

# KYAE STANDARDS for MATHEMATICS

## Level 4 Student Glossary

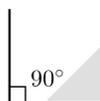
**angles** *two rays that share the same endpoint form an angle.*

**Types of angles include:**

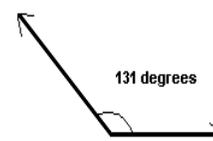
**acute angle** *an angle measuring between 0 and 90 degrees*



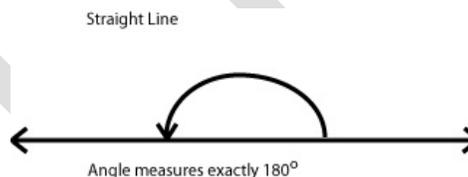
**right angle** *an angle measuring 90 degrees*



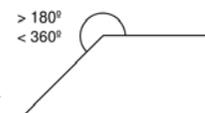
**obtuse angle** *an angle measuring between 90 and 180 degrees*



**straight angle** *an angle measuring 180 degrees*



**reflex angle** *an angle measuring more than 180 but less than 360 degrees*



**complementary angles** *two angles for which the sum of their measures is 90°*

**supplementary angles** *two angles for which the sum of their measures is 180°*

**adjacent angles** *angles that have a common side and a common vertex*

**area** *the amount of space inside the boundary of a 2-dimensional figure, expressed in square units*

**Associative Property** *a mathematical rule stating that when more than two numbers are added or multiplied, the result will be the same no matter how the numbers are grouped*

**bar graph** *see appendix*

**base** *the whole amount in a percentage problem; a number raised to a power, such as 5 in  $5^2$*

**chord** *a straight line connecting two points on a circle*

**circle** *a plane figure (2-D) formed by a curved line such that each point on the curve is the same distance from a fixed point, called the center*

**circle graph** *see appendix*

**circumference** *the distance around the edge of a circle*

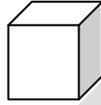
**Commutative Property** *a mathematical rule stating that the order in which numbers are added or multiplied does not change the sum or product*

**coefficient** *the number part of the terms with variables, e.g. in  $4x$ , the coefficient is 4*

**composite number** *a positive number that can be divided evenly by numbers other than 1 or itself*

**coordinate grid** *a set of points formed by a grid with a horizontal (x-) and a vertical (y-) axis*

**cube** *a number multiplied by itself 3 times shown by the exponent <sup>3</sup> as in  $5^3$ ; also a 6-sided 3-D figure in which each side is the same-sized square*



**cylinder** *a 3-dimensional figure with 2 congruent circular bases and straight sides, such as a tube*



**data** *information (often numerical) that is collected and analyzed*

**decimal** *numbers based on a whole being split into ten equal parts one or more times*

**denominator** *the bottom number of a fraction*

**diameter** *a straight line running from one side of a circle through the center to the other side*

**Distributive Property of Multiplication** *a mathematical rule over addition and subtraction that says the following is true for all numbers  $a$ ,  $b$ , and  $c$ :  $a(b + c) = ab + ac$  or  $a(b - c) = ab - ac$*

**equation** *a number sentence using math symbols to say that two things are the same*

**equivalent fractions** *fractions that are equal to each other ( $2/3 = 4/6$ )*

**exponent** *a small raised number at the right of a base number (3 in  $4^3$ ) that tells how many times the base number is multiplied by itself ( $4 \times 4 \times 4$ )*

**expression** *a mathematical statement that may use numbers, variables, or both but does not have an equals sign*

**factors** *numbers or algebraic expressions that are multiplied together (e.g., 3 and 4 are factors of 12; 2 and  $x$  are factors of  $2x$ )*

**formula** *mathematical rule that uses symbols, numbers or letters to stand for specific kinds of quantities, often in the form of an equation*

**fraction** *a part of a whole, written using a fraction bar ( $\frac{2}{3}$ )*

**graph** *see appendix*

**greatest common factor (GCF)** *the largest factor that 2 or more numbers have in common*

**horizontal**  parallel to the horizon; flat and level

**improper fractions** fractions with a value equal to or greater than one: fractions in which the numerator is equal to or greater than the denominator, e.g.  $\frac{11}{5}$

