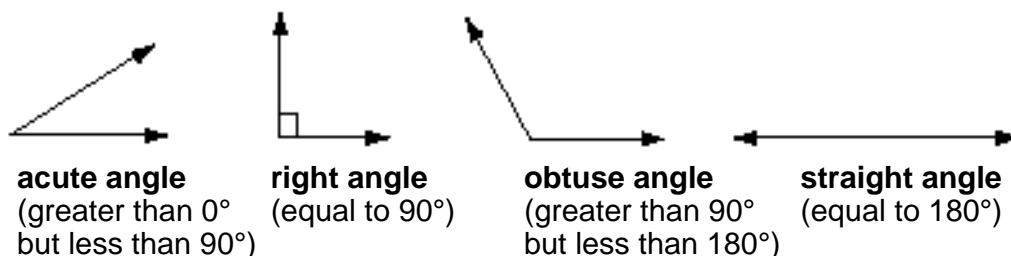


# A FRAMEWORK FOR ACHIEVING THE ESSENTIAL ACADEMIC LEARNING REQUIREMENTS IN MATHEMATICS K-4 GLOSSARY

**acute** see **angle** and **triangle**

**addend** any number that is added  
addend + addend = sum

**angle** two rays that share an endpoint; named according to the number of degrees of its measure



**associative property of addition** the sum stays the same when the grouping of addends is changed

Example:  $(a + b) + c = a + (b + c)$   
 $(30 + 4) + 20 = 30 + (4 + 20)$

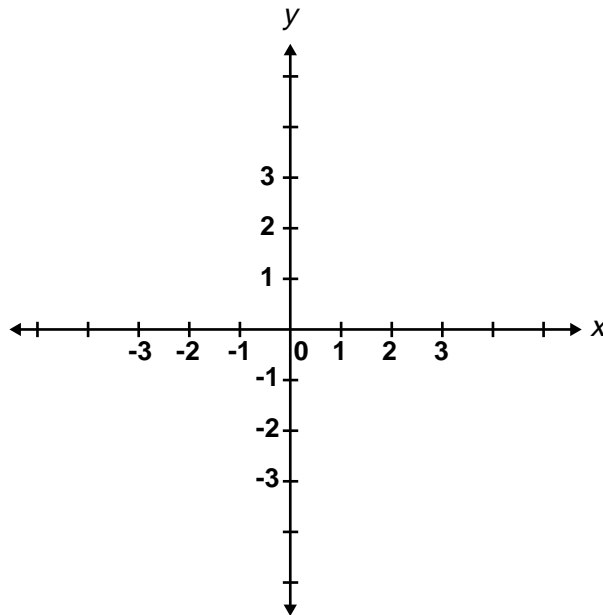
**associative property of multiplication** the product stays the same when the grouping of factors is changed

Example:  $(a \times b) \times c = a \times (b \times c)$   
 $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

**average** a measure of central tendency; a number somewhere in the middle of data ordered from least to greatest, or a number with a lot of data clustered around it. There are three types of averages: mean, median, and mode.

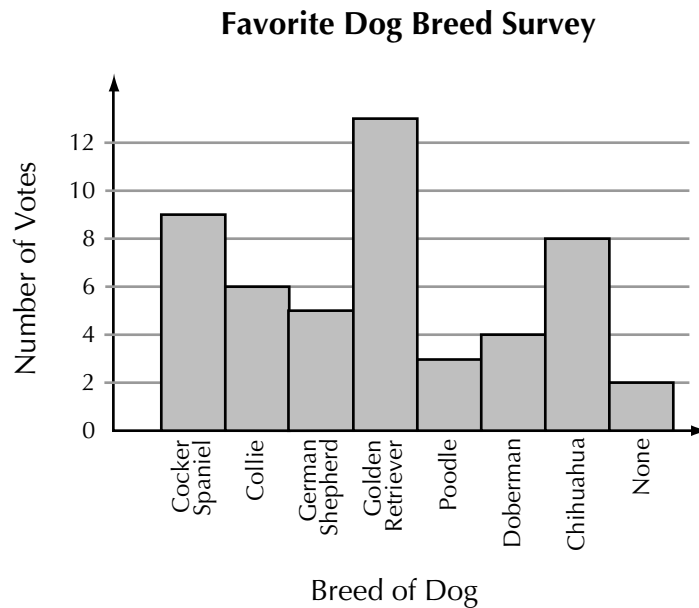
**axes**

perpendicular lines used as reference lines in a coordinate system or graph; the horizontal line is the x-axis; the vertical line is the y-axis



**bar graph**

a graph that uses the length of solid bars to represent numbers and compare data



**capacity**

the volume of material or liquid that can be poured into a container

**cardinal number**

a number that designates the “manyness” of a set of objects, or the number of units in the set; answers the question “How many...?”

