PSSA Mathematics Glossary to the

Assessment Anchors and Eligible Content

Aligned to the Pennsylvania Core Standards

Pennsylvania Department of Education

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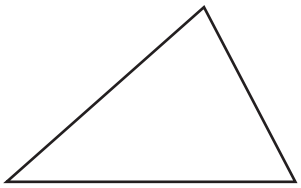
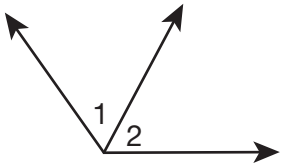
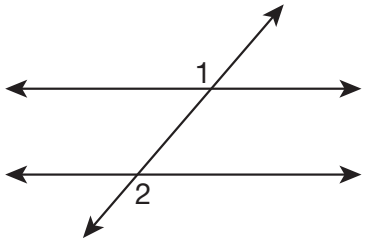
INTRODUCTION

The PSSA Mathematics Glossary includes terms and definitions associated with the Mathematics Assessment Anchors and Eligible Content aligned to the Pennsylvania Core Standards. The terms and definitions included in the glossary are intended to assist Pennsylvania educators in better understanding the PSSA Assessment Anchors and Eligible Content. The glossary does not define all possible terms included on an actual PSSA administration, and it is not intended to define terms for use in classroom instruction for a particular grade level or course.

This glossary provides definitions for terms in Grades 3–8. In addition to the term and its definition, the grade level at which the term would first be introduced is included. For terms not specifically found within the Assessment Anchors and Eligible Content, an asterisk (*) is found next to the grade level, indicating that the grade is an estimated grade for that term.

Term	Definition	Grade
Absolute Value	The magnitude of an expression under consideration. The *absolute value* of a number is the distance the number is from 0 on the number line. The notation used to designate the *absolute value* of expression w is $\lvert w \rvert$, which is read as "the *absolute value* of w." For example: • $\lvert -12 \rvert = 12$ • $\lvert 451 \rvert = 451$ • $\left\lvert -\frac{4}{7} \right\rvert = \frac{4}{7}$ • $\left\lvert 9\frac{1}{2} \right\rvert = 9\frac{1}{2}$ • $\lvert -3 + 2 \rvert = \lvert -1 \rvert = 1$ See also Magnitude.	6
Acute Angle	An angle with a measure greater than 0° and less than 90°.	4
Acute Triangle	A triangle in which all interior angles are acute angles.  Acute Triangle See also Obtuse Triangle and Right Triangle.	4*
Addend	A number or expression that is added to another number or expression. For example: • In the equation 2 + 7 = 9, the 2 and 7 are *addends*. • In the equation ☐ + 9 = 24, the ☐ and 9 are *addends*. • In the equation (2 + 3) + 6 = 11, the expression (2 + 3) and the 6 are *addends*.	3

An asterisk (*) found next to the grade level indicates that the term is not specifically found within the Assessment Anchors and Eligible Content.

Term	Definition	Grade
Additive Inverse	An expression that can be added to a given expression so that their sum is zero. For example: • 82 and $^{-}82$ are *additive inverses*. • (19×3) and $^{-}(19 \times 3)$ are *additive inverses*. See also Opposite of a Number.	6*
Adjacent Angles	Two angles with a common side and a common vertex but no overlap.  Adjacent Angles In the picture, angle 1 and angle 2 are *adjacent angles*.	4
Algebraic Expression	A mathematical expression that contains one or more variables. For example: • $7x + 3$ • $\frac{2w - 17}{19r + 7m}$ • $^{-}4xy$ See also Numerical Expression.	6
Alternate Exterior Angles	Two nonadjacent angles on opposite sides of a transversal and on the exterior of a pair of parallel lines intersected by the transversal.  Alternate Exterior Angles In the picture, angle 1 and angle 2 are *alternate exterior angles*. See also Alternate Interior Angles and Corresponding Angles.	7

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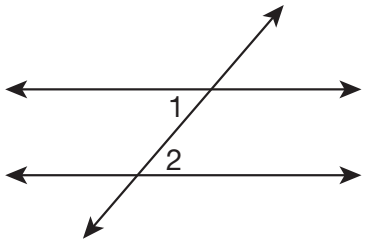
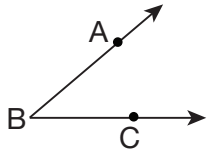
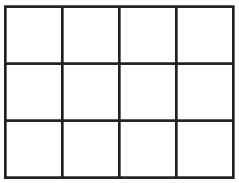
Term	Definition	Grade
Alternate Interior Angles	Two nonadjacent angles on opposite sides of a transversal and between a pair of parallel lines intersected by the transversal.  Alternate Interior Angles In the picture, angle 1 and angle 2 are *alternate interior angles*. See also Alternate Exterior Angles and Corresponding Angles.	7
Angle	The inclination between intersecting lines, line segments, and/or rays often measured in degrees (e.g., a 90° inclination is a right angle). The figure is often represented by two rays that have a common endpoint. *Angles* are generally named using three points: one point from each ray, with the common endpoint in between (e.g., angle ABC consists of ray BA and ray BC). The symbol for an *angle* is ∠ and is generally used in conjunction with the three letters (e.g., angle ABC can also be written as ∠ABC).  Angle ABC (∠ABC)	4
Area	The measure, in square units, of the interior of a plane figure. Units such as square feet (sq ft) and square centimeters (cm^2) are used to measure *area*.  Area of a Rectangle In the picture, each small square represents 1 square unit and the *area* of the rectangle is 12 square units.	3

Term	Definition	Grade
Array	A rectangular arrangement of objects, symbols, or numbers. An *array* may or may not display vertical or horizontal grid lines. In an *array*, all rows are the same length and all columns are the same length. 37 132 12 40 10 0 2 27 14 10 39 152 24 43 4 0 2 13 23 32 38 136 12 35 6 1 1 13 16 49 43 171 24 44 18 1 3 29 19 45 44 175 41 45 4 0 11 25 30 39 39 150 13 35 10 0 4 30 9 49 Array	3
Associative Property (Addition or Multiplication)	The property that asserts the grouping of adjacent addends or factors is irrelevant. That is, $(a + b) + c = a + (b + c)$ and $a \times (b \times c) = (a \times b) \times c$. For example: • by the *associative property* of addition: $(3 + 9) + 2 = 3 + (9 + 2)$ • by the *associative property* of multiplication: $(3 \times 9) \times 2 = 3 \times (9 \times 2)$ Note: by contrast, subtraction and division do **not** hold true under the *associative property* See also Commutative Property (Addition or Multiplication).	3
Average	See Mean.	3*

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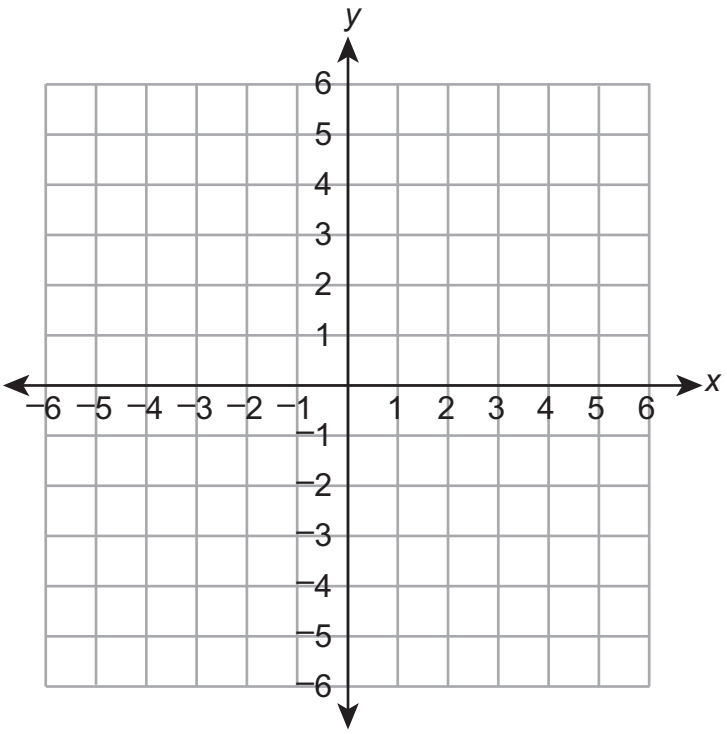
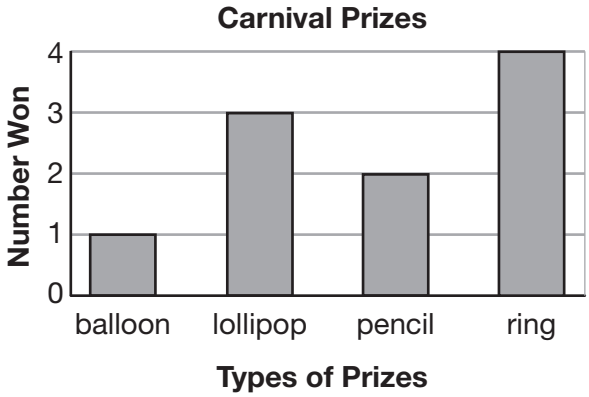
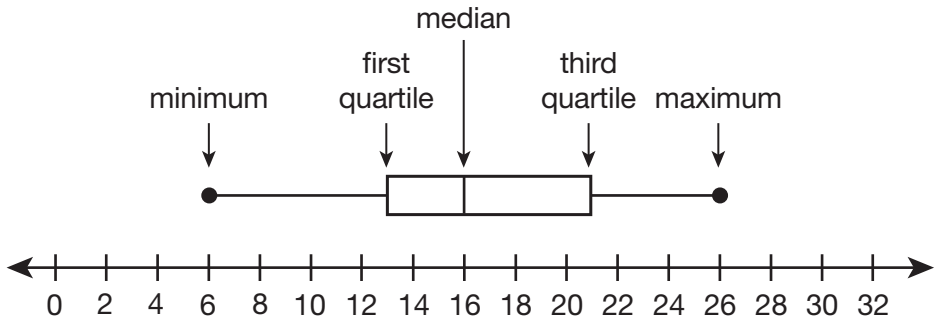
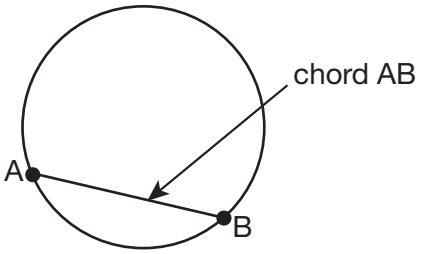
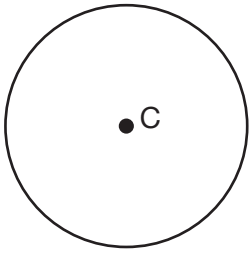
Term	Definition	Grade
Axis	A vertical or horizontal number line, both of which are used to define a coordinate grid. The horizontal *axis* is the *x*-axis, and the vertical *axis* is the *y*-axis. The plural of *axis* is *axes*. The intersection of the two *axes* occurs at 0 of both number lines. This intersection is the origin, which is designated by the ordered pair (0, 0). The *axes* divide the plane into four quadrants. When a point on a coordinate grid is named with an ordered pair, such as (5, 11), the first number (5) is the *x*-coordinate and the second number (11) is the *y*-coordinate. When representing an equation or other relation, the input values are on the *x*-axis and the output values are on the *y*-axis.  *x*-Axis and *y*-Axis See also Origin, Quadrant, Ordered Pair, Independent Variable, and Dependent Variable.	5

Term	Definition	Grade
Bar Graph	A type of data display that represents a frequency distribution. The class intervals (buckets) in a *bar graph* represent categorical data. *Bar graphs* may either be vertical or horizontal. The class intervals in a vertical *bar graph* are located on the *x*-axis and form the bases of nonadjacent rectangular bars. Frequencies are listed on the *y*-axis. The class intervals in a horizontal *bar graph* are located on the *y*-axis and form the bases of nonadjacent rectangular bars. Frequencies are listed on the *x*-axis. The class interval representation of categorical data rather than numerical data, and nonadjacent bars rather than contiguous bars, are distinguishing features of a *bar graph* in contrast to a histogram.  Bar Graph	3
Bivariate Data	Data or observations represented by two variables. The variables may or may not be independent. For example: • Age of players on a team and gender of the players (independent bivariate variables) • Gallons of gasoline purchased and cost of the gasoline purchased (dependent bivariate variables)	8

Term	Definition	Grade
Box-and-Whisker Plot	A plot that visually represents a set of data. A rectangle (the box) is used to represent the dispersion of points between the first and third quartiles, and line segments (the whiskers) are used to represent the dispersion of points between the minimum value and the first quartile and between the maximum value and the third quartile. A line segment drawn within the box represents the median value. The plot provides a five-number summary of the data—the minimum, first quartile, median, third quartile, and maximum values. This five-number summary of the data is specified on the plot or is evident from a number line drawn above or below the plot. The example below shows a horizontal *box-and-whisker plot*. *Box-and-whisker plots* can also be vertically oriented.  Box-and-Whisker Plot See also Median, Quartile, and Interquartile Range.	6
Chance Event (Random Event)	An event that leads to an outcome that cannot be determined prior to completion of the event but can be described probabilistically without an apparent cause (i.e., a probability of an outcome can be assigned). For example: flipping a coin is a *chance/random event*. The outcome cannot be determined prior to flipping the coin, but all possible outcomes can be assigned probability values (i.e., P(Head) = $\frac{1}{2}$, P(Tail) = $\frac{1}{2}$). Other examples of *chance/random events* include rolling a number cube or a "blind" drawing.	7