**in-out table** a data table in which input and output are determined according to a rule

**integer** any positive or negative whole number or zero

**inverse operation** the opposite operation, e.g. addition and subtraction are inverse operations

**latitude** imaginary circles around the Earth running parallel to the equator

**least common multiple (LCM)** the smallest number, other than zero, that is a common multiple of two or more numbers

**line** a collection of points along a straight path that goes on and on in opposite directions; a line has no endpoints. Two lines may relate to each other as **parallel** where the lines are always the same distance apart so never meet,  $\parallel$ ; they may be **perpendicular** to each other where they stand at right

angles to each other, ; they may be **intersecting** where they simply cross over one another

**line graph** see appendix

**longitude** imaginary circles around the Earth running through the North and South Poles

**mathematical symbols** signs used to indicate a mathematical relation or operation, e.g. +, -, x, ÷, ,  
, -, =, ≠, %, >, <, √, <sup>2</sup>, <sup>3</sup>, ≈, ≥, ≤, π

**mean** the average of a set of numbers, obtained by dividing the sum of the set by the number of numbers in the set

**measurement systems:**

**customary** the system commonly used in the United States; e.g. feet, miles, pounds, and ounces

**metric** the system used throughout most of the world that is based on the powers of ten (common units are meters, grams, liters, etc.)

**median** the middle number of a set of numbers arranged in order

**mixed number** an amount written as a whole number and a fraction ( $7\frac{3}{4}$ )

**mode** in a list of data, the number occurring most often (mode = most often)

**multiple** the result of multiplying a given number by the counting numbers (0, 1, 2, 3, and so on)

**negative integer** a number that is less than zero

**numerator** the top number of a fraction

## order of operations PEMDAS

**P:** *Parentheses. Perform all operations within parentheses first*

**E:** *Exponents. Evaluate exponents*

**M/D:** *Multiply/Divide, working from left to right*

**A/S:** *Add/Subtract, working from left to right*

**ordered pair** *a pair of numbers that names a point on a coordinate grid; presented in parentheses as (the x-coordinate, the y-coordinate)*

**partial amount** *the part in a percentage problem*

**pattern** *an arrangement of numbers, shapes or terms formed by following a particular rule*

**percent** *a way of representing part of a whole equal to 100; means “for every 100” or “out of 100”, represented by the symbol %*

**perfect square** *a number that is equal to the square of another number*

**perimeter** *the distance around a flat (2-D) figure*

**perpendicular** *standing at right angles to a line or a plane*

**pi** *approximately 3.14; pi is the constant ratio of the circumference of a circle to the diameter, represented by the symbol  $\pi$*

**pie chart** *see appendix*

**point** *a single, exact location often represented by a dot: •*

**point of origin** *the point at which the x-axis and y-axis in a coordinate grid intersect; the point represented by the ordered pair (0,0)*

**polygons** *plane figures (2-dimensional) with 3 or more sides.*

**Polygons include:**

- triangles** (3 sides)
- quadrilaterals** (4 sides)
- pentagon** (5 sides)
- hexagon** (6 sides)
- heptagon** (7 sides)
- octagon** (8 sides)
- nonagon** (9 sides)
- decagon** (10 sides)

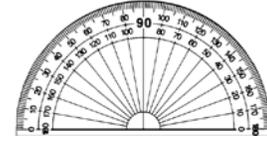
**positive integer** *a number that is greater than zero*

**power** (exponent) the number of times a quantity is to be multiplied by itself, usually written as a small number to the right and above the quantity or base

**prime number** positive integer that can only be divided evenly by 1 or itself

**probability** the chance of something happening

**proportion** an equation that compares two equal ratios or fractions, e.g.  $\frac{2}{3} = \frac{8}{12}$

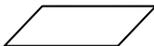


**protractor** a tool used to measure the number of degrees in an angle

**quadrant** one-fourth of a coordinate grid, formed by the intersecting axes

**quadrilateral** any 2-dimensional figure with 4 sides

Examples of **quadrilaterals** include:

**parallelogram** 

**rectangle** 

**rhombus** 

**square** 

**trapezoid** 

**radius** a line segment extending from the center of a circle to its edge

**range** the difference between the lowest number and the highest number in the set

**rate** a ratio expressing percent; any number over 100 ( $\frac{75}{100}$ ) shows percent (75%)

**ratio** a comparison of two like quantities (amounts expressed in the same units), e.g., 1:3, 1 to 3,  $\frac{1}{3}$

**rectangular solids** three-dimensional figures in which all sides are rectangles and all corners are

square, e.g. 