*Example: 34 and 50,098*

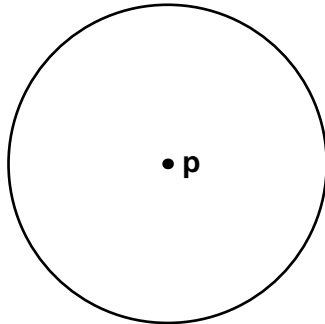
**central tendency**

a single number that describes all the numbers in a set

*Example: For the set of numbers 95, 86, 82, and 83, the mean is 89.*

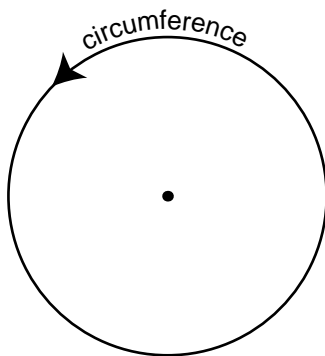
**circle**

a set of points in a plane that are all the same distance from the center point



**circumference**

the boundary line, or perimeter, of a circle; also, the length of the perimeter of a circle



**common denominator**

a number divisible by all of the denominators being considered; also known as a common multiple of the denominators

*Example:  $\frac{1}{2} + \frac{1}{3} =$*

*Multiples of 2 = {0, 2, 4, 6, 8, 10, 12,...}*

*Multiples of 3 = {0, 3, 6, 9, 12, 15,...}*

*Multiples common to both sets, other than zero, include 6 and 12. (There are infinite numbers of common multiples as the sets continue, i.e., 18, 24, 36, etc.) Any of these numbers can be used as common denominators for the two fractions.*

$$\frac{1}{2} = \frac{3}{6} \quad \text{OR} \quad \frac{1}{2} = \frac{6}{12}$$

$$\frac{1}{3} = \frac{2}{6} \quad \frac{1}{3} = \frac{4}{12}$$

$$\frac{5}{6} \quad \frac{10}{12}$$

**common multiple**

a number that is a multiple of each of two or more numbers; used to find a common denominator when operating with fractions having unlike denominators

*Example: 24 is a common multiple of 2, 3, and 8*

**commutative property of addition**

it makes no difference in which order two numbers are added (the commutative property does not apply to subtraction)

*Example:  $a + b = b + a$   
 $4 + 50 = 50 + 4$*

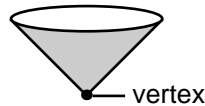
**commutative property of multiplication**

it makes no difference in which order two numbers are multiplied (the commutative property does not apply to division)

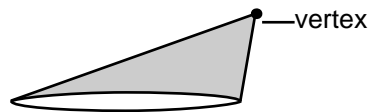
*Example:  $a \times b = b \times a$   
 $3 \times 5 = 5 \times 3$*

**cone**

a three-dimensional figure with one circular or elliptical base and a curved surface that joins the base to the vertex

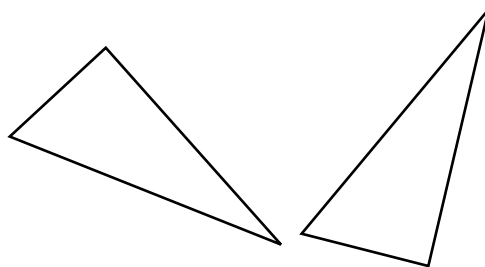


**cones**



**congruent figures**

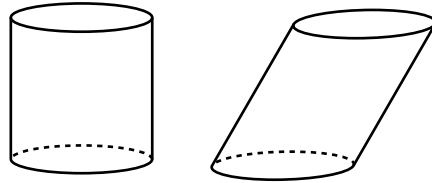
figures that have the same shape and size



**congruent triangles**

**cylinder**

a solid figure with two circular or elliptical bases that are congruent and parallel to each other



**data**

collected pieces of information

**denominator**

the number below the fraction bar; indicates the number of equivalent pieces into which something is divided

**difference**

the number found when subtracting one number from another; the result of a subtraction operation; the amount by which a quantity is more or less than another number

**discrete**

composed of distinct parts or discontinuous elements; a set of numbers, or points, that has no limit points

*Example: discrete — taking coins out of your pocket one at a time;  
non-discrete (or continuous) — pouring water from one container to another container*

**dividend**

a number which is to be divided by another number

*dividend* ÷ *divisor* = *quotient*      15 ÷ 3 = 5

$$\begin{array}{r} \text{quotient} \\ \text{divisor} \overline{) \text{dividend}} \end{array} \qquad \begin{array}{r} 5 \\ 3 \overline{) 15} \end{array}$$