Term	Definition	Grade
Chord	A line segment with endpoints on a circle. If a *chord* contains the center of the circle, it is referred to as a diameter of the circle.  Chord	8*
Circle	A two-dimensional (plane) figure for which all points are the same distance from its center. Informally, a perfectly round shape. A *circle* is identified by its center point.  Circle C	7
Circumference	The distance around a circle. The *circumference* of a circle is analogous to the perimeter of a polygon.	7
Coefficient	The constant by which a variable is multiplied. For example: • In the expression 6*x*, 6 is the *coefficient*. • In the expression 27*ab*, 27 is the *coefficient*.	6
Combination	A unique set or group of objects, symbols, numbers, etc. Only the contents of the set, not the order or arrangement, determine a *combination*. For example: • Contents of the sets {*a*, 5, cat} and {5, *a*, cat} represent the same *combination*. Placing these elements in a different order does not create a new *combination*. • Contents of the sets {*w*, 12, dog} and {*w*, 23, fish} are different *combinations*. Because one or more elements are different, the *combinations* are different.	6*

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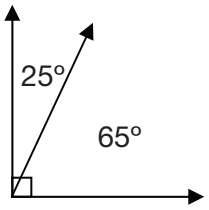
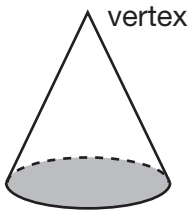
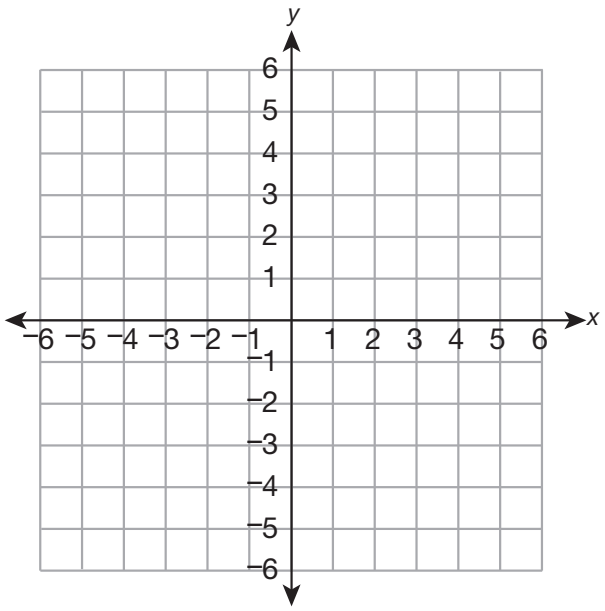
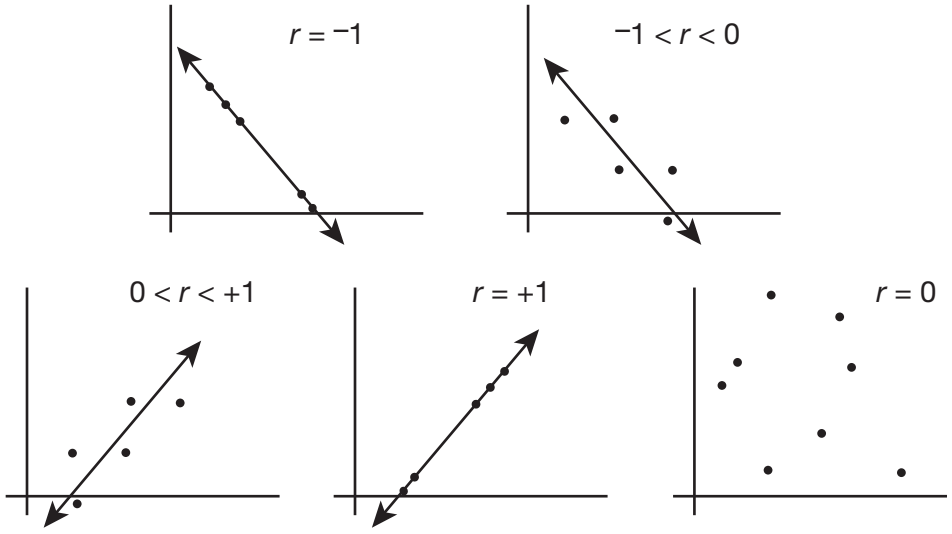
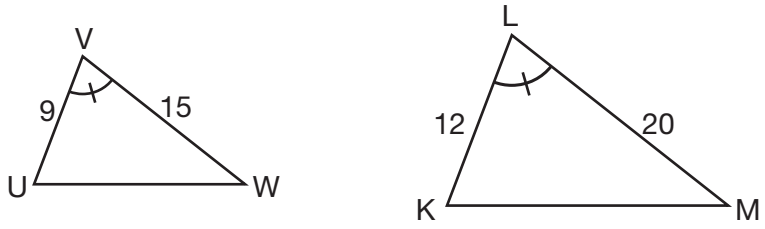
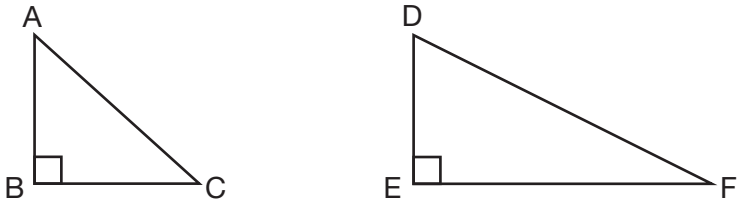
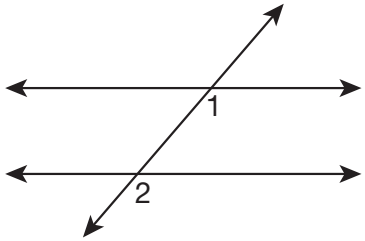
Term	Definition	Grade
Commutative Property (Addition or Multiplication)	The property that asserts the order of adding adjacent addends or multiplying adjacent factors is irrelevant. That is, $a + b = b + a$ and $a \times b = b \times a$. For example: • by the *commutative property* of addition: 7 + 4 = 4 + 7 • by the *commutative property* of multiplication: 7 × 4 = 4 × 7 Note: by contrast, subtraction and division do **not** hold true under the *commutative property* See also Associative Property (Addition or Multiplication).	3
Complementary Angles	Two angles for which the sum of their measures is 90°. If two *complementary angles* are also adjacent angles, they form a right angle. Each of two *complementary angles* is referred to as the complement of the other angle (e.g., a 65° angle is the complement of a 25° angle).  Complementary Angles See also Supplementary Angles.	7
Complex Fraction	A fraction in which the numerator, denominator, or both are also fractions. For example: • $\frac{\frac{3}{7}}{24}$ • $\frac{\frac{9}{11}}{\frac{5}{7}}$ • $\frac{37}{\frac{13}{29}}$	7
Composite Number	A whole number greater than 1 that is not a prime number.	4

Term	Definition	Grade
Compound Event	An event composed of two or more contributing events. For example: • Occurrence of rain on a Saturday—contributing events are (1) it rains and (2) it is Saturday. • A tossed coin results in two heads—contributing events are (1) head on the first toss and (2) head on the second toss. A *compound event* is often a consideration in determining probability (compound probability).	7
Cone	A three-dimensional (solid) figure that has a circular base and one vertex. A *cone* has two faces: the circular base and the lateral face.  cone (On the PSSA, it may be assumed all *cones* are right *cones* unless otherwise specified.)	8
Congruent	Geometric figures that have the same size and the same shape. *Congruent* figures may have different orientations. • *Congruent* angles have the same degree measure. • *Congruent* segments are the same length. In the case of *congruent* polygons, the identifying vertices of the two polygons refer to corresponding angles.  Congruent Polygons	8
Constant of Proportionality	The constant multiplier by which one variable in a proportional relationship is related to the other variable. *Constant of proportionality* and unit rate are equivalent. For example: if an airplane travels at a constant rate of 250 miles per hour, the *constant of proportionality* in the relation of distance (d) to time (t) is 250 (i.e., $d = 250t$).	7

Term	Definition	Grade
Coordinate Grid (Coordinate Plane)	A plane that has been divided into spaces determined by perpendicular number lines in the plane. The perpendicular number lines represent the axes of the *coordinate grid*. The intersection of the perpendicular number lines is the origin and is used to determine points named with ordered pairs of numbers.  Coordinate Grid (or Coordinate Plane) In this picture the axes are labeled as *x* and *y*. The phrases *coordinate grid* and *coordinate plane* are interchangeable.	5

Term	Definition	Grade
Correlation	A measure of the correspondence between the change in one element in a bivariate data set and the change in the related element in the bivariate data set. *Positive Correlation*: when the increase in value of one element of a bivariate data set corresponds to an increase in value of the related element in the data set. For example, if an increase in the outdoor temperature corresponds to an increase in the number of ice-cream cones sold, the *correlation* is positive. *Negative Correlation*: when the increase in value of one element of a bivariate data set corresponds to a decrease in value of the related element in the data set. For example, if an increase in the outdoor temperature corresponds to a decrease in the number of ice skates sold, the *correlation* is negative. *Correlation Coefficient*: a number (r), such that $-1 \leq r \leq 1$, that provides a measure of the degree of *correlation* between elements in bivariate data sets. For perfect negative *correlation*, $r = -1$; for no *correlation*, $r = 0$; and for perfect positive *correlation*, $r = 1$. *Correlation coefficient* (r) can also be conceptualized as a numerical measure, such that $-1 \leq r \leq 1$, of the *correlation* between points in a data set and the related points predicted by a line of best fit.  Correlations See also Line of Best Fit.	8

Term	Definition	Grade
Corresponding Angles	Pairs of angles having the same relative position in geometric figures. Example 1:  Example 2:  Corresponding Angles In Example 1, ∠UVW and ∠KLM are *corresponding angles*. In Example 2, ∠ABC and ∠DEF are *corresponding angles*. *Corresponding angles* can also refer to two nonadjacent angles on the same side of a transversal with one angle between the lines cut by the transversal (interior) and one angle outside the lines cut by the transversal (exterior). *Corresponding angles* are in the same relative position with respect to the intersections of a transversal and two parallel lines.  Corresponding Angles (parallel lines cut by a transversal) In the picture, angle 1 and angle 2 are *corresponding angles*. For reference related to the second definition, see Alternate Exterior Angles and Alternate Interior Angles.	7
Counting Number	Any number from the set of numbers represented by {1, 2, 3, …}. A *counting number* is sometimes referred to as a “natural number” or a “positive integer.”	6*

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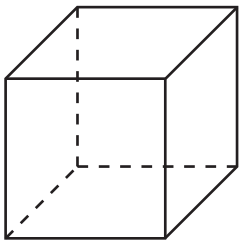
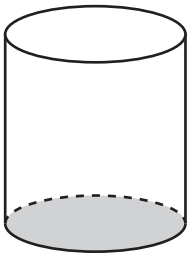
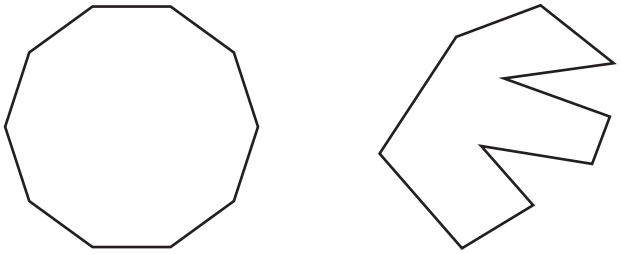
Term	Definition	Grade
Cube	A rectangular solid with exactly six congruent square faces.  Cube	7
Cube Root	One of three equal factors (roots) of a number or expression. The *cube root* of a number or expression has the same sign (positive/negative) as the number under the radical. Informally, it can be thought of as "the number that, when multiplied by itself, and then multiplied by itself again, has a product equal to a given number." For example: • $\sqrt[3]{8} = 2$ since $2 \times 2 \times 2 = 8$ • $\sqrt[3]{-64} = -4$ since $-4 \times -4 \times -4 = -64$ • $\sqrt[3]{0.343} = 0.7$ since $0.7 \times 0.7 \times 0.7 = 0.343$ • $\sqrt[3]{125w^6} = 5w^2$ since $5w^2 \times 5w^2 \times 5w^2 = 125w^6$	8
Cylinder	A three-dimensional figure with two circular bases that are parallel and congruent. A *cylinder* has three faces: the two circular bases and the lateral face.  Cylinder (On the PSSA, it may be assumed all *cylinders* are right *cylinders* unless otherwise specified.)	8

Term	Definition	Grade
Decagon	A polygon with exactly 10 sides.  Decagons	4*
Decimal Notation	A number written with base 10 place values that are smaller than one (e.g., tenths, hundredths). These place values are written to the right of a decimal point (e.g., 0.91, 25.624). *Decimal notation* is different from fraction notation. For example: • *decimal notation*: 0.25 • fraction notation: $\frac{1}{4}$	4
Degree (angle)	A unit of measure for the inclination of an angle. It is represented by the symbol ° and is used in conjunction with the number (e.g., 30° is read as "thirty degrees"). Each *degree* represents $\frac{1}{360}$ of the angle inclination change from two rays being on top of one another (0°) to a complete revolution (360°) about the shared endpoint of the two rays.	4
Degree (temperature)	A unit of measure for temperature. It is represented by the symbol ° and is used in conjunction with the number (e.g., $^{-}$40° is read as either "negative forty degrees" or "forty degrees below zero"). In the Fahrenheit (F) temperature scale, each *degree* represents $\frac{1}{180}$ of the temperature change between the freezing point of water (32°F) and the boiling point of water (212°F). In the Celsius (C) temperature scale, each *degree* represents $\frac{1}{100}$ of the temperature change between the freezing point of water (0°C) and the boiling point of water (100°C). A less common name for this temperature scale is centigrade. Celsius is the officially recognized PSSA term.	6

