8th Grade Vocabulary Cards and Word Walls

Revised: January 4, 2016

Important Notes for Teachers:

- The vocabulary cards in this file match the Common Core, the math curriculum adopted by the Utah State Board of Education, August 2010.
- The cards are arranged alphabetically.
- Each card has three sections.
 - Section 1 is only the word. This is to be used as a visual aid in spelling and pronunciation. It is also used when students are writing their own "kid-friendly" definition and drawing their own graphic.
 - Section 2 has the word and a graphic. This graphic is available to be used as a model by the teacher.
 - Section 3 has the word, a graphic, and a definition. This is to be used for the Word Wall in the classroom. For more information on using a Word Wall for Daily Review – see "Vocabulary – Word Wall Ideas" on this website.
- These cards are designed to help all students with math content vocabulary, including ELL, Gifted and Talented, Special Education, and Regular Education students.

For possible additions or corrections to the vocabulary cards, please contact the Granite School District Math Department at 385-646-4239.

Bibliography of Definition Sources:

<u>Algebra to Go</u>, Great Source, 2000. ISBN 0-669-46151-8 <u>Math on Call</u>, Great Source, 2004. ISBN-13: 978-0-669-50819-2 <u>Math at Hand</u>, Great Source, 1999. ISBN 0-669-46922 <u>Math to Know</u>, Great Source, 2000. ISBN 0-669-47153-4 <u>Illustrated Dictionary of Math</u>, Usborne Publishing Ltd., 2003. ISBN 0-7945-0662-3 <u>Math Dictionary</u>, Eula Ewing Monroe, Boyds Mills Press, 2006. ISBN-13: 978-1-59078-413-6 <u>Student Reference Books</u>, Everyday Mathematics, 2007. Houghton-Mifflin eGlossary, http://www.eduplace.com Interactive Math Dictionary, http://www.amathsdictionaryforkids.com/

negative association

negative association



negative association



Two variables have a negative association when the values of one variable tend to decrease as the values of the other variable increase.

no solution

no solution

5x + 8 = 5x - 13 5(11) + 8 = 5(11) - 13 $63 \neq 42$ **no solution**

no solution

5x + 8 = 5x - 13 5(11) + 8 = 5(11) - 13 $63 \neq 42$ **no solution** No solution would mean that there is no answer to the equation. It is impossible for the equation to be true no matter what value we assign to the variable. Infinite solutions would mean that any value for the variable would make the equation true.

nonlinear association

nonlinear association



nonlinear association



A scatterplot, which does not form a straight line, is said to have a nonlinear association.

nonlinear function

nonlinear function





nonlinear function



Equation whose graph does not form a straight line (linear) is called a nonlinear function.

non-vertical line

non-vertical line



non-vertical line



All lines which have a defined slope.

number line

number line



number line



A diagram that represents numbers as points on a line.

ordered pair

ordered pair

(-5, 2)

ordered pair

(-5, 2)

A pair of numbers that gives the coordinates of a point on a grid in this order (horizontal coordinate, vertical coordinate). Also known as a coordinate pair.

origin

origin



origin



The intersection of the x- and yaxes in a coordinate plane, described by the ordered pair (0, 0).

outlier

outlier



outlier



An outlier is a piece of data that doesn't seem to fit with the rest of a data set.

output

f(x) = 2(x + 1) - 7input: x = 3 f(3) = 2(3 + 1) - 7= 2(4) - 7 = 8 - 7 = 1 output: 1

output

f(x) = 2(x+1) - 7

output

input: x = 3 f(3) = 2(3 + 1) - 7 = 2(4) - 7 = 8 - 7= 1

A value of the dependent variable. (Generally an answer to an equation.)

output: 1

parallel lines

parallel lines



parallel lines



Two lines in the same plane that never intersect. Parallel lines have the same slope.

perfect square

perfect square

 $10 \times 10 = 10^{2} = 100$ $-6 \times -6 = (-6)^{2} = 36$ $5 \times 5 = 5^{2} = 25$

perfect square $10 \times 10 = 10^{2} = 100$ $-6 \times -6 = (-6)^{2} = 36$

 $5 \times 5 = 5^2 = 25$

The product of an integer and itself.

positive association

positive association



Distance Traveled

positive association



Two variables have a positive association when the values of one variable tend to increase as the values of the other variable increase.

power of ten

power of $10^2 = 10 \times 10 = 100$ $10^4 = 10 \times 10 \times 10 \times 10 = 10,000$ $10^{-2} = \frac{1}{10} \times \frac{1}{10} = \frac{1}{100}$

 $10^{2} = 10 \times 10 = 100$ $10^{4} = 10 \times 10 \times 10 \times 10 = 10,000$ $10^{-2} = \frac{1}{10} \times \frac{1}{10} = \frac{1}{100}$

A number with 10 as a base and an integer exponent.

proof

Statement: There is a prime number between 45 and 54.