**divisible**

a whole number is divisible by another whole number if the remainder equals zero when you divide

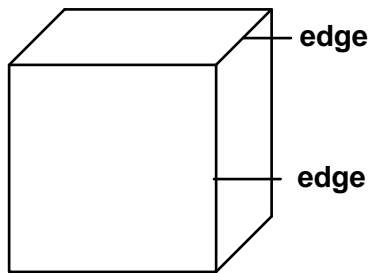
**divisor**

the number by which the dividend is to be divided; also a factor

$$\begin{array}{r} \text{quotient} \\ \text{divisor} \overline{) \text{dividend}} \end{array} \qquad \text{dividend} \div \text{divisor} = \text{quotient}$$

**edge**

the line segment formed by the intersection of two faces of a solid figure;  
a cube has 12 edges

**equation**

a number sentence which shows equality between two sets of values

*Example:  $4 + 8 = 6 + 6$*

**equilateral**

see **triangle**

**estimate**

to find an approximate value or measurement of something

**even number**

a whole number divisible by two

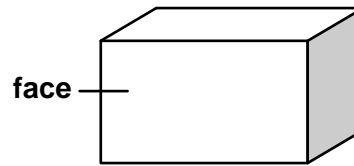
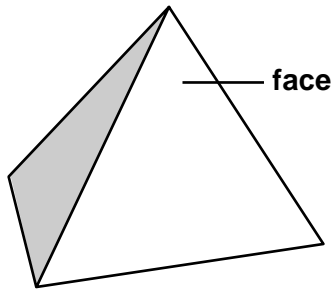
*Example: 0, 4, 678*

**expanded form**

a number written in component parts showing the cumulative place values of each digit in the number

*Example:  $546 = 500 + 40 + 6$*

**face** a flat surface, or side, of a solid figure



**fact** a basic mathematical statement involving numbers and operations; ex.  $3 + 5 = 8$ ,  $10 \div 2 = 5$

**factor** one of two or more numbers that are multiplied together to obtain a product;  $\text{factor} \times \text{factor} = \text{product}$

*Example:  $4 \times 3 = 12$ , 4 and 3 are factors*

**figure** a closed geometric shape in 2 or 3 dimensions

**flip** the effect of a flip is a reflection; see **reflection**

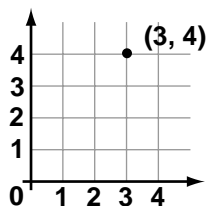
**fraction** a way of representing part of a whole or part of a group by telling the number of equal parts in the whole and the number of those parts you are describing; it is written in the form  $\frac{\text{numerator}}{\text{denominator}}$  where the numerator can be any integer and the denominator can be any integer except zero

*Example:  $\frac{2}{3}, \frac{56}{23}, \frac{16}{765}, \frac{0}{34}, \frac{8}{1}$*

**fraction families** fractions having denominators that are multiples of a single number; ex. halves, fourths, eighths, and sixteenths; thirds, sixths, and ninths

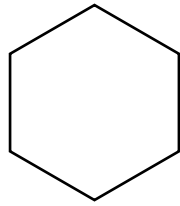
*Example:  $\frac{2}{4}, \frac{3}{8}, \frac{5}{12}$  have denominators that are multiples of 4*

**grid** a pattern of regularly spaced horizontal and vertical parallel lines drawn on a map or chart with ordered pairs of numbers that can be used to locate points

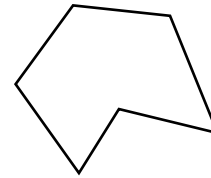


**hexagon**

a six-sided polygon



**regular hexagon**



**nonregular hexagons**

**horizontal**

extending side to side, parallel to the horizon

**identity property of addition**

adding zero to a number gives a sum identical to the given number

**identity property of multiplication**

multiplying a number by 1 gives a product identical to the given number

**inequality**

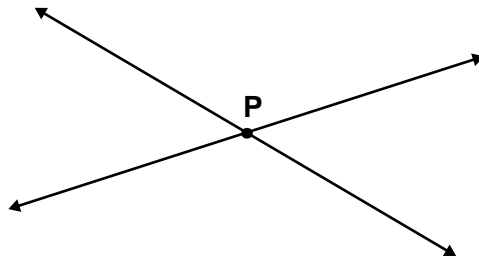
two sets of values that are not equal

**integer**

the counting numbers (1, 2, 3,...), their opposites (-1, -2, -3,...), and zero

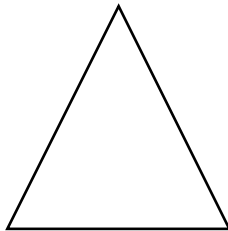
**intersecting lines**

lines that meet at a point



**isosceles triangle**

a triangle with 2 congruent sides; an alternate definition is a triangle with *at least* 2 congruent sides (there is no common agreement on a definition of an isosceles triangle)