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Term	Definition	Grade
Denominator	The divisor in a ratio or fraction. For example: in the fraction $\frac{7}{9}$, 9 is the *denominator*. Often students first learn the informal definition of *denominator* as "the bottom number" in a ratio or fraction. See also Numerator.	3
Dependent Events	Two or more events in which the outcome of one event affects or influences the outcome of the other event(s). Sometimes, these events can happen at the same time. For example: • Event 1: Picking a card from a deck; Event 2: Picking a second card from the same deck without replacing the first card. • Event: Selecting two colored markers at the same time from a set of markers. (On the PSSA, it may be assumed that events occurring at the same time is the same as events occurring one at a time without replacement unless otherwise specified.) See also Independent Events.	7*
Dependent Variable	The variable in a relation that represents a value determined by the independent variable. The *dependent variable* is sometimes referred to as the "output variable." When a relation is written as a set of ordered pairs, the *y*-coordinate corresponds to the *dependent variable*. For example: In the relation $y = 3x - 8$, when the independent variable (x) is replaced by the number 5, the value of the *dependent variable* (y) is 7. See also Independent Variable.	6

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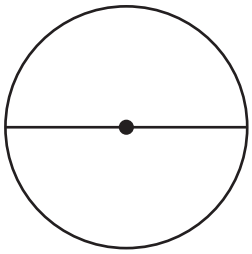
Term	Definition	Grade
Diameter	A line segment that has endpoints on a circle and passes through the center of the circle. A *diameter* is a chord that contains the center of the circle.  Diameter In common usage, *diameter* occasionally refers not only to the line segment but also to the length of the line segment that constitutes the *diameter*. (On the PSSA, it may be assumed that *diameter* is the line segment, **not** the measurement of the line segment unless otherwise specified. If there is a context in which *diameter* is intended to imply a measurement, the context must clearly, absolutely, and indisputably make that assertion.) See also Radius.	5*
Difference	The result when one number is subtracted by another number (i.e., the "answer" to a subtraction computation). Unless otherwise specified, it may be assumed that the *difference* is the absolute value of the subtraction (e.g., the *difference* of 3 and 7 and the *difference* of 7 and 3 are both 4).	7

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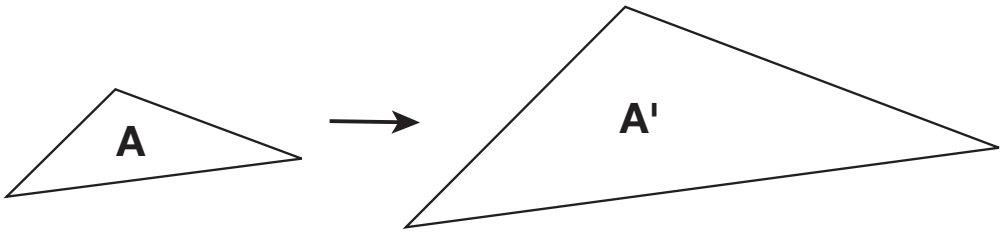
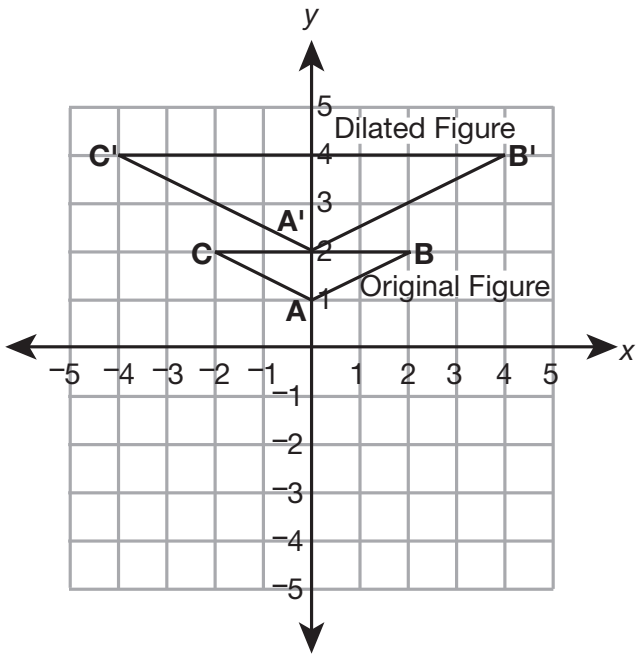
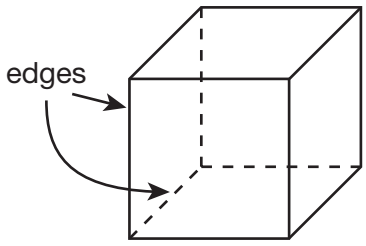
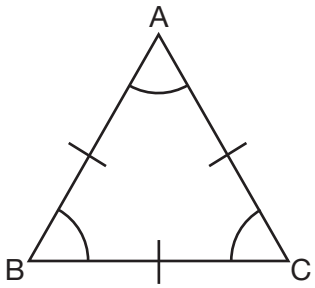
Term	Definition	Grade
Dilation	A nonrigid transformation in which linear measurements may change but the proportional relationships of those measurements are preserved (i.e., length measurements in the dilated image remain uniformly proportional to length measurements in the original figure). In a *dilation*, all the lengths of a figure are multiplied by a common scale factor. Angle measurements in a *dilation* do **not** change. Scale Factor of 2 Original Figure Dilated Figure  Dilation All *dilations* have a point of emanation, or center of *dilation*. When a shape on a coordinate grid is dilated, the scale factor is applied to the difference between the vertices of the figure and the point of emanation.  Dilation (on a coordinate grid) (On the PSSA, it may be assumed the point of emanation on a coordinate grid is the origin unless otherwise specified.)	8

Term	Definition	Grade
Distributive Property	When a single-term expression is being multiplied by a sum or difference, the single-term expression can be multiplied by each term before finding the sum or difference. That is, $a(b + c) = ab + ac$ or $a(b - c) = ab - ac$. For example: • $5(7 + 4) = 5(7) + 5(4) = 35 + 20$ • $w(9 - 3) = 9w - 3w$	6
Dividend	When dividing one number by another number, the number that is being divided. For example, in the expression 24 ÷ 6, the number 24 is the *dividend*. See also Divisor.	3
Divisor	When dividing one number by another number, the number by which another number is divided. For example, in the expression 24 ÷ 6, the number 6 is the *divisor*. See also Dividend.	4
Edge	The line segment formed by the intersection of two faces of a three-dimensional (solid) figure. For example, a cube has 12 *edges*.  Edges of a Cube In the picture, each solid line segment and each dashed line segment represents an *edge* of the cube.	5
Equation	A mathematical sentence or statement relating two equal expressions. When written in mathematical notation, an *equation* always contains an equal sign (=). Examples of *equations*: • $4 + 15 = 19$ • $w + 13 = 17 \times 12$ • $\begin{array}{r} 27 \\ -14 \\ \hline 13 \end{array}$ (On the PSSA, an *equation* may be written either horizontally or vertically.)	3

Term	Definition	Grade
Equilateral Triangle	A triangle where all sides are the same length (i.e., the sides are congruent). Each of the angles in an *equilateral triangle* is 60°. Thus, the triangle is also equiangular.  Equilateral Triangle A less common name for this triangle is equiangular, since all the angles are equal in measure. *Equilateral* is the officially recognized PSSA term. See also Isosceles Triangle and Scalene Triangle.	4*
Equivalent	Two or more mathematical statements, expressions, or other representations that have the same value. *Equivalent* mathematical statements, expressions, or other representations, including geometric figures, are interchangeable in the setting in which they exist. For example: • The expressions $2 + 9$ and $2 + 3 \times 3$ are *equivalent* expressions. • The sequences 4, 8, 12, 16, … and 2×2, 2×4, 2×6, 2×8, … are *equivalent* sequences. • Geometric figures are *equivalent* if they are congruent.	3
Expanded Form (Expanded Notation)	A whole or decimal number written as the sum of single-digit multiples of powers of 10. For example: • $735.2 = 700 + 30 + 5 + 0.2$ • $735.2 = 7 \times 100 + 3 \times 10 + 5 \times 1 + 2 \times 0.1$ $\left(\text{or, } 735.2 = 7 \times 100 + 3 \times 10 + 5 \times 1 + 2 \times \frac{1}{10}\right)$ • $735.2 = 7 \times 10^2 + 3 \times 10^1 + 5 \times 10^0 + 2 \times 10^{-1}$ The phrase *expanded notation* is equivalent to and interchangeable with *expanded form*.	4

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Term	Definition	Grade
Experimental Probability	A likelihood of an outcome based on the number of favorable outcomes that have occurred compared to the total number of outcomes that have occurred. An *experimental probability* is based on a series of trials. For example, if a coin lands heads on 17 of the 20 times it is flipped, the *experimental probability* of this coin landing heads is $\frac{17}{20}$. See also Theoretical Probability.	8*
Expression	A number or variable, the power of a number or variable, or the sum, difference, product, or quotient of a combination of numbers, variables, and/or powers of a number or variable. Examples of *expressions*: • $15xy$ • $23 \times 6 + 51$ • $3r - 28$ • $\sqrt{38}$ *Expressions* do not contain relations such as =, >, <, etc. *Expressions* are the elements that form mathematical sentences, equations, or inequalities, but they are **not** mathematical sentences, equations, or inequalities.	6
Face	A two-dimensional (plane) figure that is one side of a three-dimensional (solid) figure. The *faces* make up the surface of the three-dimensional (solid) figure. For example, the six squares that form a cube are the *faces* of the cube.	3*
Fact Family	A set of related addition and subtraction equations or related multiplication and division equations using the same numbers. For example: • $9 + 6 = 15$, $6 + 9 = 15$, $15 - 9 = 6$, $15 - 6 = 9$ • $3 \times 4 = 12$, $4 \times 3 = 12$, $12 \div 3 = 4$, $12 \div 4 = 3$	1*
Factor	A whole number that can divide another whole number with no remainder. For example, 1, 3, 5, and 15 are *factors* of 15.	3
Factor Pair	A pair of whole numbers with a product equal to the number under consideration. For example, the numbers 2 and 7 are a *factor pair* of 14 since $2 \times 7 = 14$.	4
Fraction	A ratio of two values, numbers, or expressions. It is written in the form $\frac{a}{b}$, where b is not equal to 0.	3
Function	A relation in which each input value (independent variable) is associated with exactly one output value (dependent variable).	4

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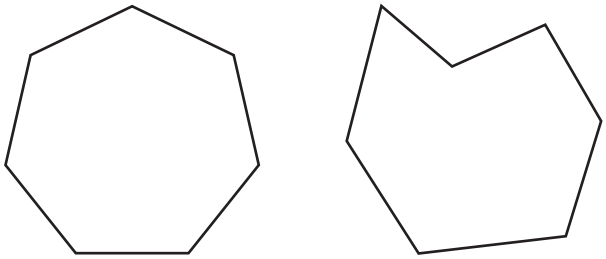
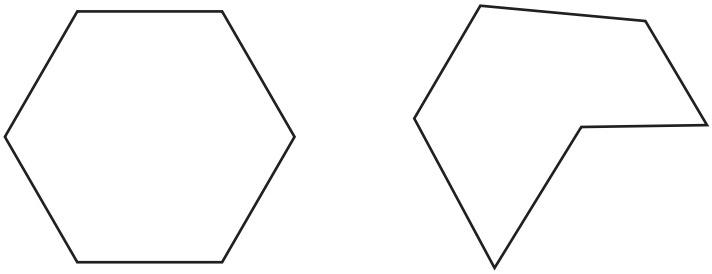
Term	Definition	Grade
Greatest Common Factor (GCF)	The greatest factor that two or more numbers have in common. For example: • The *greatest common factor* of 4 and 10 is 2. • The *greatest common factor* of 12, 30, and 42 is 6. • The *greatest common factor* of 8 and 15 is 1.	6
Heptagon	A polygon with exactly 7 sides.  Heptagons Less common names for this polygon are septagon and septilateral. *Heptagon* is the officially recognized PSSA term.	4*
Hexagon	A polygon with exactly 6 sides.  Hexagons	4*

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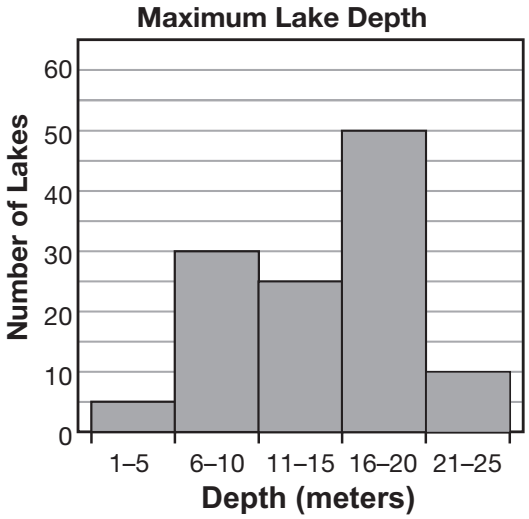
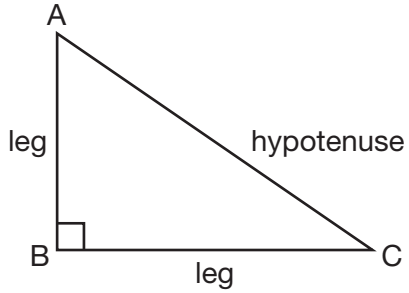
Term	Definition	Grade
Histogram	A type of data display that represents a frequency distribution. The class intervals (buckets) represent numerical data. The class intervals are located on the *x*-axis and form the bases of contiguous rectangular bars. Frequencies are listed on the *y*-axis. The class interval representation of numerical data rather than categorical data, and contiguous bars rather than nonintersecting bars, are distinguishing features of a *histogram* in contrast to a bar graph.  Histogram	6
Hypotenuse	The side opposite the 90° (right) angle in a right triangle. The *hypotenuse* is also the longest side in a right triangle.  Hypotenuse of a Right Triangle See also Leg (of a Right Triangle).	8*

