from lesson 6.2 pages 164-166
Students will learn how to use linear relationships to compare two functions.
Assessment: problems from lesson 6.3 pages 170-172
Students will learn how to represent and use functions by analyzing and interpreting graphs.
Assessment: problems from lesson 6.4 pages 176-178

Learning Targets linked to Priority Standard = ✙

Unit: Measurement Geometry **Duration:** Ongoing

Unit Description
Angle relationships in parallel lines and triangles
The Pythagorean Theorem
Volume

Enduring Understandings (Knowledge & Skills)
How can you use angle relationships in parallel lines and triangles to solve real-world problems?
How can you use the Pythagorean Theorem to solve real-world problems?

How can you use volume to solve real-world problems?

Topic: Angle Relationships in Parallel Lines and Triangles

Duration: 10 Day(s)

Topic Description (short)
Parallel Lines Cut by a Transveral
Angle Theorems for Triangles
Angle-Angle Similarity

Learning Targets
Alternate exterior angles
Alternate interior angles
Corresponding angles
Exterior angle
Interior angle
Remote interior angle
Same-side interior angles
Similar
Transveral

Formative Assessment
Bell ringer
Exit slip
Teacher observation
Fist of 5
Homework

Learning Targets
Students will represent and determine angle relationships from angles formed by parallel lines that are cut by a transversal.
Students will represent and determine the sum of the measures of the angles of a triangle.
Students will determine the similarity of triangles.
Students will use similar triangles to find that slope is the same using any two points on a nonvertical line.
Students will solve equations to find missing interior and exterior angles of a triangle.

Learning Targets linked to Priority Standard = ✙

Topic: The Pythagorean Theorem

Duration: 6 Day(s)

Topic Description (short)
The Pythagorean Theorem
Converse of the Pythagorean Theorem
Distance Between Two Points

Learning Targets
Hypotenuse
Legs
Theorem
Vertex

Formative Assessment
Bell ringer
Exit slip
Teacher observation
Fist of 5
Homework

Learning Targets
Students will use the Pythagorean Theorem to solve problems.
Students will use the converse of the Pythagorean Theorem to solve problems.
Students will use models and diagrams to explain the Pythagorean Theorem.
Students will use the Pythagorean Theorem to solve problems.
Students will determine the distance between two points on a coordinate plane using the Pythagorean Theorem.

Learning Targets linked to Priority Standard = ✙

Topic: Volume

Duration: 6 Day(s)

Topic Description (short)
Volume of Cylinders
Volume of Cones
Volume of Spheres

Learning Targets
- Cone
- Cylinder
- Sphere
- Pyramid
- Surface Area
- Volume

Formative Assessment
- Bell Ringer
- Exit slip
- Teacher observation
- Fist of 5
- Homework

Learning Targets
- Students will represent and solve for the volumes of three-dimensional curved figures.
- Students will describe the formula V = Bh of a cylinder in terms of its base area and height.
- Students will model the relationship between the volume of a cylinder and a cone having both congruent bases and height and connect that relationship to their volume formulas.
- Students will solve problems involving the volume of cylinders, cones, and spheres.
- Students will solve for surface area of pyramids and find the volume of cones, spheres, pyramids, and cylinders.

Learning Targets linked to Priority Standard = ✣

Unit: Statistics

Duration: Ongoing

Unit Description
- Scatter Plots
- Two-Way tables

Enduring Understandings (Knowledge & Skills)
- How can you use scatter plots to solve real-world problems?
- How van you use two-way frequency tables to solve real-world problems?

Topic: Scatter Plots

Duration: 7 Day(s)

Topic Description (short)
- Scatter Plots and Association
- Trend Lines and Predictions

Learning Targets
- Cluster
- Outlier
- Scatter Plot
- Trend Line

Formative Assessment
- Bell Ringer
- Exit Slip
- Fist of 5
- Teacher observation
- Homework

Learning Targets
- Students will learn to represent bivariate data in a scatter plot with a trend line.
- Students will learn to represent data in a scatter plot.
- Students will learn to describe associations in data in scatter plots.
- Students will learn to make predictions from a scatter plot or trend line.

Learning Targets linked to Priority Standard = ✣

Topic: Two-Way Tables

Duration: 10 Day(s)

Topic Description (short)
- Two-Way Frequency Tables
- Two-Way Relative Frequency Tables

Learning Targets
- Conditional Relative Frequency
- frequency
- joint relative frequency

marginal relative frequency
relative frequency
two-way table
two-way relative frequency table

Formative Assessment
bell ringer
exit slip
teacher observation
fist of 5

Learning Targets
Students will learn how to:
1. Create two-way frequency and relative frequency tables for categorical data.
2. Calculate join, marginal, and conditional relative frequencies given a two-way relative frequency table.
3. Analyze a two-way table to discover any association between the variables.

Learning Targets linked to Priority Standard = ✠

Unit: Real Numbers, Exponents, and Scientific Notation

Duration: 18 Day(s)

Unit Description
Real Numbers
Exponents and Scientific Notation

Students will learn how to express rational numbers and irrational numbers, as well as how to describe the relationships and order a set of real numbers. Students will learn how to apply properties of exponents, convert numbers in scientific and standard notation, and use operations with numbers in scientific notation.

Enduring Understandings (Knowledge & Skills)
How can you use real numbers to solve real-world problems?
How can you use scientific notation to solve real-world problems?

Academic Vocabulary
Cube root
Irrational number
perfect cube
perfect square
principal square root
rational number
real numbers
repeating decimal
square root
terminating decimal
base
exponent
positive number
standard notation
power
rational number
real numbers
scientific notation
whole number

Materials and Resources (optional)
Test submitted as an attachment

Topic: Real Numbers

Duration: 8 Day(s)

Topic Description (short)
Rational and Irrational Numbers
Sets of Real Numbers
Ordering Real Numbers

Learning Targets
Cube root
Irrational number
perfect cube
perfect square
principal square root
rational number
real numbers

repeating decimal
square root
terminating decimal

Formative Assessment
Bell Work
Exit Slip
Teacher Observation
Fist of 5

Learning Targets
Students will learn how to express a rational number as a decimal.
Assessment: Problems from lesson 1.1 page 12-14
Students will learn how to describe the relationship between sets of real numbers.
Assessment: problems from lesson 1.2 pages 18-20
Students will learn how to approximate the value of an irrational number.
Assessment: problems from lesson 1.3 page 24-25
Students will be able to use square roots and cube roots.

Learning Targets linked to Priority Standard = ✠

Topic: Exponents and Scientific Notation **Duration:** 10 Day(s)

Topic Description (short)
Integer Exponents
Scientific Notation with Positive Powers of 10
Scientific Notation with Negative Powers of 10
Operations with Scientific Notation

Learning Targets
base
exponent
positive number
standard notation
power
rational number
real numbers
scientific notation
whole number

Formative Assessment
bell work
exit slip
fist of 5
teacher observation

Learning Targets
Students will learn how to apply properties of integer exponents to evaluate expressions.
Assessment: problems from lesson 2.1 pages 36-38
Students will learn how to convert between large numbers in standard decimal notation and scientific notation.
Assessment: problems from lesson 2.2 pages 42-44
Students will learn how to convert between small numbers in standard decimal notation and scientific notation.
Assessment: problems form lesson 2.3 pages 48-50
Students will learn how to add, subtract, multiply, and divide numbers expressed with scientific notation.
Assessment: problems from lesson 2.4 pages 54-56

Learning Targets linked to Priority Standard = ✠