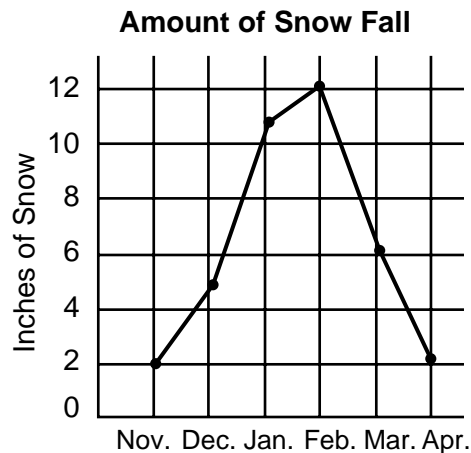
**line**

a set of points extending infinitely in opposite directions



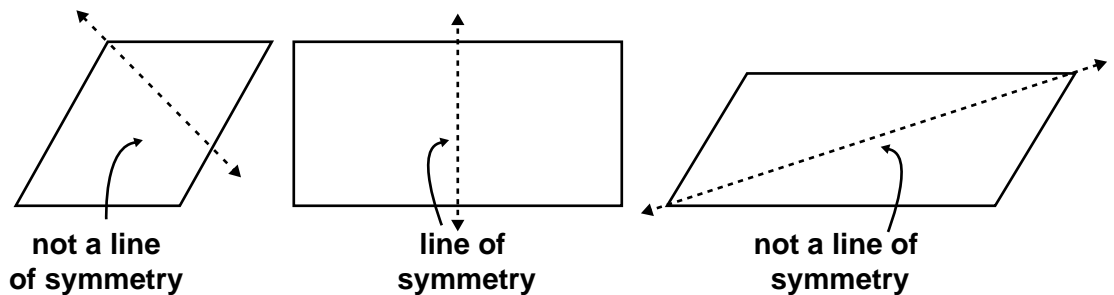
## line graph

a graph that uses a line to show that something is increasing, decreasing, or staying the same over time



## line of symmetry

a line on which a figure can be folded into two parts that are congruent mirror images of each other



## mean

an average obtained by dividing the sum of the data items by the number of data items

*Example: If there are three classes: A = 24 children, B = 25 children, and C = 23 children, the classes would be balanced by moving one student from class B to class C, thus making each class the same size (24). This number would indicate the average class size. Arithmetically, it is obtained by adding all data points together and dividing the sum by the number of points ( $24 + 25 + 23 = 72$ ;  $72$  divided by  $3 = 24$ ).*

## measure of central tendency

see **average**

## median

the number in the middle of a set of data arranged in order from least to greatest or from greatest to least; or the average of the two middle terms if there is an even number of terms

*Example:*

*For the data: 6, 14, 23, 46, 69, 72, 94 → The median is 46 (the middle number)*

*For the data: 6, 14, 23, 69, 72, 94 → The median is also 46 (the average of the two middle numbers in the list)*

**mixed number**

a number expressed as the sum of an integer and a fraction

*Example:*  $6\frac{2}{3}$

**mode**

the number that occurs most frequently in a set of data

*Example:* For the set of data {42, 36, 75, 75, 80}, 75 is the mode because it occurs most often. For the set of data {25, 45, 25, 55, 45, 65}, 25 and 45 are the modes. If no number occurs most often, then the set of data has no mode.

**multiple**

a number that is divisible by a given factor; a multiple of a whole number can be found by multiplying it by any whole number other than one

*Example:* 56 is a multiple of 7; 0 is a multiple of 34

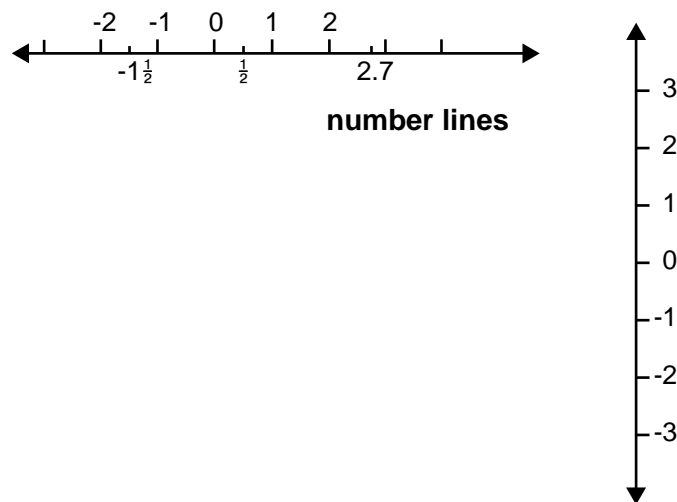
**nonstandard units of measure**

measurement units that are not commonly accepted as standard but are applied uniformly when measuring