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Term	Definition	Grade
Identity Property of Multiplication	The property that asserts the product of an original factor times one is equal to the original factor. In less formal mathematical phrasing, it is the property that states whenever a number/variable/expression is multiplied by one, the product is identical to the original number/variable/expression. For example: • $93 \times 1 = 93$ • $1(3w + 9) = (3w + 9)$	7*
Identity Property of Addition	The property that asserts the sum of an original addend plus zero is equal to the original addend. In less formal mathematical phrasing, it is the property that states whenever a number/variable/expression is added to zero, the sum is identical to the original number/variable/expression. For example: • $93 + 0 = 93$ • $(3w + 9) + 0 = (3w + 9)$	7*
Independent Events	Two or more events, in which the outcome of one event does not influence or affect the outcome of the other event(s). For example: • Event 1: Flipping a coin; Event 2: Picking a card from a deck • Event 1: Selecting a colored marker; Event 2: Walking to school See also Dependent Events.	7
Independent Variable	The variable that is used to determine the value of a relation. The *independent variable* is often referred to as the "input variable" of a relation. When a relation is written as a set of ordered pairs, the x-coordinate corresponds to the *independent variable*. The set of values that can be used to replace the *independent variable* is named the "domain" of the relation. For example: To determine the value of the relation $y = 3x - 8$, input values replace the *independent variable* (x). The values of the equation that result from substituting numbers for the *independent variable* are often referred to as dependent or output values. See also Dependent Variable.	6

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Term	Definition	Grade
Inequality	A mathematical sentence that contains an inequality symbol (i.e., >, <, ≥, ≤, or ≠). It compares two quantities. The symbol > represents greater than, the symbol < represents less than, the symbol ≥ represents greater than or equal to, the symbol ≤ represents less than or equal to, and the symbol ≠ represents not equal to (the symbol ≠ is often used to express which values are not available to be used for a particular expression or equation). For example: • $3 + 4 > 6$ • $7 + 2 < 11 - \square$	6
Integer	A counting number, the additive inverse of a counting number, or zero. Any number from the set of numbers represented by {…, $^{-}3$, $^{-}2$, $^{-}1$, 0, 1, 2, 3, …}.	4*
Interquartile Range	The difference between the third quartile and the first quartile in an ordered set of numerical data. It represents the spread of the middle 50% of a set of data. For example: For the data set {2, 5, 7, 12, 17, 22, 23}, the first quartile value is 5 and the third quartile value is 22; so, the *interquartile range* is 22 – 5 = 17. See also Quartile.	6
Irrational Number	A number that cannot be precisely represented as a fraction written with integers. In relation to other real numbers, an *irrational number* is any real number that is not a rational number. When an *irrational number* is written in decimal notation, the numeral has an infinite number of non-repeating digits or non-repeating sequence of digits to the right of the decimal point. For example: • $\sqrt{2}$ • π • *e* (base of the natural logarithm) See also Rational Number.	8

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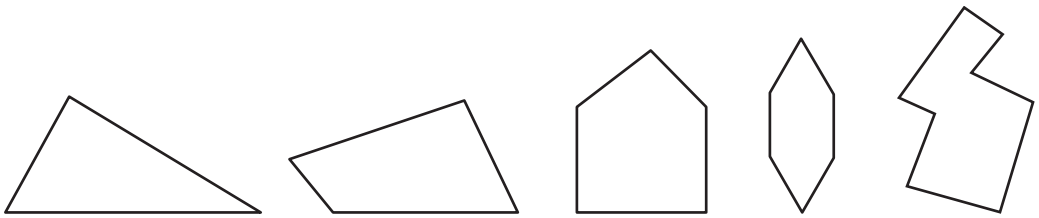
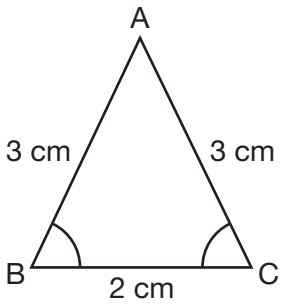
Term	Definition	Grade
Irregular Polygon	A polygon that does **not** have all congruent sides and all congruent angles. An *irregular polygon* may have congruent sides and/or congruent angles. Essentially, an *irregular polygon* is any polygon that is not a regular polygon.  Irregular Polygons Two special types of *irregular polygons* are scalene triangles and trapezoids.	6
Isosceles Triangle	A triangle with two congruent sides, which are called the legs of the *isosceles triangle*. The angles opposite the two legs (called *base angles*) are also congruent.  Isosceles Triangle An equilateral triangle is a special type of *isosceles triangle*. See also Equilateral Triangle and Scalene Triangle.	4*
Least Common Denominator (LCD)	The least common multiple of the denominators of two or more fractions. For example: • The *least common denominator* of $\frac{1}{4}$ and $\frac{3}{10}$ is 20. • The *least common denominator* of $\frac{3}{10}$, $\frac{5}{12}$, and $\frac{19}{30}$ is 60. • The *least common denominator* of $\frac{3}{4}$ and $\frac{3}{21}$ is 84.	4*

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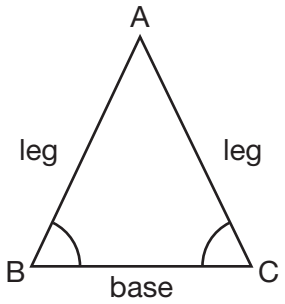
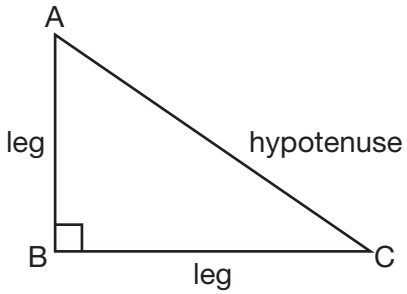
Term	Definition	Grade
Least Common Multiple (LCM)	The least whole number that is a common multiple of two or more numbers. For example: • The *least common multiple* of 4 and 10 is 20. • The *least common multiple* of 10, 12, and 30 is 60. • The *least common multiple* of 4 and 21 is 84.	6
Leg (of an Isosceles Triangle)	Each of the two congruent sides of an isosceles triangle. In an equilateral triangle, any pair of sides may be considered the *legs* of the triangle.  Legs of an Isosceles Triangle	4*
Leg (of a Right Triangle)	Each of the two sides that form the right angle in a right triangle.  Legs of a Right Triangle See also Hypotenuse.	4*
Line	An infinitely long, straight set of points. Informally, it can be thought of as a path extending in opposite directions with no endpoints. A *line* is identified by any two unique points on the *line*.  Line AB ($\overleftrightarrow{AB}$) See also Line Segment.	3

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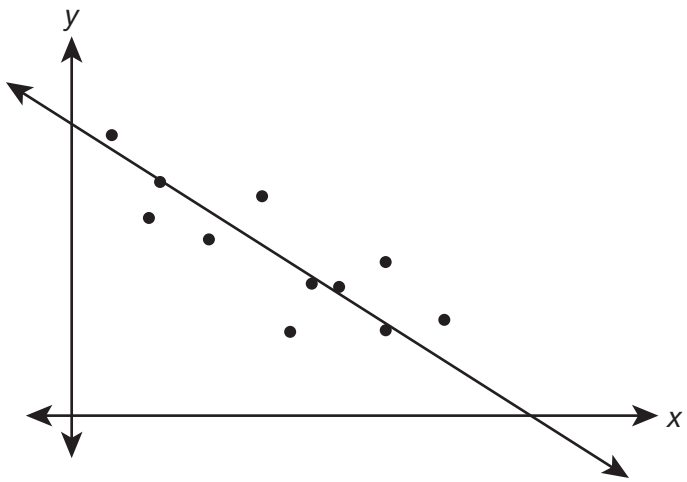
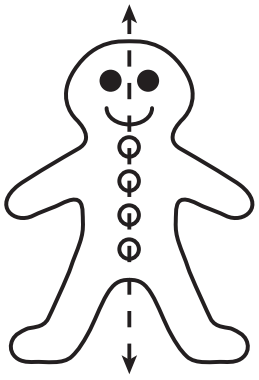
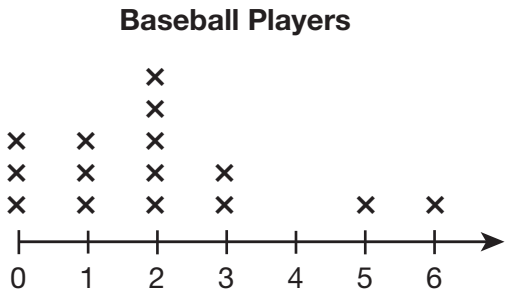
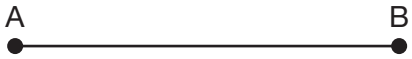
Term	Definition	Grade
Line of Best Fit	A line drawn on a scatter plot to best estimate the relationship between two sets of data. It describes the trend of the data. Different measures are possible to describe the *line of best fit*. The most common is a line that minimizes the sum of the squares of the errors (vertical distances) from the data points to the line.  Line of Best Fit	8
Line of Symmetry	A line that divides a figure into two parts that are congruent mirror images of each other.  Line of Symmetry See also Reflection.	4

Term	Definition	Grade
Line Plot	A frequency distribution plot in which the data are single points on a number line and the frequencies are represented by dots, ×'s, or similar notation. The data may be categorical or numerical. Unless otherwise specified, it may be assumed that each mark (dot, ×, or similar notation) represents a value of 1.  Line Plot	3
Line Segment	A portion or subset of a line bounded by two endpoints. Informally, a *line segment* can be conceptualized as two points on a line and all the points between them. A *line segment* is not a line. A *line segment* is identified by its endpoints.  Line Segment AB ($\overline{AB}$) See also Line.	4
Linear Relationship	A mathematical relationship between two variables that can be represented by a linear equation (e.g., $Ax + By = C$). If points represent a *linear relationship*, the graph of those points is a straight line. If a graph is a straight line, the points on the line represent a *linear relationship*. For example: • Distance traveled (d) in 6 hours at a constant speed (s): $d + {}^{-}6s = 0$ or $d = 6s$ • Gallons of water (w) in a container (starting volume = 3 gallons) when g gallons of water are added per hour for 22 hours: $w + {}^{-}22g = 3$ or $w = 22g + 3$	8

Term	Definition	Grade
Magnitude	A scalar (no units assigned) associated with a quantity. *Magnitude* is always a positive number. In general, *magnitude* is found by determining the absolute value of the numerical portion of a quantity. For example: • The *magnitude* of 1,200 feet above sea level is 1,200. • The *magnitude* of $18\frac{1}{2}$ pounds is $18\frac{1}{2}$. • The *magnitude* of the number 34.931 is 34.931. See also Absolute Value.	6
Maximum	The greatest number in a set of data. For example: • For the data set {5, 7, 12, 23, 29}, the *maximum* is 29. • For the data set {1, 7, 9, 11}, the *maximum* is 11. See also Minimum.	6*
Mean	A number found by dividing the sum of a set of numbers by the number of addends. The terms *mean* and average are equivalent. For example: • For the data set {1, 7, 9, 11}, the sum of the 4 data points is 1 + 7 + 9 + 11 = 28, so the *mean* is 28 ÷ 4 = 7. • For the data set {5, 7, 12, 23, 29}, the sum of the 5 data points is 5 + 7 + 12 + 23 + 29 = 76, so the *mean* is 76 ÷ 5 = 15.2. See also Median and Mode.	6
Mean Absolute Deviation	The average of the differences between each data point in a data set and the mean. For example: • For the data set {1, 7, 9, 11}, the mean of the set is 7 and the sum of the differences between each data point and 7 is 6 + 0 + 2 + 4 = 12; so, the *mean absolute deviation* is 12 ÷ 4 = 3. • For the data set {5, 7, 12, 23, 29}, the mean of the set is 15.2 and the sum of the differences between each data point and 15.2 is 10.2 + 8.2 + 3.2 + 7.8 + 13.8 = 43.2; so, the *mean absolute deviation* is 43.2 ÷ 5 = 8.64.	6

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Term	Definition	Grade
Measures of Center	Statistical measures that are intended to provide numerical representations of the center of a set of numerical data. The phrases *measure of center* and *measure of central tendency* are interchangeable. For example: • Mean • Median • Mode • Midrange See also Measures of Variability.	6
Measures of Variability	Statistical measures that are intended to provide numerical representations of the variability of a set of numerical data. For example: • Range • Interquartile Range • Mean Absolute Deviation • Standard Deviation See also Measures of Center.	6
Median	The middle number in a set of data ordered from least to greatest (or from greatest to least). If the data set consists of an even number of entries, the *median* is the mean of the two middle entries in the list. For example: • For the data set {5, 7, 12, 23, 29}, the middle number of the ordered set is 12, so the *median* is 12. • For the data set {1, 7, 9, 11}, the middle numbers are 7 and 9, so the *median* is the mean of 7 and 9, which is 8. See also Mean and Mode.	6
Minimum	The least number in a set of data. For example: • For the data set {5, 7, 12, 23, 29}, the *minimum* is 5. • For the data set {1, 7, 9, 11}, the *maximum* is 11, *minimum* is 1. See also Maximum.	6*

