

## 8<sup>th</sup> Grade Vocabulary from GPS Framework

### Unit 1 Probability

**Independent events:** Events for which the occurrence of one has no impact on the occurrence of the other.

**Relative frequency:** The number of times an outcome occurs divided by the total number of trials.

**Sample space:** All possible outcomes of a given experiment.

**Event:** A subset of a sample space.

**Simple Event:** An event consisting of just one outcome. A simple event can be represented by a single branch of a tree diagram.

**Compound Event:** A sequence of simple events.

**Complement:** The complement of event E, sometimes denoted E' (E prime), occurs when E doesn't. The probability of E' equals 1 minus the probability of E:  $P(E') = 1 - P(E)$ .

**Counting Principle:** If an event A can occur in  $m$  ways and for each of these  $m$  ways, an event B can occur in  $n$  ways, then events A and B can occur in  $mn$  ways. This counting principle can be generalized to more than two events that happen in succession. So, if for each of the  $m$  and  $n$  ways A and B can occur respectively, there is also an event C that can occur in  $s$  ways, then events A, B, and C can occur in  $mn$  ways.

**Tree diagram:** A tree-shaped diagram that illustrates sequentially the possible outcomes of a given event.

### Unit 2 Exponents and Radicals

**Additive Inverse:** The sum of a number and its additive inverse is zero. Also called the opposite of a number. Example: 5 and -5 are additive inverses of each other.

**Exponent:** The number of times a base is used as a factor of repeated multiplication.

**Exponential Notation:** See *Scientific Notation* below.

**Hypotenuse:** The side opposite to the right angle in a right triangle.

**Irrational:** A real number whose decimal form is non-terminating and non-repeating that cannot be written as the ratio of two integers.

**Leg:** Either of the two shorter sides of a right triangle. The two legs form the right angle of the triangle.

**Pythagorean Theorem:** A theorem that relates the lengths of the sides of a right triangle: The sum of the squares of the lengths of the legs of a right triangle equals the square of the length of the hypotenuse.

**Radical:** A symbol that is used to indicate square roots.

**Rational:** A number that can be written as the ratio of two integers with a nonzero denominator.

**Scientific Notation:** A representation of real numbers as the product of a number between 1 and 10 and a power of 10, used primarily for very large or very small numbers.

**Significant Digits:** A way of describing how precisely a number is written.

**Square root:** One of two equal factors of a nonnegative number. For example, 5 is a square root of 25 because  $5 \cdot 5 = 25$ . Another square root of 25 is -5 because  $(-5) \cdot (-5) = 25$ . The +5 is called the principle square root of 25 and is always assumed when the radical symbol is used.

## Unit 4 Functional Relationships

**Closed Form of a Sequence:** (This is also known as the explicit form of a sequence.)

For an arithmetic sequence, use as the explicit or closed form.

For a geometric sequence, use as the explicit or closed form.

$a_n$  represents the  $n$ th term of the sequence;

$a_1$  represents the first term in the sequence;

$d$  is the common difference for the arithmetic sequence;

$r$  is the common ratio for the geometric sequence; and

$n$  represents the number of a term (for the 7th term,  $n$  would be 7).

This form should be simplified whenever possible.

**Complement of a Set:** (This is also known as the absolute complement of a set and/or the relative complement of a set.)

If a universal set,  $\mathbf{U}$ , is defined; the complement of  $A$  in  $\mathbf{U}$  is the collection of all items in  $\mathbf{U}$  *not* in  $A$  and may be denoted by  $A^c$  or  $A'$ .

**Element:** A member or item in a set

**Explicit Form of a Sequence:** See Closed Form of a Sequence

**Function:** A special dependence between two quantities where the independent variable (or input) produces the dependent variable (or output). A function relates precisely one output to each of its acceptable inputs.

**Intersection of Sets:** The set of all elements contained in all of the given sets, but no additional elements

**Null Set:** : A subset which has no elements; also called the ‘empty set’

**Proper Subset:** A subset that does not contain every element of the parent set

**Recursive Sequence:** A type of sequence in which the values of terms originate from other terms in the sequence

**Relation:** A set

**Set:** A collection of numbers, geometric figures, letters, or other objects that have some characteristic in common

**Subset:** A collection of items drawn entirely from a single set. A subset can consist of any number of items from a set ranging from none at all (a null subset) all the way up to the entire set (every set is a subset of itself).