*Example:* paperclips, pencils, cubes

**number line**

a line that shows numbers ordered by magnitude from left to right or bottom to top; an arrowhead at each end indicates that the line continues endlessly in both directions; points are marked to subdivide the line into intervals that correspond to indicated numbers

**number sentence**

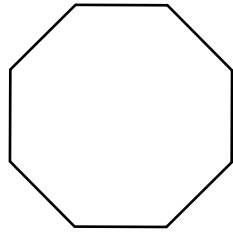
an expression of a relationship between quantities as an equation or an inequality

*Example:*  $7 + 7 = 8 + 6$   
 $14 < 92$   
 $56 + 4 > 59$

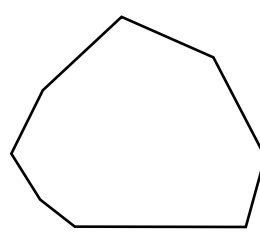
**numerator** the number above the line in a fraction; indicates the number of equivalent parts being considered

**obtuse** see **angle** and **triangle**

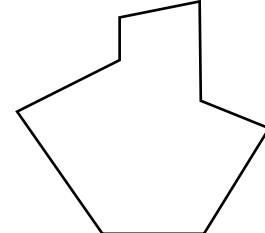
**octagon** an eight-sided polygon



**regular octagon**



**nonregular octagons**



**odd number** a whole number that is not divisible by two

*Example: 53, 701*

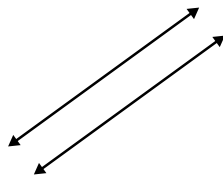
**operation** a mathematical process that combines numbers; basic operations of arithmetic include addition, subtraction, multiplication, and division

**ordered pair** two numbers for which their order is important when used to locate points on a coordinate graph; the first element indicates distance along the *x*-axis (horizontal) and the second indicates distance along the *y*-axis (vertical); see illustration for **grid**

**ordinal number** a number that designates the position of an object in order; *first*, *second*, and *third* are examples of ordinal numbers

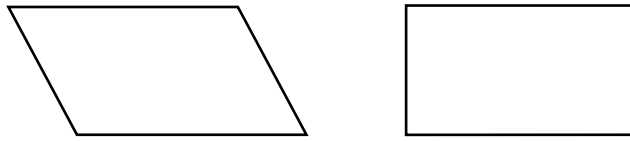
*Example: Eraser is the SECOND element in the set (pencil, eraser, desk, chalkboard, book, file, paper); Z is the TWENTY-SIXTH element in the set (a, b, c, d, ..., z).*

**parallel lines** lines that lie in the same plane and never intersect



**parallelogram**

a quadrilateral with opposite sides parallel



**parallelograms**

**pattern**

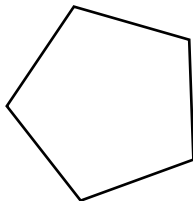
the arrangement of numbers, pictures, etc. in an organized and predictable way

*Example:* 3, 6, 9, 12, ...

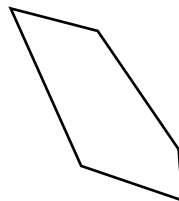


**pentagon**

a five-sided polygon



**regular pentagon**



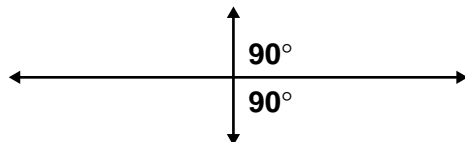
**nonregular pentagon**

**perimeter**

the distance around the outside of a shape or figure

**perpendicular lines**

lines that lie on the same plane that intersect to form right angles (90 degrees)



**point**

an exact position in space

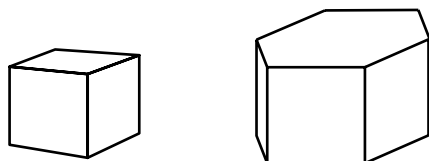
**polygon**

a closed plane figure having three or more straight sides

**polyhedron**

a solid figure, the sides of which are polygons

*Example:*



**probability**

the numerical measure of the chance that a particular event will occur, depending on the possible events; the probability of an event is always between 0 and 1, with 0 meaning that there is no chance of occurrence and 1 meaning a certainty of occurrence