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Term	Definition	Grade
Mode	The number that occurs most often in a set of data. A set of data may have more than one *mode*, or it may have no *mode*. For example: • For the data set {5, 7, 12, 12, 29}, 12 appears the most often, so the *mode* is 12. • For the data set {1, 1, 6, 6, 6, 11, 11, 11, 13, 17}, both 6 and 11 appear the most often, so the *modes* are 6 and 11 (note that 1 is **not** a *mode* since it only appears twice). • For the data set {1, 7, 9, 11}, no number appears more than once, so the data set does **not** have a *mode*. See also Mean and Median.	6
Multiple	A number that is divisible by another number with no remainder. For example: • 3, 6, 9, 12, and 15 are all *multiples* of 3 • 1.75, 3.5, 5.25, 7, and 8.25 are all *multiples* of 1.75 *Multiples* of a number can be found by multiplying the given number by whole numbers.	4
Mutually Exclusive Events	Events that preclude each other. *Mutually exclusive events* cannot occur simultaneously. *Mutually exclusive events* are always dependent events. For example: • Flipping a coin one time and getting heads and tails. The coin landing heads meant that it could not also have landed tails and vice versa. • Arriving 10 minutes early and arriving 10 minutes late. If you arrived 10 minutes early, you did not arrive 10 minutes late and vice versa.	7*
Negative Number	The opposite of a positive number (i.e., any number less than 0).	6

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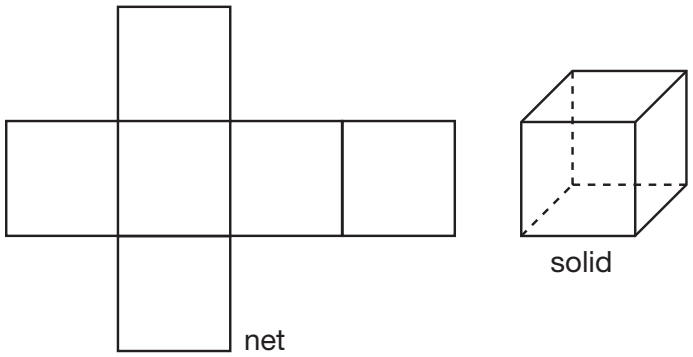
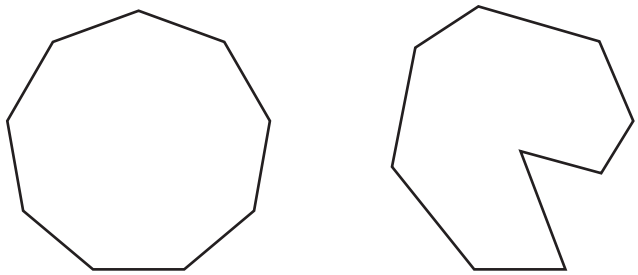
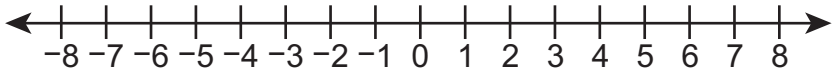
Term	Definition	Grade
Net	A two-dimensional shape or figure that can be folded to form a three-dimensional (solid) shape or object. It is usually the case that the fold lines are marked on the *net*. The total area of the *net* is equal to the total surface area of the associated three-dimensional (solid) shape or object.  Net	6
Nonagon	A polygon with exactly 9 sides.  Nonagons	4*
Number Line	A graph that represents the real numbers as ordered points on a line. A *number line* may be either horizontal (left and right) or vertical (up and down). Starting at zero, the positive numbers progress to the right (or up) and the negative numbers progress to the left (or down).  *Number lines* serve as the bases of line plots and box-and-whisker plots. In a coordinate grid, a horizontal *number line* is used for the *x*-axis and a vertical *number line* is used for the *y*-axis.	3
Number Sentence	A mathematical statement that is either an equation or an inequality. A *number sentence* is composed of expressions, but it is not an expression. When written, a *number sentence* always contains a relation symbol (e.g., =, ≤, >).	3

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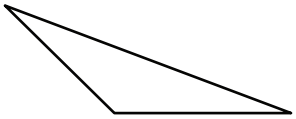
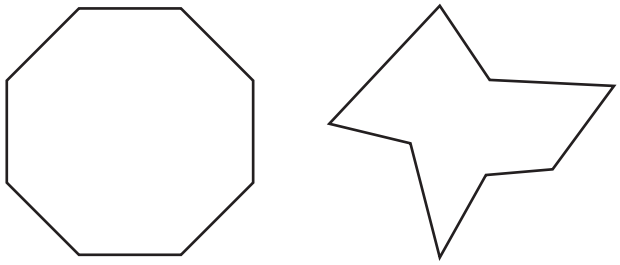
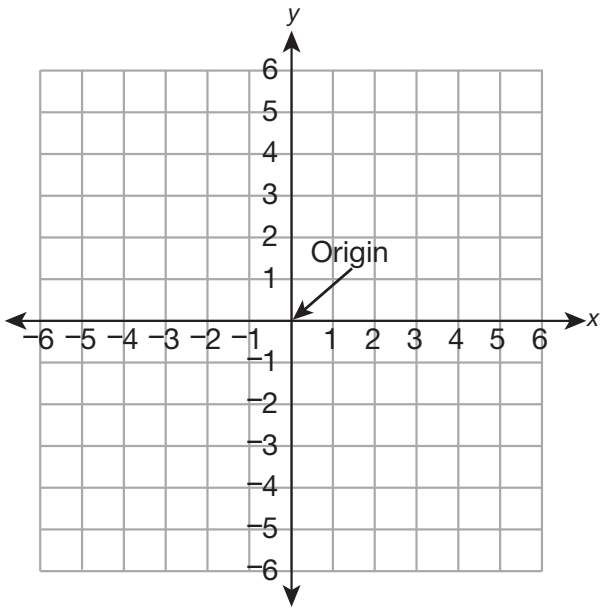
Term	Definition	Grade
Numerator	The dividend in a ratio or fraction. For example: in the fraction $\frac{7}{9}$, 7 is the *numerator*. Often students first learn the informal definition of *numerator* as "the top number" in a ratio or fraction. See also Denominator.	3
Numerical Expression	A mathematical expression that does **not** contain a variable. For example: • 679 – 12(45) • 7^3 See also Algebraic Expression.	5
Obtuse Angle	An angle with a measure greater than 90° and less than 180°.	4
Obtuse Triangle	A triangle in which an interior angle is an obtuse angle.  Obtuse Triangle See also Acute Triangle and Right Triangle.	5*
Octagon	A polygon with exactly 8 sides.  Octagons	4*
Opposite (of a Number)	The additive inverse of a number. For example: • The *opposite* of 458 is $^-458$. • The *opposite* of $^-\frac{3}{7}$ is $\frac{3}{7}$.	6
Order of Operations	The rules that specify the order in which operations (e.g., +, –, ×, ÷, $\sqrt{\ }$) are performed when more than one operation in a numerical expression or an algebraic expression is required.	3

An asterisk (*) found next to the grade level indicates that the term is not specifically found within the Assessment Anchors and Eligible Content.

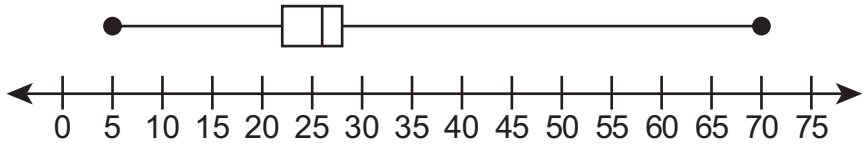
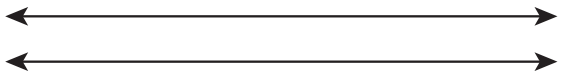
<table>
<tr><th>Term</th><th>Definition</th><th>Grade</th></tr>
<tr><td>Ordered Pair</td><td>A pair of numbers or other elements in which the order of recording is consequential (i.e., order makes a difference). Ordered pairs can be used to locate points on a coordinate grid. Ordered pairs, both numerical and non-numerical, are written within a set of parentheses or in an x-y table.

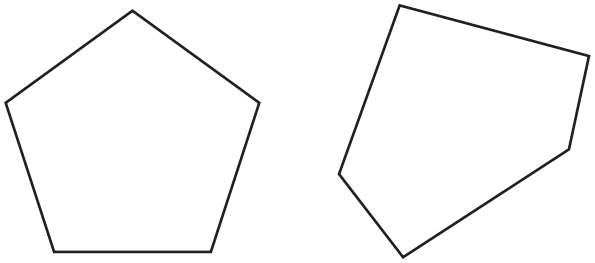
For example:
• (5, 9)
• (insect, ant)
• (x + 2, 3 × w)
•
<table>
<tr><th>x</th><th>y</th></tr>
<tr><td>–1</td><td>0</td></tr>
<tr><td>0</td><td>2</td></tr>
<tr><td>1</td><td>4</td></tr>
</table>

On a coordinate grid, the ordered pair (a, b) refers to a point at the intersection of the vertical line through a on the x-axis and the horizontal line through b on the y-axis.</td><td>5</td></tr>
<tr><td>Origin</td><td>The intersection of the perpendicular axes of a coordinate grid. The origin is designated by the ordered pair (0, 0).

Origin</td><td>5</td></tr>
</table>

Term	Definition	Grade
Outlier	A value that is noticeably greater than or less than the observed or expected values in the data set (i.e., a value that, in the judgment of an observer, is excessively aberrant). Unless otherwise specified, it may be assumed that an *outlier* is a value in a data set that is 1.5 times the interquartile range less than the first quartile or 1.5 times the interquartile range greater than the third quartile. For example: the data set {5, 18, 22, 23, 24, 26, 27, 27, 28, 33, 70} has two *outliers*: • 1st quartile = 22, 3rd quartile = 28 • Interquartile range = (28 – 22) = 6 • 1.5 times the interquartile range = 1.5(6) = 9 • 70 – 28 > 9 and 22 – 5 > 9; therefore, both 70 and 5 are *outliers*. Visually, an *outlier* can be seen in a box-and-whisker plot when a whisker is at least 1.5 times as long as the box representing the data between the 1st quartile and the 3rd quartile. It should be noted that only the minimum value and/or the maximum value can be identified as *outliers* using this method. For example, in the box-and-whisker plot shown below, the box representing the data between the 1st quartile and the 3rd quartile has a length of 6, the whisker representing the lower quartile of the data has a length of 17, and the whisker representing the upper quartile of the data has a length of 42.  	8
Parallel Lines	Two or more lines that lie in the same plane and do not intersect.  Parallel Lines For illustration purposes, railroad tracks are often used to represent *parallel lines*, whereas a bridge and river under the bridge are often used to represent skew lines (they do not intersect, but they are not parallel).	4
Parallelogram	A quadrilateral in which opposite sides are parallel and congruent.  Parallelogram	5

Term	Definition	Grade
Pentagon	A polygon with exactly 5 sides.  Pentagons	3
Perfect Cube	A number for which the cube root is an integer. For example: • Since $\sqrt[3]{27} = 3$, 27 is a *perfect cube*. • Since $\sqrt[3]{-125} = -5$, $^{-}125$ is a *perfect cube*. • Since $\sqrt[3]{600} \approx 8.434\ldots$, 600 is **not** a *perfect cube*. *Perfect cubes* can be determined by cubing an integer (e.g., $(^{-}8)^3 = {}^{-}512$, so $^{-}512$ is a *perfect cube*).	8
Perfect Square	A number for which the square root is an integer. For example: • Since $\sqrt{49} = 7$, 49 is a *perfect square*. • Since $\sqrt{3} \approx 1.732\ldots$, 3 is **not** a *perfect square*. • Since $\sqrt{0.25} = 0.5$, 0.25 is **not** a *perfect square*. *Perfect squares* can be determined by squaring whole numbers (e.g., $15^2 = 225$, so 225 is a *perfect square*).	8
Perimeter	The distance around a closed 2-dimensional figure or shape. In the case of a circle, the distance around is the circumference.	3
Permutation	An ordered arrangement or set of elements. In contrast to a combination of elements (in which order makes no difference), changing the order changes the *permutation* of elements. For example: even though they contain the same elements, the arrangements {2, 4, 6} and {4, 2, 6} are two unique *permutations*. An example of three unique *permutations* of the same elements is {apple, cat, car}, {car, cat, apple}, and {cat, car, apple}.	6*

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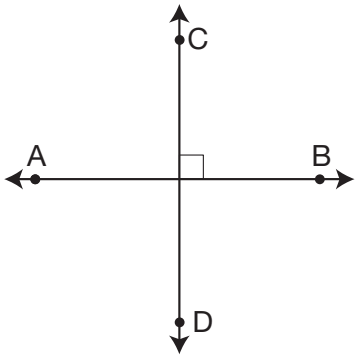
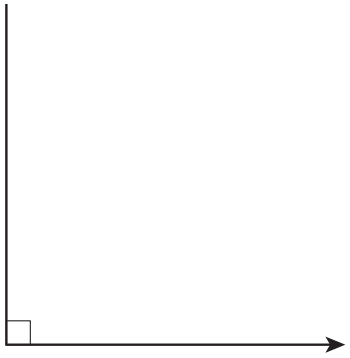
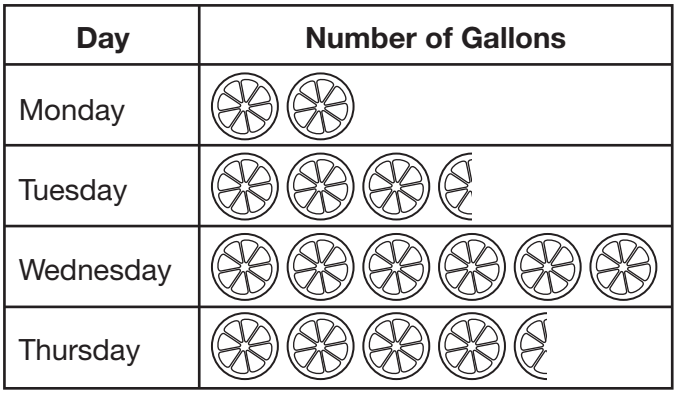
<table>
<tr><th>Term</th><th>Definition</th><th>Grade</th></tr>
<tr><td>Perpendicular</td><td>Two geometric figures (e.g., lines, segments, rays) that intersect to form at least one right angle.
 