**simplest form** term used to describe a fraction in which there is no number other than 1 that will divide evenly into both the numerator and the denominator

**square root**  $\sqrt{\quad}$  a number that when multiplied by itself gives the original number ( $\sqrt{9} = 3$  because  $3 \times 3 = 9$ )

**squaring** multiplying a number by itself, usually shown as the number and the exponent  $^2$  ( $3^2$ )

**substitution** the act of replacing a letter in an equation or formula with its value

**table** see appendix

**term** *in algebra, a number, variable or the product of a number and variables*

**three-dimensional** *having height, width, and depth*

*Common 3-D figures include: cubes, cylinders, cones, pyramids, rectangular solids*

**transformation** *in geometry, the change of the position of a shape on a coordinate plane, moving it from one place to another either by **reflection** (flipping it), **translation** (sliding it) or **rotation** (turning it).*

**triangles** *2-dimensional figures having 3 sides and 3 angles.*

*Types include:*

**acute triangle** *all 3 of its angles are acute*

**obtuse triangle** *has 1 obtuse angle*

**right triangle** *has 1 right angle*

**two-dimensional** *having length and width, but no thickness*

*Common 2-D figures include: squares, rectangles, triangles, circles, parallelograms, polygons, trapezoids*

**variable** *a letter used to represent an unknown amount*

**vertex** *the point of an angle where two rays (sides) intersect*

**vertical**  *straight up and down*

**volume** *the amount of space taken up or enclosed by a three-dimensional object, expressed in cubic units*

**x-axis** *the horizontal axis on a coordinate grid*

**x-coordinate** *the first number in an ordered pair, the distance from the origin along the x-axis*

**y-axis** *the vertical axis on a coordinate grid*

**y-coordinate** *the second number in an ordered pair, the distance from the origin along the y-axis*

## APPENDIX

### TABLE

**table** a display of data organized in rows and columns

<b>Calories Used per Hour in Common Physical Activities</b>		
<b>Moderate Physical Activity</b>	<b>Approximate Calories / 30 minutes for a 154 lb person<sup>1</sup></b>	<b>Approximate Calories / 1 hour for a 154 lb person<sup>1</sup></b>
Hiking	185	370
Light Gardening/Yard Work	165	330
Dancing	165	330
Golf (walk and carrying clubs)	165	330
Bicycling (<10 mph)	145	290
Walking (3.5 mph)	140	280
Weight Lifting (general light workout)	110	220
Stretching	90	180
<b>Vigorous Physical Activity</b>	<b>Approximate Calories / 30 minutes for a 154 lb person<sup>1</sup></b>	<b>Approximate Calories / 1 hour for a 154 lb person<sup>1</sup></b>
Running/jogging (5 mph)	295	590
Bicycling (>10 mph)	295	590
Swimming (slow freestyle laps)	255	510
Aerobics	240	480
Walking (4.5 mph)	230	460
Heavy Yard Work (chopping wood)	220	440
Weight Lifting (vigorous effect)	220	440
Basketball (vigorous)	220	440