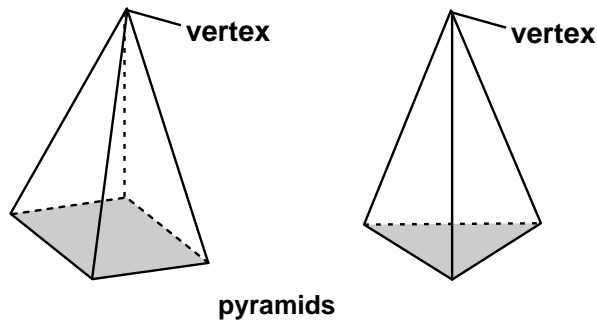
**product**

the result of a multiplication expression; factor  $\times$  factor = product

*Example:  $3 \times 4 = 12$ , 12 is the product*

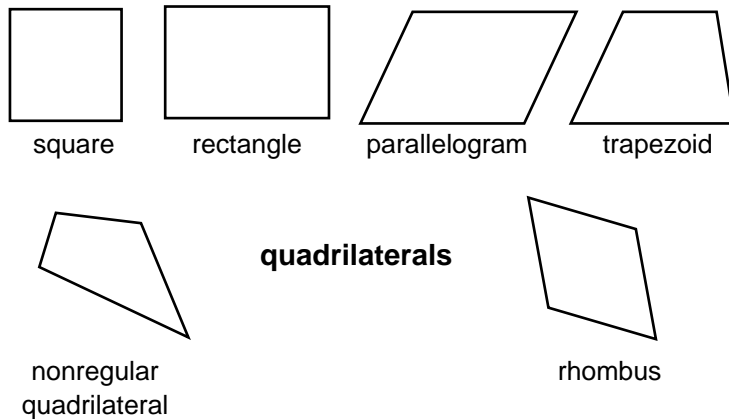
**pyramid**

a solid whose base is a polygon and whose faces are triangles that meet at a common point (vertex)



**quadrilateral**

a four-sided polygon



**quotient**

the result of dividing one number by another number

$$\begin{array}{r} \text{quotient} \\ \text{divisor} \overline{) \text{dividend}} \end{array} \qquad \text{dividend} \div \text{divisor} = \text{quotient}$$

**ray**

a part of a line that has one end point and extends infinitely in one direction



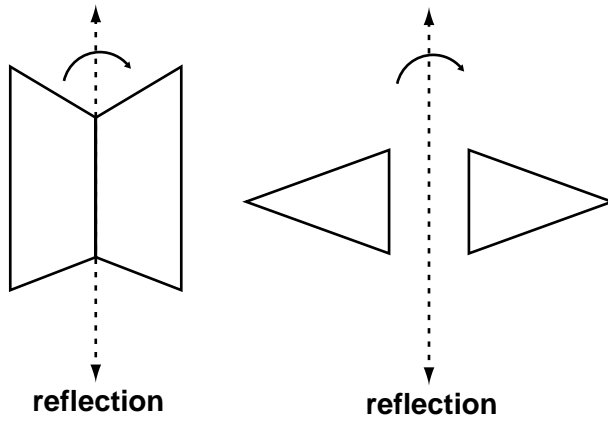
**rectangle**

a parallelogram with right angles; a square is a special rectangle



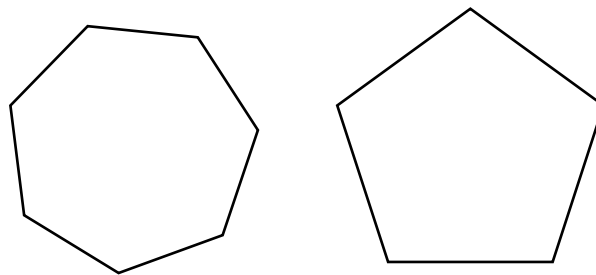
**reflection**

a transformation of a figure by reflecting it over a line, creating a mirror image of the figure; the effect of a flip is a reflection



**regular polygon**

a polygon with equal sides and equal angles



**regular polygons**

**remainder**

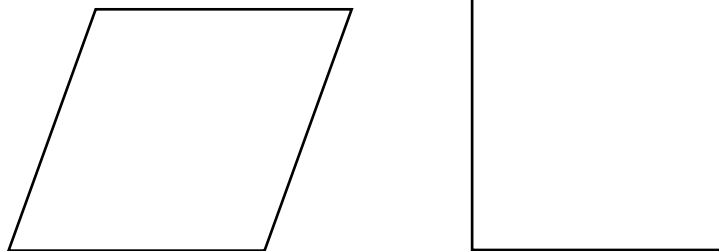
the undivided part that is left after division; it is less than the divisor