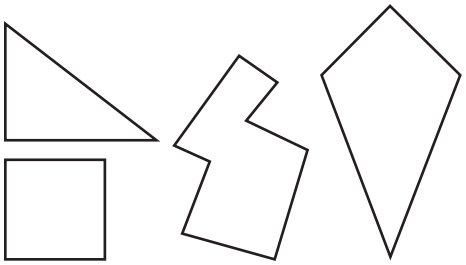
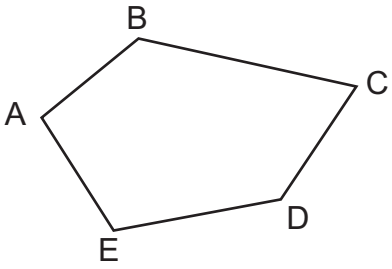

Perpendicular Lines Perpendicular Segment and Ray</td><td>4</td></tr>
<tr><td>Pictograph</td><td>A chart that uses pictures or drawings to represent quantities.

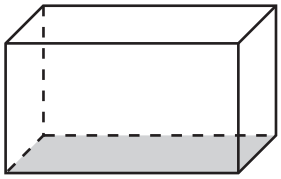
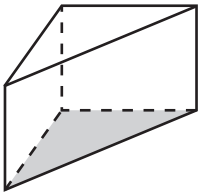
In the example shown below, pictures of lemons are used to represent the number of gallons of lemonade served.

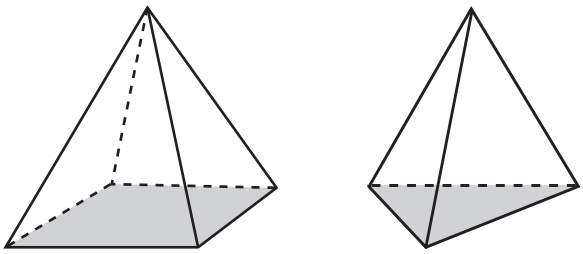
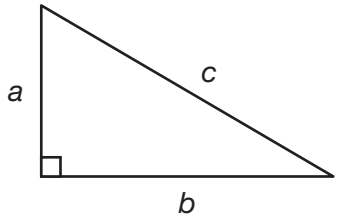
Lemonade Served at the Carnival
 

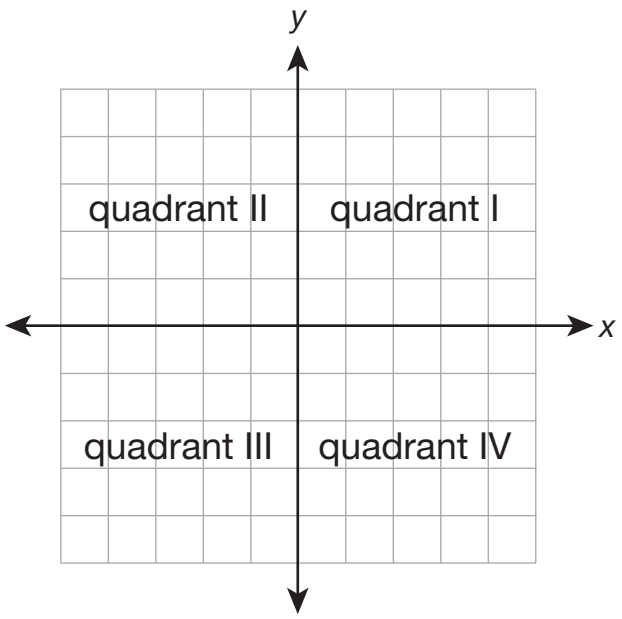
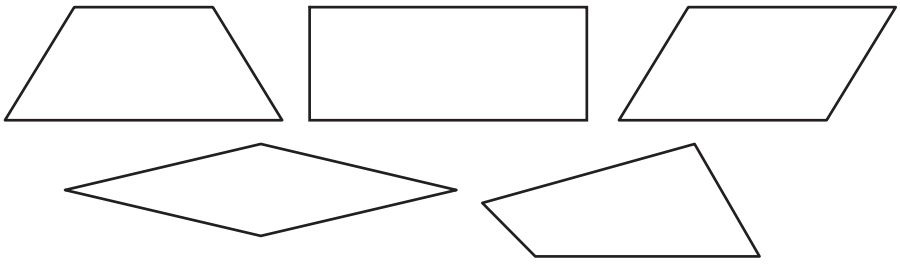
Key: = 1 gallon

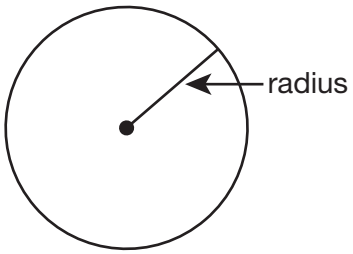
Pictograph</td><td>3</td></tr>
<tr><td>Place Value</td><td>The value of the place a digit occupies in a number. The place value is independent of the value of the digit occupying the place. For example, in the decimal number 748.56, the digit 7 occupies the hundreds place (i.e., the place value of the third place left of the decimal point is 10^2 or 100).</td><td>3</td></tr>
</table>

Term	Definition	Grade
Plane	A set of points that forms a flat surface that extends infinitely in all directions. It has length and width but no height. Informal examples that may aid students in conceptualizing a *plane*: • An infinitely thin sheet of glass that extends infinitely far in all directions • The surface of an infinitely long and wide tabletop—not the tabletop itself, only the infinitely thin surface of the tabletop.	3
Point	A figure with no dimensions—it has no length, width, or height. A *point* is generally indicated with a single dot and is labeled with a single capital letter (e.g., point P). When the *point* appears at the end of a figure (e.g., a line segment or a ray), it is referred to as an *endpoint*. See also Ordered Pair and Vertex.	4
Polygon	A bounded (enclosed) two-dimensional figure. Each side of the figure is a line segment. Each side intersects exactly two other sides at endpoints. Each point of intersection is the intersection of exactly two sides. A *polygon* is identified by the labels of its consecutive vertices.  Polygons  Polygon ABCDE	3
Positive Number	Any number greater than 0.	6
Prime Number	A whole number greater than 1 with exactly two factors, 1 and the number itself. For example: • Since 7 has only two factors (1 and 7), 7 is a *prime number*. • Since 9 has more than two factors (1, 3, and 9), 9 is **not** a *prime number*. There are infinitely many *prime numbers*.	4

Term	Definition	Grade
Prism	A three-dimensional (solid) figure that has two congruent and parallel faces that are polygons called bases. The remaining faces, called lateral faces, are parallelograms (often rectangles). *Prisms* are named by the shape of their bases.   Rectangular Prism Triangular Prism (On the PSSA, it may be assumed all *prisms* are right *prisms* unless otherwise specified.)	5
Product	The result when one number is multiplied by one or more numbers (i.e., the answer to a multiplication computation).	3
Proportion	An equation showing the equality of two ratios. For example: $\frac{3}{4} = \frac{x}{16}$	6
Proportional Relationship	Relationships between two variable quantities in which their ratio remains equivalent. For example: • Rate of travel relationships in which the ratios of distance to time may be written differently but remain equivalent $\left(\text{e.g., } \frac{550 \text{ miles}}{10 \text{ hours}} = \frac{220 \text{ miles}}{4 \text{ hours}}\right)$ • Price relationships in which the ratios of cost to quantity purchased may be written differently but remain equivalent $\left(\text{e.g., } \frac{\$13.50}{5 \text{ gallons}} = \frac{\$8.10}{3 \text{ gallons}}\right)$	6

Term	Definition	Grade
Pyramid	A three-dimensional (solid) figure with a polygonal base and with triangular faces that have a common vertex. *Pyramids* are named by the shape of their bases.  Square Pyramid Triangular Pyramid (On the PSSA, it may be assumed all *pyramids* are right *pyramids* unless otherwise specified.)	7
Pythagorean Theorem	A formula that relates the lengths of the two legs and the hypotenuse of any right triangle. The *Pythagorean theorem* states the following: If a triangle is a right triangle and has two legs with lengths a and b and a hypotenuse with length c, then $a^2 + b^2 = c^2$. The converse is also true: If a triangle has sides with lengths a, b, and c, such that $a^2 + b^2 = c^2$, then the triangle is a right triangle. This statement is often referred to as the converse of the *Pythagorean theorem*.  $a^2 + b^2 = c^2$	8

Term	Definition	Grade
Quadrant	One of the four regions into which the perpendicular axes divide a coordinate grid. Beginning with the region in which all ordered pairs have only positive coordinate values (the top-right region) and progressing counterclockwise about the origin, the *quadrants* are named quadrant I, quadrant II, quadrant III, and quadrant IV (note the use of Roman numerals).  Quadrants A point lies in a *quadrant* only if the ordered pair contains non-zero coordinates. If either coordinate of the ordered pair is zero, then the point lies on an axis and **not** in a *quadrant*.	5
Quadrilateral	A polygon with exactly 4 sides.  Quadrilaterals	3

Term	Definition	Grade
Quartile	One of three values that divides a set of ordered data into four equal parts. • *first quartile* (Q1)—the median of all data points less than the median of the entire data set • *second quartile* (Q2)—the median of the entire data set (*Second quartile* and median are equivalent and interchangeable; however, median is used more frequently.) • *third quartile* (Q3)—the median of all data points greater than the median of the entire data set For example, for the data set {2, 5, 7, 12, 17, 22, 23}: • *first quartile* value: 5 • *second quartile* (median) value: 12 • *third quartile* value: 22 See also Median.	6*
Quotient	The result when one number is divided by another number (i.e., the answer to a division computation).	3
Radius	A line segment with one endpoint at the center of a circle and one endpoint on the circle. The length of the *radius* is equal to one-half the length of the diameter.  In common usage, the *radius* occasionally refers not only to the line segment, but also to the length of the line segment that constitutes the *radius*. (On the PSSA, it may be assumed that *radius* is the line segment, **not** the measurement of the line segment unless otherwise specified. If there is a context in which *radius* is intended to imply a measurement, the context must clearly, absolutely, and indisputably make that assertion.) See also Diameter.	5*
Range (of Data)	The difference between the greatest and the least values in a set of data. For example: • For the data set {1, 7, 9, 11}, the *range* is 11 – 1 = 10. • For the data set {5, 7, 12, 23, 29}, the *range* is 29 – 5 = 24.	6

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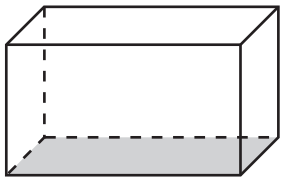
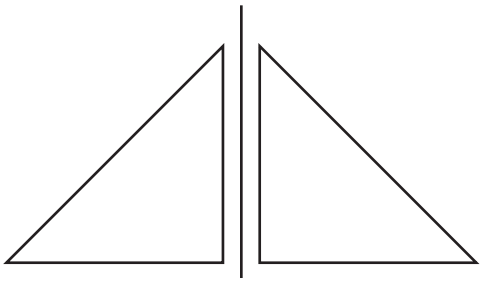
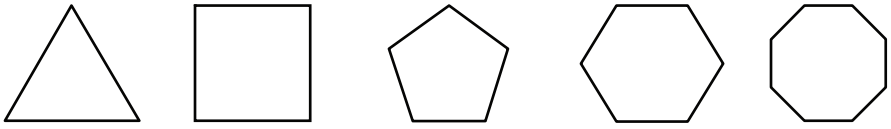
Term	Definition	Grade
Rate	A ratio that compares two quantities with different measurements (e.g., distance compared to time; height, in inches, compared to width, in inches). *Rate* is a measure of change. For example: • miles per hour • dollars : pounds • change in *y* compared to change in *x* (i.e., slope) See also Ratio.	6
Ratio	A comparison of two numbers, quantities, or expressions by division. It is often written as a fraction, but not always (e.g., $\frac{2}{3}$, 2:3, 2 to 3, and $2 \div 3$ all represent the same *ratio*).	6
Rational Number	Any number that is equivalent to a fraction written as an integer over a counting number. The set of *rational numbers* includes all of the integers since each integer can be written as that number over one. For example: • $\frac{4}{7}$, since it is a fraction of an integer over a counting number • 27, since it is equivalent to $\frac{27}{1}$ • $^{-}3\frac{5}{8}$, since it is equivalent to $^{-}\frac{29}{8}$ • 3.71, since it is equivalent to $\frac{371}{100}$ • $24.\overline{3}$, since it is equivalent to $24\frac{1}{3}$ • $0.94\overline{713}$, since it is equivalent to $\frac{94{,}619}{99{,}900}$ See also Irrational Number.	6
Ray	A part of a line that has one endpoint and continues infinitely in one direction or on one side of that point. A *ray* is identified by two points: first its endpoint and then another unique point on the *ray*.  Ray AB ($\overrightarrow{AB}$)	4