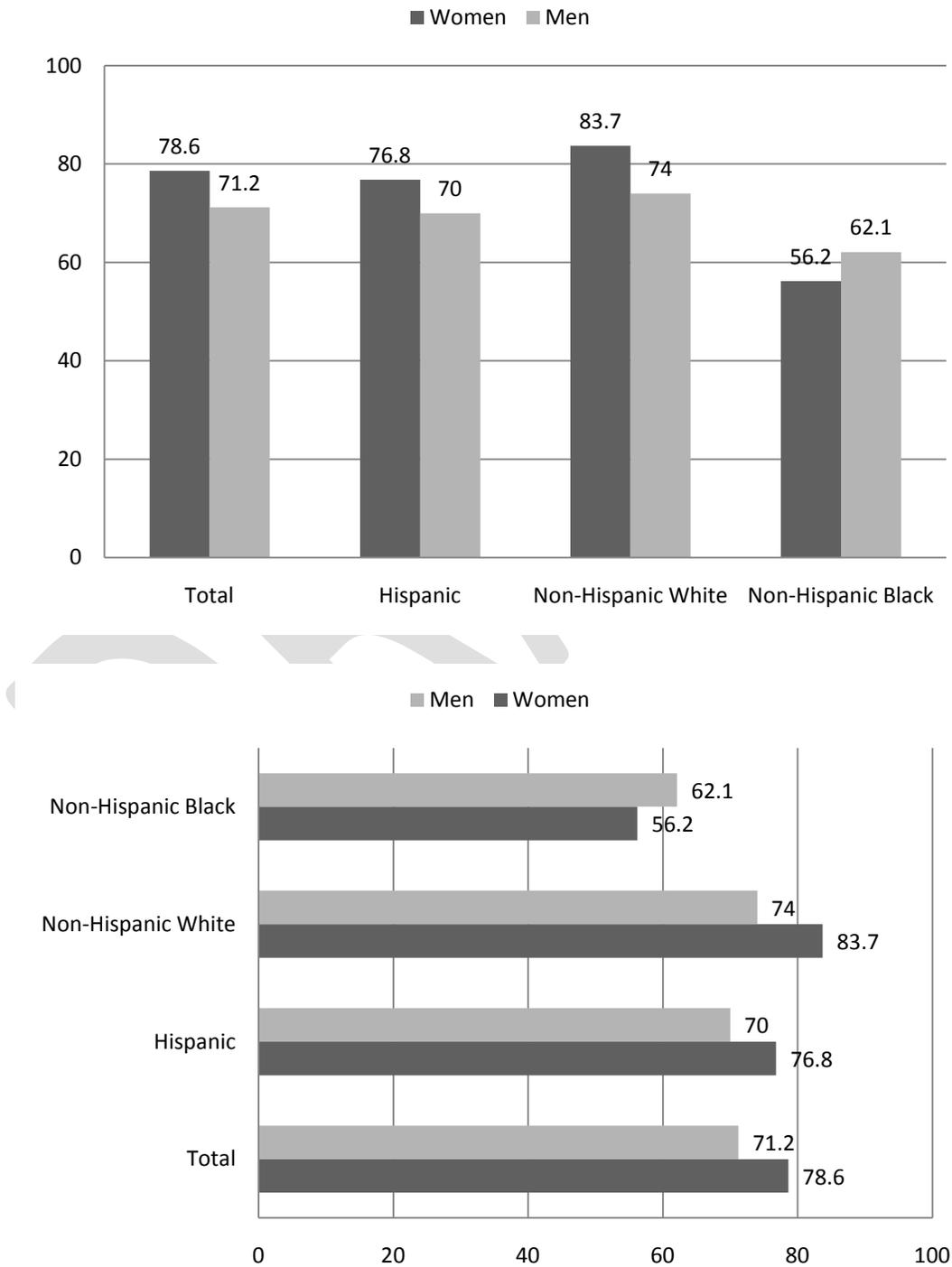
<sup>1</sup>Calories burned per hour will be higher for persons who weigh more than 154 lbs (70 kg) and lower for persons who weigh less. Source: Adapted from Dietary Guidelines for Americans 2005, page 16, Table 4 (<http://www.health.gov/dietaryguidelines/dga2005/document/html/chapter3.htm#table4>).

# GRAPHS

**graphs** diagrams showing the relationship of quantities, e.g. bar graphs, line graphs, circle or pie graphs:

**bar graph** graph that displays data using horizontal or vertical bars to compare numbers

Percentage of men and women 25-44 years of age who have ever been married, by race and Hispanic origin: United States, 2002