*Example:*

$$\begin{array}{r} 5 \text{ r } 2 \\ 6 \overline{) 32} \\ \underline{30} \\ 2 \end{array}$$

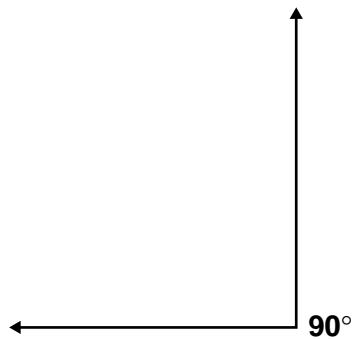
**rhombus**

a parallelogram with all four sides equal in length



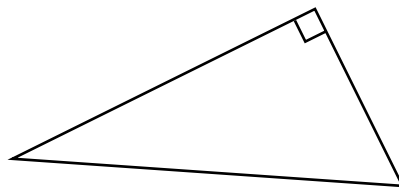
**right angle**

an angle whose measure is 90 degrees; see **angle** and **triangle**



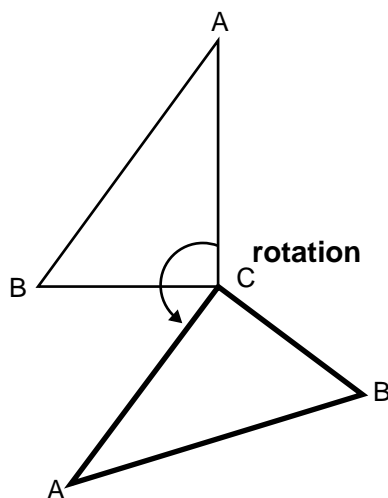
**right triangle**

a triangle having one right angle; see **angle** and **triangle**



**rotation**

turning a figure around a given point



**sample**

a portion of a population or set used in statistics

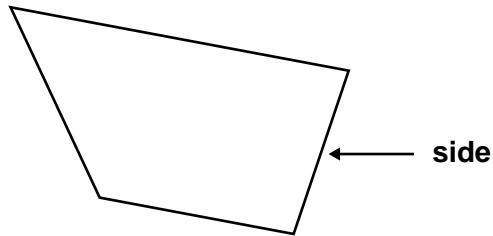
*Example: All boys under the age of ten constitute a sample of the population of all male children.*

**scalene**

see **triangle**

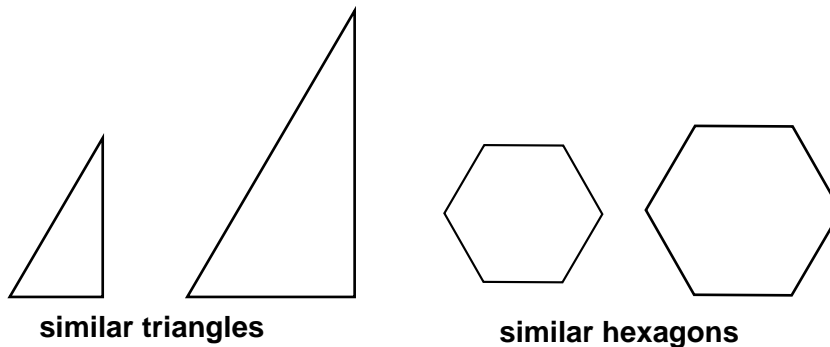
**side**

a line segment connected to other segments to form the boundary of a polygon



**similar figures**

having the same shape but not necessarily the same size (congruent corresponding angles and proportional corresponding sides)



**slide**

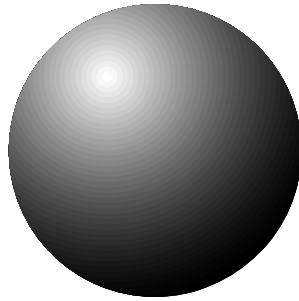
the effect of a slide is a translation; see **translation**

**solid**

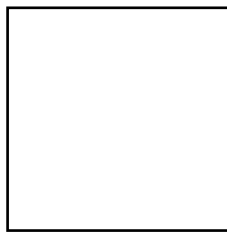
a geometric figure with three dimensions

**sphere**

a closed surface consisting of all points in space that are the same distance from a given point (the center)

**ball****square**

a rectangle with congruent sides

**standard form**

a number written with one digit for each place value

*Example: The standard form for five hundred forty-six is 546.  
The standard form for three thousand six is 3,006.*

**standard units of measure**

units of measure commonly used, generally classified in the U.S. customary system or metric system

