

# 8<sup>th</sup> Math - 7<sup>th</sup> Grade Accelerated Year at a Glance 2019 - 2020

## 1<sup>st</sup> Grading Period

### Real Numbers

- Calculator Skills and Operations (review operations without calculator first)
- Scientific Notation  
8.2C (1 day exponent skills) convert between standard decimal notation and scientific notation
- Relationships between sets, approximating, and ordering real numbers  
8.2A extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers  
8.2B approximate the value of an irrational number, including  $\pi$  and square roots of numbers less than 225, and locate that rational number approximation on a number line  
**8.2D order a set of real numbers arising from mathematical and real-world contexts**

### Equations and Inequalities

- Review one and two step equations, combining like terms, distributive property, multi-step equations
- Model and Solve one variable equations with variables on both sides  
Scaffold –
  - **7.11A model and solve one-variable, two-step equations and inequalities****8.8C model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants**
- Write one variable equations and inequalities  
8.8A write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants  
8.8B write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants

### Bivariate Data and Constant Rate of Change/Slope

- Bivariate Data  
8.5C contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation  
**8.5D use a trend line that approximates the linear relationship between bivariate sets of data to make predictions**  
8.11A construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data
- Direct Variation and represent linear proportional situations  
Scaffold –
  - **7.4D solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems**
 8.5E solve problems involving direct variation  
8.5A represent linear proportional situations with tables, graphs, and equations in the form of  $y = kx$
- Develop slope and graph proportional situations  
Scaffold –
  - **7.7A represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form  $y = mx + b$**
  - **7.5C solve mathematical and real-world problems involving similar shape and scale drawings**
 8.4A use similar right triangles to develop an understanding that slope,  $m$ , given as the rate comparing the change in  $y$ -values to the change in  $x$ -values,  $(y_2 - y_1)/(x_2 - x_1)$ , is the same for any two points  $(x_1, y_1)$  and  $(x_2, y_2)$  on the same line  
**8.4B graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship**

## 2<sup>nd</sup> Grading Period

### 1<sup>st</sup> 4 days - Finish Bivariate Data and Constant Rate of Change/Slope Functions

- Determine slope  
**8.4C use data from a table or graph to determine the rate of change or slope and  $y$ -intercept in mathematical and real-world problems**
- Represent linear relationships and Write an Equation ( $y=mx+b$ ) using Verbal, Numerical, Tables & Graphs  
**8.5I write an equation in the form  $y = mx + b$  to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations**  
8.5B represent linear non-proportional situations with tables, graphs, and equations in the form of  $y = mx + b$ , where  $b \neq 0$
- Proportional vs Non-Proportional  
8.5F distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form  $y = kx$  or  $y = mx + b$ , where  $b \neq 0$   
8.5H identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems
- Identify, Represent Functions using Ordered Pairs, Tables, Graphs, and Mappings  
**8.5G identify functions using sets of ordered pairs, tables, mappings, and graphs**
- Intersection of Two Linear Equations Graphs  
8.9A identify and verify the values of  $x$  and  $y$  that simultaneously satisfy two linear equations in the form  $y = mx + b$  from the intersections of the graphed equations

### Financial Literacy

- Mean Absolute Deviation  
8.11B determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points
- Simulate Random Sampling  
8.11C simulate generating random samples of same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected
- Calculate/Compare Simple and Compound Interest  
**8.12D calculate and compare simple interest and compound interest earnings**  
Financial Decisions (8.12A – 8.12G)

**Transformations**

- Similar Figures and Dilations

8.3A generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation

8.3B compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane

**8.3C use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation**

8.10D model the effect on linear and area measurements of dilated two-dimensional shapes

- Transformations

8.10A generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane

8.10B differentiate between transformations that preserve congruence and those that do not

**8.10C explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation**

**2D Figures**

- Angles and Similarity

8.8D use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles

- Pythagorean Theorem

8.6C use models and diagrams to explain the Pythagorean theorem

**8.7C use the Pythagorean theorem and its converse to solve problems**

8.7D determine the distance between two points on a coordinate plane using the Pythagorean theorem

**3D Figures**

- Volume of cylinders, cones, and spheres

Scaffold CIRCLES -

- 7.9B determine the circumference and area of circles
- 7.9C determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles

Additional Scaffold –

- 7.9A solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids

8.6B model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas

8.6A describe the volume formula  $V = Bh$  of a cylinder in terms of its base area and its height

**8.7A solve problems involving the volume of cylinders, cones, and spheres**

- Surface Area of rectangular and triangular prisms and cylinders

Scaffold –

- 7.9D solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net

**8.7B use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders**

**Finish 3-D Figures****Preparing for Algebra****More in depth:**

- Slope
- Linear Equations
- Solving Equations