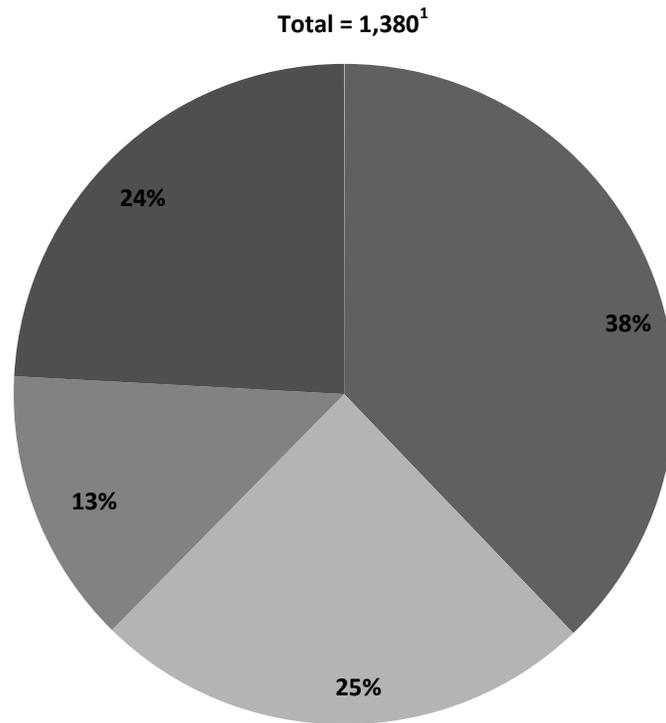


Source: CDC/NCHS, National Survey of Family Growth, Cycle 6

**circle graph** also called **pie chart**, graph that shows a whole amount (100%) divided into parts

### Department of Defense Manpower - 2007

(in thousands)

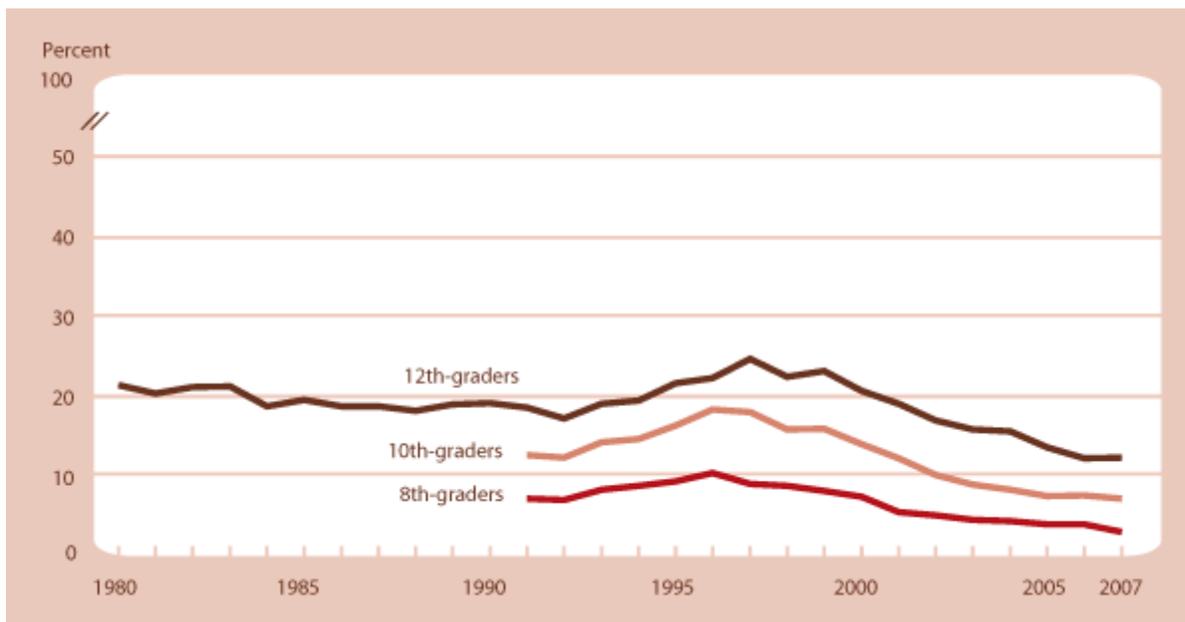


<sup>1</sup> Includes National Guard, Reserve, and retired personnel on extended or continuous active duty. Excludes Coast Guard.

Source: Chart prepared by U.S. Census Bureau. Statistical Abstract of the United States: 2009

**line graph** *graph that uses a lines to show changes over time*

Figure 10 Percentage of 8th-, 10th-, and 12th-grade students who reported smoking cigarettes daily over the past 30 days by grade, 1980–2007



SOURCE: National Institutes of Health, National Institute on Drug Abuse, [Monitoring the Future Survey](#).

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