Term	Definition	Grade
Rectangle	A parallelogram with all angles congruent. Each of the angles in a *rectangle* is 90°.  Rectangle	K*
Rectangular Prism	A three-dimensional (solid) figure which has exactly six faces. All six faces are rectangles.  Rectangular Prism	5
Reflection	The transformation of a figure that produces the mirror image of the original figure. As a result of the transformation, the line over which the *reflection* occurs becomes a line of symmetry. Because the reflected image is congruent to the original image, a *reflection* is referred to as a rigid transformation. Informally, a *reflection* can be thought of as a "flip" of the original figure.  Reflection See also Line of Symmetry.	8
Regular Polygon	A polygon in which all sides are congruent and all angles are congruent.  Regular Polygons Two special types of *regular polygons* are equilateral triangles and squares.	4*

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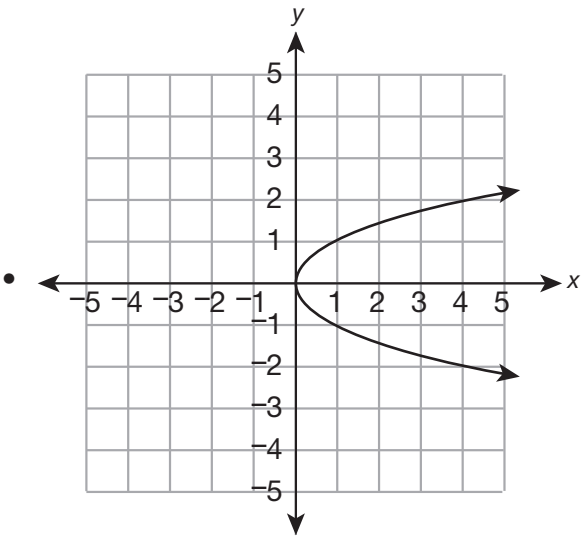
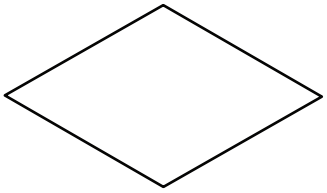
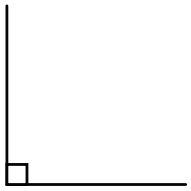
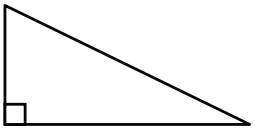
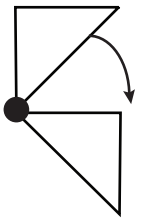
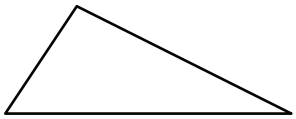
Term	Definition	Grade
Relation	Any set of ordered pairs. For example: • {(5, 9), (⁻3, 7), (15, 2), (⁻3, 9)} • {(insect, ant), (reptile, lizard), (bird, goose), (mammal, deer)} • {($x + 2$, $3 \times w$), (a, b), ($x + a$, $w - b$), (a, $3 \times w$)} • 	8
Repeating Decimal Number	A decimal number in which the fractional part (the part to the right of the decimal point) is non-terminating and extends infinitely in a repeating sequence of digits. When written, a bar may be written above the repeated digits (e.g., 0.333… may be written as $0.\overline{3}$). When a repeating decimal is written in decimal notation without the bar, an ellipsis (…) must be used to indicate the decimal does not terminate; also, three repetitions of the repeated digit(s) and/or some indication of which digits are repeated must be included. Only those numbers written under the bar are repeated infinitely. All *repeating decimal numbers* are rational numbers. For example: • $24.\overline{3} = 24.333\ldots$ (the 3 repeats infinitely) • $0.94\overline{713} = 0.94713713713\ldots$ (the 713 repeats infinitely) • $193.\overline{40} = 193.404040\ldots$ (the 40 repeats infinitely; note the 0 cannot be ignored) See also Terminating Decimal Number.	8

Term	Definition	Grade
Rhombus	A parallelogram with all sides congruent. The plural of *rhombus* is *rhombi*.  Rhombus	3
Right Angle	An angle that measures exactly 90°. A *right angle* may be marked with a small square in the interior of the angle.  Right Angle	4
Right Triangle	A triangle in which an interior angle is a right angle.  Right Triangle See also Acute Triangle and Obtuse Triangle.	4
Rotation	The transformation of a figure that moves the figure by rotating it about a fixed point. Often the point about which the original figure is rotated and the degrees of *rotation* are stated (e.g., a 90° clockwise *rotation* about point A). Because the rotated image is congruent to the original image, a *rotation* is referred to as a rigid transformation. Informally, a *rotation* can be thought of as a "turn" of the original figure.  Rotation	8

Term	Definition	Grade
Scale Drawing	A drawing that is geometrically similar to an original figure or object. In a *scale drawing*, the linear measurements may change but the proportional relationships of those measurements are preserved (i.e., length measurements in the *scale drawing* remain uniformly proportional to length measurements in the original figure). The angle measurements in a *scale drawing* and the original object or figure are congruent. See also Proportional Relationship.	7
Scale Factor	The number by which the length(s) of a geometric object is multiplied to generate a similar geometric object. The *scale factor* is the magnitude of a dilation. If a *scale factor* is greater than one, the dilated figure is larger than the original figure. If the *scale factor* is less than one, the dilated figure is smaller than the original figure. If the *scale factor* is one, the dilated figure is congruent to the original figure (i.e., the figure does not change). In some cases, the *scale factor* is a negative number. A *negative scale factor* results in both a dilation and a reflection. (*Negative scale factors* are generally only used when the original figure appears on a coordinate grid.)	7*
Scalene Triangle	A triangle in which no two sides are congruent (i.e., all three sides have different lengths).  Scalene Triangle See also Equilateral Triangle and Isosceles Triangle.	4*

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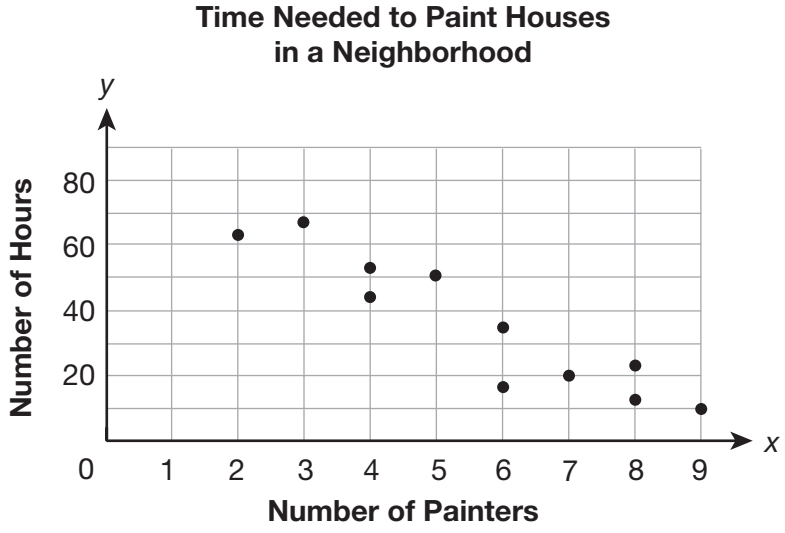
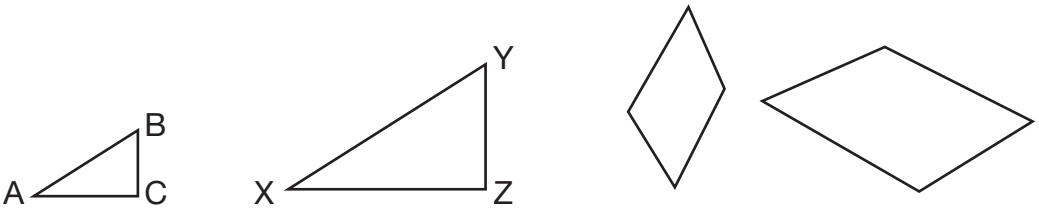
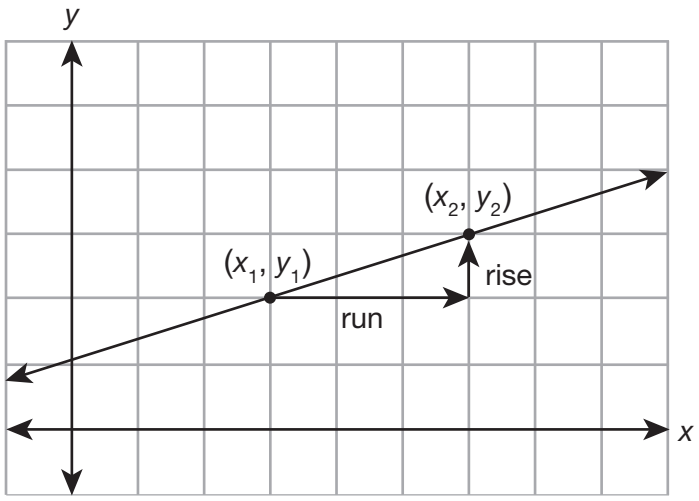
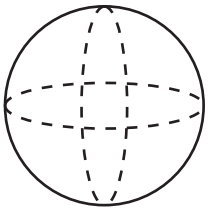
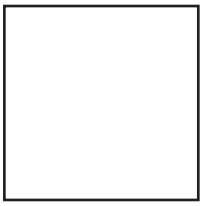
Term	Definition	Grade
Scatter Plot	A plot that represents discrete bivariate data. The data points are represented by ordered pairs marked on a coordinate grid. In addition to visually representing data, *scatter plots* often serve as the geometric basis for derivation and application of lines of best fit.  Scatter Plot See also Line of Best Fit.	8
Scientific Notation	A form of exponential notation created by writing a number as the product of a decimal number multiplied by a power of 10 (e.g., 10^3). If the original number is positive, the decimal number must be greater than or equal to 1, but less than 10. If the original number is negative, the decimal number must be less than or equal to $^-1$, but greater than $^-10$. A number is written in *scientific notation* by "floating" the decimal point in the original number to a position where it is preceded by a single, nonzero digit and then multiplying that number by the greatest power of ten less than or equal to the original number. For example: • The *scientific notation* of 23,911.1862 is 2.39111862×10^4. • The *scientific notation* of 0.00531 is 5.31×10^{-3}. *Scientific notation* is generally used to represent numbers that have either very large or very small absolute values.	8

Term	Definition	Grade
Similar	Geometric figures in which the measures of corresponding sides are uniformly proportional and the measure of corresponding angles are congruent. In *similar* figures, the linear measurements may be different but the proportional relationships of those measurements are preserved (i.e., length measurements in the one figure remain uniformly proportional to length measurements in the other figure). *Similar* figures are dilations of each other. An informal definition of *similar* figures is figures with the same shape but not necessarily the same size.  Similar Triangles Similar Quadrilaterals Figures that are congruent are also *similar*.	8
Slope	The ratio of the vertical change compared to the horizontal change between two points on a coordinate grid. *Slope* is often expressed as $\frac{\text{rise}}{\text{run}}$ or $\frac{\text{change in } y}{\text{change in } x}$. A vertical line has an undefined *slope*. A horizontal line has a *slope* of 0. Note that *slope* is a rate.  Slope The variable *m* is often used to represent *slope* (e.g., $m = \frac{y_2 - y_1}{x_2 - x_1}$, $y = mx + b$).	8

Term	Definition	Grade
Sphere	A three-dimensional (solid) figure in which all points on the surface are the same distance from the center.  Sphere	8
Square	A parallelogram with all sides congruent and all angles congruent. Thus, a *square* is also a rectangle and a rhombus.  Square	K*
Square Root	One of two equal factors (roots) of a number or expression. Informally, it can be thought of as "the number, when multiplied by itself, has a product equal to a given number." Note that any positive number has two square roots: one positive and one negative. The unique nonnegative square root of a nonnegative number is the principal square root. The square roots of 25 are 5 and −5; the principal square root of 25 is 5 and can be written $\sqrt{25} = 5$. For example: • $\sqrt{9} = 3$ since $3 \times 3 = 9$ and 3 is nonnegative • $\sqrt{0.36} = 0.6$ since $0.6 \times 0.6 = 0.36$ and 0.6 is nonnegative • $\sqrt{49w^4} = 7w^2$ since $7w^2 \times 7w^2 = 49w^4$ and $7w^2$ is nonnegative	8

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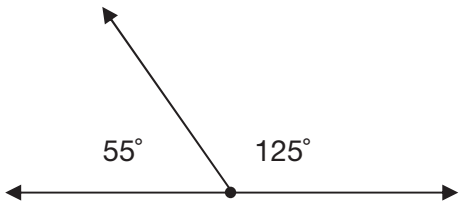
Term	Definition	Grade
Stem-and-Leaf Plot	A plot that represents discrete numerical data. In the display, a bar separates common digits in larger place values from the smaller digits. The numbers to the left of the bar are the *stems* and the numbers to the right of the bar are the *leaves*. Generally, the *leaves* are the digits in the ones place of all the numbers in a data set and the *stems* are the common digits in the place values greater than the ones place. **Number of Sit-Ups** Each tens digit is called a *stem*. → 3 | 4 6 8 8 4 | 0 3 6 7 5 | 0 0 1 2 7 → Each ones digit is called a *leaf*. **Key** 3 | 6 = 36 Stem-and-Leaf Plot	6*
Straight Angle	An angle with a measure of exactly 180°. A *straight angle* created by two rays forms a line.	5*
Subtrahend	An expression that is subtracted from another expression. For example: • In the computation 29 – 11 = 18, 11 is the *subtrahend*. • In the expression $(3 + x) - 7w$, $7w$ is the *subtrahend*.	4
Sum	The result when adding two or more numbers (i.e., the answer to an addition computation).	3
Supplementary Angles	Two angles for which the sum of their measures is 180°. If two *supplementary angles* are also adjacent angles, they form a straight angle. Each of two *supplementary angles* is referred to as the supplement of the other angle (e.g., a 125° angle is the supplement of a 55° angle).  Supplementary Angles See also Complementary Angles.	7

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<table>
<tr><th>Term</th><th>Definition</th><th>Grade</th></tr>
<tr><td>Surface Area</td><td>The sum of the areas of all the faces of a three-dimensional (solid) figure or object.</td><td>6</td></tr>
<tr><td>Tally Chart</td><td>A table or chart in which tally marks (in contrast to numbers or pictures) are used to record data.