*Example: feet, meters, acres, gallons, liters*

**sum**

the result of addition

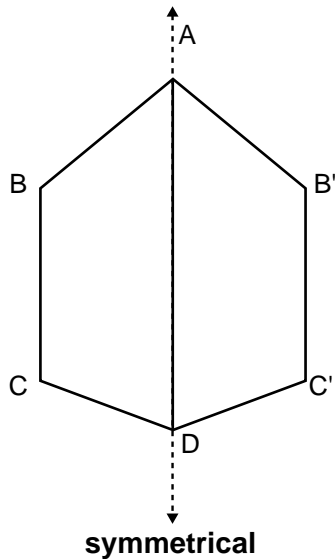
*addend + addend = sum*

**survey**

to get an overview by gathering data

**symmetrical**

having a line, plane, or point of symmetry such that for every point on the figure, there is a corresponding point that is the reflection of that point (see **line of symmetry**)



**symmetry**

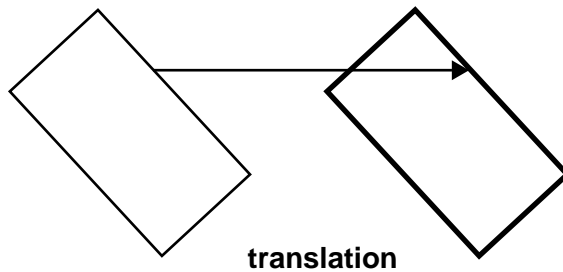
the property of being balanced about a line, plane, or point

**transformation**

one of three methods for moving a figure without changing its shape or size: translations (slides), reflections (flips), and rotations (turns)

**translation**

a transformation of a figure by moving it without turning or flipping it in any direction; the effect of a slide is a translation



**trapezoid**

a quadrilateral that has 2 parallel sides; an alternate definition is a quadrilateral with *at least 2* parallel sides (there is no common agreement on a definition of a trapezoid)

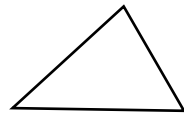
**trend**

the general direction or tendency of a set of data

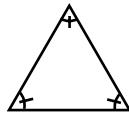
**triangle**

a three-sided polygon

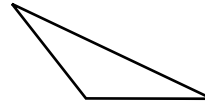
**Triangles Classified Using Angle Sizes**



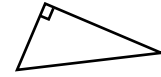
acute triangle  
(all angles acute)



equiangular triangle  
(all angles equal)

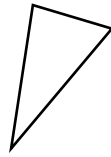


obtuse triangle  
(has one obtuse angle)

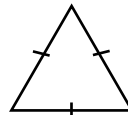


right triangle  
(has one 90° angle)

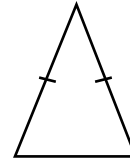
**Triangles Classified Using Length of Sides**



scalene triangle  
(no sides equal)



equilateral triangle  
(all sides equal)



isosceles triangle  
(two sides equal)

**turn**

see **rotation**

**variable**

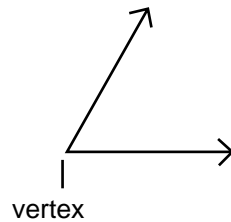
a quantity or symbol capable of assuming any of a set of values

*Example: In the expression  $b < 100$ , the variable  $b$  can be any number less than 100.*

**vertex**

point at which two line segments, lines, or rays meet to form an angle

*Example:*



**vertical**

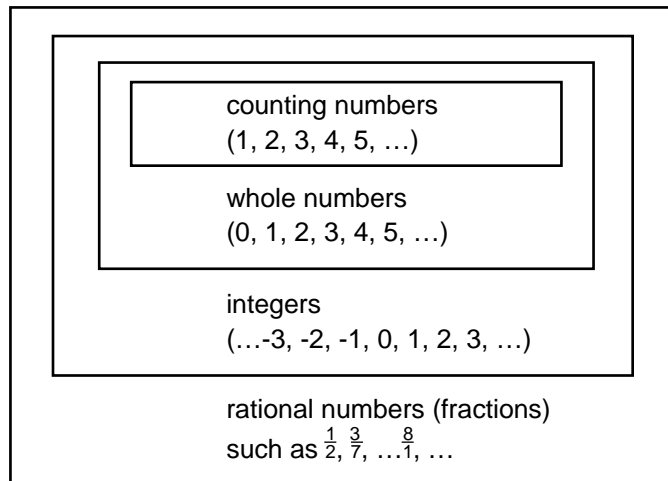
extending straight up and down; perpendicular to the horizon

**volume**

the number of cubic units it takes to fill a figure

**whole number**

any counting number or zero: 0, 1, 2, 3, . . .



**word form**

the expression of a number in words; reading the symbols

*Example: 546 is "five hundred forty-six"*

<

symbol meaning "is less than"

>

symbol meaning "is greater than"

=

symbol meaning "equals" or "is equal to"