Common Core Math 1
Definitions and Formulas Students Might Need to Know

Concept/Vocabulary Word	Definition/Formula
measures of center	Numerical measures that describe the typical value of a quantitative data set. In this unit, we will be studying the mean and the median.
measures of spread	Numerical measures that describe how much values typically vary from the center in a quantitative data set. In this unit, we will be studying interquartile range and standard deviation.
mean	A numerical measure of center that is the arithmetic average of the data. $$Mean = \frac{Sum\ of\ the\ data\ items}{total\ number\ of\ data\ items}$$
mean absolute deviation	A numerical measure of spread that shows how much data values vary from the mean for a quantitative data set. A low mean absolute deviation indicates that the data points tend to be very close to the mean, whereas a high mean absolute deviation indicates that the data points are spread out over a large range of values. The process of calculating the mean absolute deviation involves taking the absolute value of the deviations from the mean.
median	A numerical measure of center that describes the middle value of a data set. Note that the median does not have to be one of the values in the data set, but a value that divides the data set in half so that 50% of the data values lie above the median and 50% of the data values fall below the median.
standard deviation	A numerical measure of spread that shows how much data values vary from the mean for a quantitative data set. A low standard deviation indicates that the data points tend to be very close to the mean, whereas a high standard deviation indicates that the data points are spread out over a large range of values. The process of calculating the standard deviation involves squaring the deviations from the mean.
interquartile range	A measure of the spread of the middle 50% of a set of quantitative data; the difference between the upper and lower quartiles. **IQR = $Q_3 - Q_1$**
outlier	A data value that does not fit the overall pattern of the data distribution. In the case of one-variable data, an outlier is **a value that is more than 1.5 IQR above the third quartile or below the first quartile.**
Distributive Property	For every real number a, b, and c: **a(b + c) = ab + ac and a(b - c) = ab − ac.**
Distance Formula	The distance d between any two points is given by the formula **$d =\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$**
Midpoint Formula	The midpoint M of a line segment with endpoints A and B is $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$
Pythagorean Theorem	The Pythagorean Theorem describes the relationship of the lengths of the sides of a right triangle where in any right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse. **$a^2 + b^2 = c^2$**
Area of a circle	Area of a circle is given by Π times the square of the radius **$A = \pi r^2$**

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Circumference	Circumference is the perimeter of or distance around a circle given by times the diameter of the circle. $C = \pi d \ or \ 2\pi r$
cone	a solid, 3-dimensional figure with one vertex and one circular base. **Volume of a Cone:** $\frac{1}{3}\pi r^2 h$
Cylinder	A solid, 3-dimensional figure with a curved side and two circular, congruent bases that are in parallel planes **Volume of a Cylinder:** $\pi r^2 h$
Sphere	A three dimensional solid that is perfectly round, ex. A ball. **Volume of a Sphere:** $\frac{4}{3}\pi r^3$
Slope Intercept Form	The equation of a line with given slope and y-intercept $y = mx + b$
Point-Slope Form	The equation of a non-vertical line that passes through the point (x_1, y_1) with slope m is $y - y_1 = m(x - x_1)$
standard form	$Ax + By = C$ where A, B, C are real numbers and A and B are not both zero
Direct Variation	a linear function that can be expressed in the form $y = kx$ where $k \neq 0$
Slope	a number used to describe the steepness, incline, gradient, or grade of a straight line; the ratio of the "rise" (vertical change) to the "run" (horizontal change) of any two points on the line: $\frac{y_2 - y_1}{x_2 - x_1}$
NOW-NEXT	is the recursive process of getting from one number to the next number in the sequence. $next = now$ ...
Exponential function	is used to model a relationship in which a constant change in the independent variable gives the same proportional change (percent of increase or decrease) in the dependent variable. $y = ab^x$
Exponential Decay	occurs when an exponential function has a b value between 0 and 1. $y = ab^x$ **where 0<b<1**
Exponential growth	occurs when an exponential function has a b value greater than 1. $y = ab^x$ **where b>1**
Quadratic Function	$y = ax^2 + bx + c$
axis of symmetry	Vertical line that intersects the vertex of a parabola. If the parabola is reflected across this line, it will match up perfectly on itself. $$x = \frac{-b}{2a}$$