Common Core Math 1

Definitions and Formulas Students Might Need to Know

| **Concept/Vocabulary Word** | **Definition/Formula** |
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| 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](http://en.wikipedia.org/wiki/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](http://en.wikipedia.org/wiki/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 http://cmapp.wcpss.net/cgi-bin/mimetex.cgi?%5Cdisplaystyle%5CPitimes the square of the radius $A= πr^{2}$ |
| Circumference | Circumference is the perimeter of or distance around a circle given by times the diameter of the circle. $C= πd or 2πr$ |
| cone  | a solid, 3-dimensional figure with one vertex and one circular base.**Volume of a Cone:** $\frac{1}{3}πr^{2}h$ |
| Cylinder | A solid, 3-dimensional figure with a curved side and two circular, congruent bases that are in parallel planes**Volume of a Cylinder:** $πr^{2}h$ |
| Sphere | A three dimensional solid that is perfectly round, ex. A ball.**Volume of a Sphere:** $\frac{4}{3}πr^{3}$ |
| 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 $\left(x\_{1} , y\_{1}\right) $with slope *m* is $y- y\_{1}=m\left(x- x\_{1}\right)$ |
| 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 $y=kx where k\ne 0$ |
| 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.$$ x= \frac{-b}{2a}$$ |