Favorite Stores
<table><tr><th>Type of Store</th><th>Number of Students</th></tr><tr><td>pet</td><td>𝍸 ||||</td></tr><tr><td>book</td><td>𝍸 |</td></tr><tr><td>game</td><td>𝍸 ||</td></tr><tr><td>hardware</td><td>||||</td></tr></table>Tally Chart</td><td>3</td></tr>
<tr><td>Terminating Decimal Number</td><td>A decimal number that can be written, in its entirety, with a finite number of digits.

See also Repeating Decimal Number.</td><td>8</td></tr>
<tr><td>Theoretical Probability</td><td>A likelihood of an outcome based on the number of expected favorable outcomes compared to the number of possible outcomes. A theoretical probability is determined prior to any trials.

The value of a theoretical probability (P) is determined by the following formula:

$$P(\text{favorable outcome}) = \frac{\text{theoretical number of favorable outcomes}}{\text{theoretical number of possible outcomes}}$$
For example:
• Probability of flipping heads in one trial is $\frac{1}{2}$
○ 1 is the theoretical number of favorable outcomes (heads)
○ 2 is the theoretical number of possible outcomes (heads or tails)

• Probability of the first snow occurring on a Tuesday or a Wednesday is $\frac{2}{7}$
○ 2 is the theoretical number of favorable outcomes (Tuesday or Wednesday)
○ 7 is the theoretical number of possible outcomes (7 days in a week)

See also Experimental Probability.</td><td>8*</td></tr>
</table>

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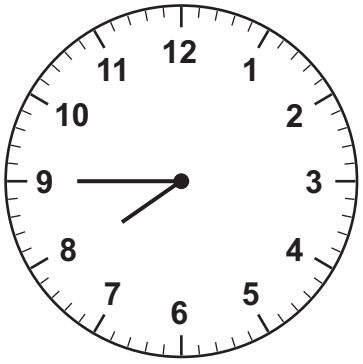
Term	Definition	Grade
Time (analog)	Time displayed by an analog clock. Analog clocks display continuous time. Traditional two- or three-hand clocks are examples of clocks that display *analog time*.  Analog Clock	3
Time (digital)	Time displayed as digits, as seen on digital clocks. *Digital time* shows each unit of time separated by colons. Digital clocks typically display only whole-number hours, minutes, and/or seconds. *Digital times* may refer to either elapsed time or the time of the day. For example: • 2:57 represents 2 hours, 57 minutes • 11:03:20 represents 11 hours, 3 minutes, 20 seconds • 7:45 P.M. represents 7 hours, 45 minutes after noon and is read as "seven forty-five P.M." (On the PSSA, it may be assumed all *digital times* begin with the hour unless otherwise specified.)	3*
Transformation	The application of a rule that may change the size or location of a geometric figure. Application of the rule is termed a "mapping." *Transformations* may include translation, reflection, rotation, or dilation. A *rigid transformation* is one in which the new figure is congruent to the original figure. A *non-rigid transformation* is one in which the new figure is **not** congruent to the original figure (the new figure may be similar to the original figure, although this is not always the case).	8

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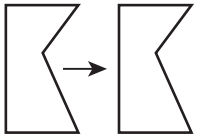
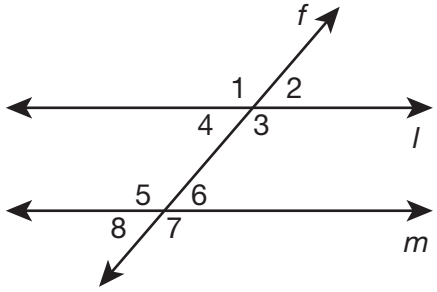
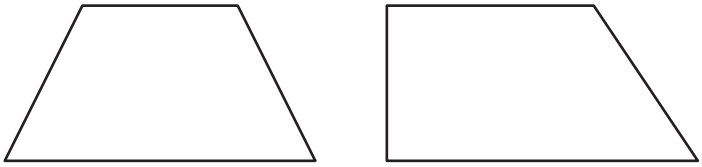
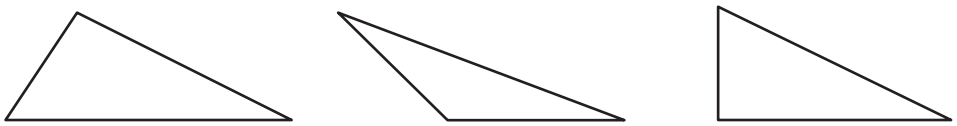
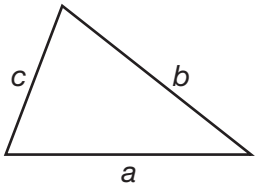
Term	Definition	Grade
Translation	The movement of a figure to a new position without any dilation, rotation, or reflection. It is a transformation in which the size and orientation of the original figure remain constant but the location in a plane changes. Because the translated image is congruent to the original image, a *translation* is referred to as a rigid transformation. Informally, a *translation* can be thought of as a "slide" of the original figure.  Translation	8
Transversal	A line that intersects two or more other lines. The lines intersected by a *transversal* may or may not be parallel. The relationships of angles formed by the intersection of two lines and a *transversal* are frequently encountered in the study of geometry.  Line *f* is a transversal through parallel lines *l* and *m.* See also Alternate Exterior Angles, Alternate Interior Angles, and Corresponding Angles.	7
Trapezoid	A quadrilateral with exactly one pair of parallel sides.  Trapezoids	6

<table>
<tr><th>Term</th><th>Definition</th><th>Grade</th></tr>
<tr><td>Triangle</td><td>A polygon with exactly 3 sides. A triangle may be classified by its side lengths (i.e., equilateral triangle, isosceles triangle, or scalene triangle), or by its angle measures (i.e., acute triangle, obtuse triangle, right triangle, or equiangular triangle).
 
Triangles</td><td>K*</td></tr>
<tr><td>Triangle Inequality Theorem</td><td>The theorem that asserts the sum of the lengths of any two sides of a triangle is greater than the length of the third side.
 
$a + b > c \quad a + c > b \quad b + c > a$</td><td>7</td></tr>
<tr><td>Two-Way Table</td><td>A table that shows the relationship between two sets of categorical variables. The entries in the table are either frequency counts (numerical values) or relative frequencies (ratios or percents).
High Temperatures during the Month<table><tr><th></th><th>Above 40°F</th><th>40°F or Colder</th></tr><tr><td>January</td><td>14</td><td>17</td></tr><tr><td>February</td><td>18</td><td>10</td></tr></table>High Temperatures during the Month<table><tr><th></th><th>Above 40°F</th><th>40°F or Colder</th></tr><tr><td>January</td><td>45%</td><td>55%</td></tr><tr><td>February</td><td>64%</td><td>36%</td></tr></table>Two-Way Tables</td><td>8</td></tr>
<tr><td>Unit Price</td><td>The price of a single item or unit (e.g., $3.50 per pound).</td><td>4*</td></tr>
</table>

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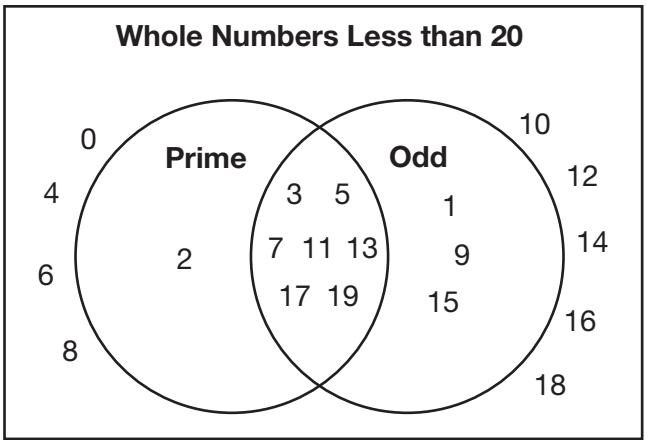
Term	Definition	Grade
Unit Rate	The ratio of a quantity to a single unit of comparison. For example: • 52 miles per hour – or – 52 miles : 1 hour – or – $\frac{52 \text{ miles}}{1 \text{ hour}}$ • 8.3 pounds per gallon – or – 8.3 pounds : 1 gallon – or – $\frac{8.3 \text{ pounds}}{1 \text{ gallon}}$ • 4 beats per measure – or – 4 beats : 1 measure – or – $\frac{4 \text{ beats}}{1 \text{ measure}}$ • \$2.98 per pound – or – \$2.98 : 1 pound – or – $\frac{\$2.98}{1 \text{ pound}}$ See also Constant of Proportionality and Unit Price.	6
Unit Square	A square with each side 1 unit in length. The area of a *unit square* is 1 square unit. 1 unit 1 unit area = 1 square unit Unit Square	3
Variable	A letter or symbol that represents a missing or unknown value. Generally, the letter is lowercase and italicized. For example: • In the expression $5w + 17$, the *variable* is the w. • In the equation $3 + \square = 9$, the *variable* is the $\square$. • In the formula $y = mx + b$, the *variables* are the y, m, x, and b. Note: not all special characters are *variables*. For example, the Greek letter π (pi) represents a specific value (3.14159265…).	6

Term	Definition	Grade
Venn Diagram	A diagram that represents the relationship between sets of data (either numerical or categorical). The diagram typically consists of data entered into two or more circles—distinct or intersecting—drawn inside a rectangle. The rectangle represents the universal set and the circles represent subsets. Data that are in two or more of the subsets will appear in the intersection of the circles representing those subsets. In the *Venn diagram* below, the left circle contains the prime numbers less than 20 (2, 3, 5, 7, 11, 13, 17, and 19) and the right circle contains the odd whole numbers less than 20 (1, 3, 5, 7, 9, 11, 13, 15, 17, and 19). Since the numbers 3, 5, 7, 11, 13, 17, and 19 are both prime and odd, they appear in the intersection (overlap) of the two circles; outside of the circles are the even, nonprime whole numbers less than 20 (0, 4, 6, 8, 10, 12, 14, 16, 18).  Venn Diagram This representation of data is named after the English mathematician/logician John Venn (1834–1923).	4*

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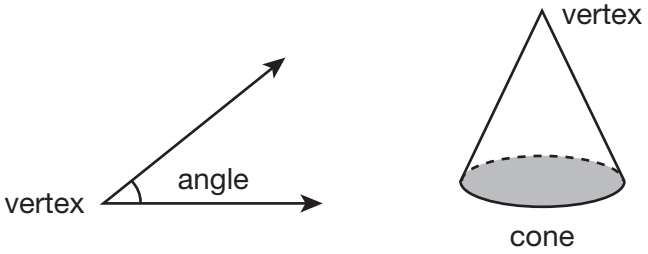
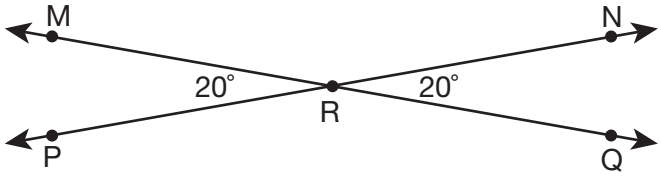
Term	Definition	Grade
Vertex	A point where lines, rays, line segments, two sides of a two-dimensional (plane) figure, or three edges of a three-dimensional (solid) figure meet. A *vertex* is the single point that geometric figures have in common when they intersect. The plural of *vertex* is *vertices*. For example: • The *vertex* of an angle is the point at which the rays that form the angle intersect. • A *vertex* of a pyramid is a point at which three faces intersect. • A *vertex* of a square is one of the "corners" (a point at which two sides intersect). • The *vertex* of a cone is the point opposite the base.  Vertex	4
Vertical Angles	The pair of angles with the same vertex on opposite sides of two intersecting lines. *Vertical angles* are congruent.  $\angle MRP$ and $\angle NRQ$ are vertical angles. Note: *vertical angles* are not necessarily oriented vertically.	7
Volume	The amount of space (in cubic units) that a three-dimensional (solid) figure occupies or contains. Units such as cubic meters (m^3), cubic inches (cu in.), gallons (g), liters (L), and fluid ounces (fl oz.) are used to measure *volume*.	3
Whole Number	A counting number or zero. Any number from the set of numbers represented by {0, 1, 2, 3, …}. A *whole number* is sometimes referred to as a non-negative integer.	3
x-Axis	The horizontal axis of a coordinate grid.	5
y-Axis	The vertical axis of a coordinate grid.	5

Pennsylvania System of School Assessment: Mathematics

Assessment Anchors and Eligible Content with Glossary

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