**Union of Sets:** The set of all elements that belong to at least one of the given two or more sets

**Venn Diagram:** A picture that illustrates the relationship between two or more sets

{ } : “Curly braces” are often used to denote members of a set. For example, the positive, single-digit, even numbers are {2,4,6,8}.

## Unit 5 Functions

**Arithmetic sequence:** A sequence of numbers in which the difference between any two consecutive terms is the same

**Constant function:** A function that is written  $y = k$ , where  $k$  is a real number. The  $y$  value is constant for all values of  $x$ . The graph of a constant function is a horizontal line.

**Function:** A relation (set of ordered pairs) such that each  $x$  value is associated with only one  $y$  value.

**Graph of a linear inequality:** The solutions of a linear inequality, forming a half-plane on one side of a line and may or may not also form the line itself.

**Half-plane:** The portion of a plane on one side of a line.

**Line of best fit:** The line that best represents the trend established by the points in a particular scatter plot.

**Point-slope form:** Derived from the fact that if one point on a line and the slope of that same line are known, the line may be determined or drawn,  $y - y_1 = m(x - x_1)$

**Scatter plot:** The graph of a collection of ordered pairs.

**Slope:** The steepness of a line, which may be calculated by finding the ratio of the difference between the  $y$  values of two points on the line to the difference between the corresponding  $x$  values of those two points on the line.

**Slope-intercept form:** One way to write an equation of a line; uses the form  $y = mx + b$ , where  $m$  is the slope and  $b$  is the  $y$ -intercept.

**Standard form:** Also known as ‘General form’ for a linear equation in two variables,  $x$  and  $y$ .

It is usually given as  $Ax + By = C$  where, if at all possible,  $A$ ,  $B$ , and  $C$  are integers, and  $A$  is non-negative, and,  $A$ ,  $B$ , and  $C$  have no common factors other than 1.

## Unit 6 Geometry

**Adjacent Angles:** Angles in the same plane that have a common vertex and a common side, but no common interior points.

**Alternate Exterior Angles:** Alternate exterior angles are pairs of angles formed when a third line (a transversal) crosses two other lines. These angles are on opposite sides of the transversal and are outside the other two lines. When the two other lines are parallel, the alternate exterior angles are equal.

**Alternate Interior Angles:** Alternate interior angles are pairs of angles formed when a third line (a transversal) crosses two other lines. These angles are on opposite sides of the transversal and are in between the other two lines. When the two other lines are parallel, the alternate interior angles are equal.

**Coincidental:** Two equivalent linear equations overlap when graphed.

**Complementary Angles:** Two angles whose sum is 90 degrees.

**Congruent:** Having the same size, shape and measure. Two figures are congruent if all of their corresponding measures are equal

**Corresponding Angles:** Angles that have the same relative positions in geometric figures.

**Equiangular:** The property of a polygon whose angles are all congruent.

**Equilateral:** The property of a polygon whose sides are all congruent.

**Intersecting Lines:** Two lines in a plane that cross each other. Unless two lines are coincidental, parallel, or skew, they will intersect at one point.

**Linear Pair:** Adjacent, supplementary angles. Excluding their common side, a linear pair forms a straight line.

**Parallel Lines:** Two lines are parallel if they lie in the same plane and they do not intersect.

**Perpendicular Lines:** Two lines are perpendicular if they intersect at a right angle.

**Reflection Line:** A line that is the perpendicular bisector of the segment with endpoints at a pre-image point and the image of that point after a reflection.

**Regular Polygon:** A polygon that is both equilateral and equiangular.

**Same-Side Interior Angles:** Pairs of angles formed when a third line (a transversal) crosses two other lines. These angles are on the same side of the transversal and are between the other two lines. When the two other lines are parallel, same-side interior angles are supplementary.

**Same-Side Exterior Angles:** Pairs of angles formed when a third line (a transversal) crosses two other lines. These angles are on the same side of the transversal and are outside the other two lines. When the two other lines are parallel, same-side exterior angles are supplementary.

**Skew Lines:** Two lines that do not lie in the same plane (therefore, they cannot be parallel or intersect).

**Supplementary Angles:** Two angles whose sum is 180 degrees.

**Transversal:** A line that crosses two or more lines.

**Vertical Angles:** Two nonadjacent angles formed by intersecting lines or segments. Also called opposite angles.

## Unit 6 Systems

**System of equations:** Two or more equations that together define a relationship between variables