

## Instructional Vocabulary

### Grade 8 Math

#### Unit 1: Numerical Understanding: Rational Numbers

- **Rational number** – a number that can be expressed as a fraction, where the numerator and denominator are integers and the denominator is not equal to zero
- **Scientific notation** – a method to write very large or very small numbers using powers of ten that contains two parts, a coefficient whose decimal value is greater than or equal to 1 and less than 10 and a power of ten to which the coefficient is multiplied

#### Unit 2: Numerical Operations: Rational Numbers

- **Estimate** – to use the information given in a problem to predict the answer
- **Simplifying an expression** – to find the value of a numeric expression by following the order of operations

#### Unit 3: Proportionality: Representations and Applications

- **Proportional relationship** – a relationship between variables in a problem that is characterized by three things: 1) there is a constant rate of change between the variables-  $y/x$  is constant for any ordered pair, 2) the graph goes through the origin, and 3) the equation for the function has the form  $y = kx$  where  $k$  is the constant of proportionality,  $y/x$
- **Scale factor** – the common ratio between pairs of corresponding sides of similar figures; the constant of proportionality
- **Unit rate** – a ratio between two units where one of the terms is 1

#### Unit 4: Geometry: Transformations in the Coordinate Plane and Perspectives

- **Dilation** – a transformation where the image is enlarged or reduced depending on the scale factor; produces an image that is similar to the original
- **Front view** – the view of a three-dimensional figure looking from the front
- **Perspectives** – the two-dimensional top, front, and side view of a three-dimensional shape
- **Reflection** – a transformation frequently described as a flip; congruence is maintained and orientation is a mirror image
- **Scale factor** – the common ratio between pairs of corresponding sides of similar figures; the constant of proportionality
- **Side view** – the view of a three-dimensional figure looking from the side
- **Top view** – the view of a three-dimensional figure looking down from the top
- **Transformation** – a translation, reflection, dilation, or a combination of the three
- **Translation** – a transformation frequently described as a slide; congruence is maintained, as well as orientation to the original figure

#### Unit 5: Algebraic Representations and Applications

- **Arithmetic sequence** – a sequence of numbers that have a constant common difference between each pair of consecutive numbers, and a linear relationship exists between the number in the sequence and its location in the sequence
- **Equation** – a mathematical sentence composed of algebraic expressions set equal to each other
- **Equivalent equations or expressions** – algebraic equations or expressions that yield the same solution or values
- **Expression** – a mathematical representation consisting of symbols, operators, and/or variables to indicate operations to be performed on a group of numbers according to the order of operations
- ***n*th term** – term in a sequence represented by and found using an algebraic expression that describes the relationship between the two variables in the problem
- **Representations** – concrete models, tables, graphs, verbal descriptions, and algebraic generalizations of data
- **Solution** – a value of the variable that makes the equation true
- **Solving an equation** – process of finding the value of a variable that makes the equation true
- **Variable** – a symbol, usually a letter, used to represent an unknown value

#### Unit 6: Irrational Numbers and Pythagorean Theorem

- **Hypotenuse** – name given to the side of a right triangle that connects the legs; it is the longest side of the triangle
- **Irrational number** – a number which cannot be written in the form of a ratio
- **Leg** – name given to the two sides of a right triangle that are adjacent to the right angle

#### Unit 7: Measurement: Two- and Three-Dimensional

- **Lateral surface area** – the number of square units needed to cover the lateral view (area excluding the base(s) of a three-dimensional figure)
- **Total surface area** – the number of square units needed to cover all of the surfaces (bases and lateral area)
- **Volume** – a measurement of the amount of space occupied by a three-dimensional figure, recorded in cubic units

#### Unit 8: Probability

- **Dependent events** – events where the outcome of the first event affects the probability that the second event occurs
- **Experimental probability** – number of observed occurrences of the event/total number of trials
- **Independent events** – events where the outcome of one event does not affect the outcome of another
- **Probability** – a ratio between the number of desired outcomes to the total possible outcomes,  $0 \leq p \leq 1$
- **Sample space** – the collection of all possible outcomes of an experiment
- **Theoretical probability** – number of outcomes in the event/number of possible outcomes

#### Unit 9: Statistical Representations and Analysis

- **Correlation** – a description of the relationship between the two variables in a set of data; linear correlation describes the linear trend in the data; there are three possibilities with linear correlation: positive linear correlation, negative linear correlation, or no linear correlation

- **Interquartile Range (IQR)** – a measure of the spread equal to the difference between the first and third quartiles in a set of numerical data
- **Measures of central tendency** – statistical representations (mean, median, and mode) used to analyze data in a set
- **Measures of variability** – variation of the data around measures of central tendency, range, and interquartile range (IQR)
- **Trend** – predictability in data
- **Sample** – a subset of the population selected in order to make inferences about the entire population
- **Sampling method** – the strategy chosen to collect research data for a survey or experiment (e.g., convenience, random, systematic, voluntary, etc.)
- **Validity** – the extent to which data measures what it is intended to measure

#### Unit 10: Making Connections

- **Proportional relationship** – a relationship between variables in a problem that is characterized by three things: 1) there is a constant rate of change between the variables-  $y/x$  is constant for any ordered pair; 2) the graph goes through the origin; and 3) the equation for the function has the form  $y = kx$ , where  $k$  is the constant of proportionality,  $y/x$
- **Scale factor** – the common ratio between pairs of corresponding sides of similar figures; the constant of proportionality

#### Unit 11: Graphing Calculator Investigations

- **None identified**