Proof: We examine one by one, the numbers between 45 and 54, until a prime is found. If no prime is found, the statement is false.

proof

Number	Is it prime?
45	No, because it's divisible by 5
46	No, because it's divisible by 2
47	Yes, 47 because is only divisible by 1 and 47

Conclusion: The statement is true. (no need to check the rest of the numbers from 48 to 54)

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Proof: We examine one by one, the numbers between 45 and 54, until a prime is found. If no prime is found, the statement is false.

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A proof is a logical argument in which each statement you make is backed up by a reason that is accepetted as true.

proof

proportional relationships

proportional relationships

Gallons of Gasoline	Cost (\$)
0	0
1	4.24
2	8.48
3	12.72



The equation that will represent this data is y = 4.24x, where x is the number of gallons of gasoline and y is the total cost.

proportional relationships



Two quantities x and y have a proportional relationship if y is always a constant multiple of x. A relationship is proportional if it can be described by equivalent ratios.

The equation that will represent this data is y = 4.24x, where x is the number of gallons of gasoline and y is the total cost.

Pythagorean Theorem

Pythagorean Theorem

a² + b² = c² a = 3 b = 4 c = 5 3² + 4² = 5²9 + 16 = 25



Pythagorean Theorem



In any right triangle, the sum of the squares of the length legs (a and b) is equal to the square of the length of the hypotenuse c.

Pythagorean Theorem Converse



Pythagorean Theorem Converse



If c is the longest side of a triangle, and a and b are the lengths of the other two sides, and $c^2 = a^2 + b^2$, then the triangle is a right triangle.

radicals

radicals

2 cubed, $2^3 = 8$ The cubed root of 8, $\sqrt[3]{8} = 2$

3 to the 4th power, $3^4 = 81$ The 4th root of 81, $\sqrt[4]{81} = 3$

radicals

2 cubed, $2^3 = 8$ The cubed root of 8, $\sqrt[3]{8} = 2$

3 to the 4th power, $3^4 = 81$ The 4th root of 81, $\sqrt[4]{81} = 3$ Radicals are the opposite operation of applying exponents.

rate of change

rate of change

Input	Output
1	25
3	75
5	125
7	175
9	225

Change in the output	_	125-75	_	50	_	25
Change in the input	_	5-3	_	2	_	40

rate of change

Input	Output
1	25
3	75
5	125
7	175
9	225

 $\frac{\text{Change in the output}}{\text{Change in the input}} = \frac{125 - 75}{5 - 3} = \frac{50}{2} = 25$

The ratio of the change in the output value and change in the input value of a function.

rational number

rational number



rational number



A number that can be expressed as a ratio of two integers.

reflection

reflection





A transformation such that if a point A is on line r, then the image of A is itself, and if a point B is not on line r, then it is image B' is the point such that r is the perpendicular bisector of $\overline{BB'}$.

relative frequency table

relative frequency table

	Dance	Sports	Movies	TOTAL
Women	0.32	0.12	0.16	0.60
Men	0.04	0.20	0.16	0.40
TOTAL	0.36	0.32	0.32	1.00

relative frequency table

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TOTAL	0.36	0.32	0.32	1.00

A relative frequency table is a chart that shows the popularity or mode of a certain type of data based on the population sampled.

repeating decimal

repeating decimal A decimal, which has repeating digits or a repeating pattern of digits.

rotation

rotation

rotation





A transformation such that for any point *V*, its image is the point *V*', where RV =RV' and $m \angle VRV' = x^{\circ}$. The image *R* itself. The positive number of degrees *x* that a figure rotates is the *angle of rotation*.

scale factor

scale

factor



In real-life, the length of this van may measure 240 inches. However, the length of the van above is 2 inches. You can write this scale factor as 1:20 or 1/20 or 1 to 20.

scale factor



In real-life, the length of this van may measure 240 inches. However, the length of the van above is 2 inches. You can write this scale factor as 1:20 or 1/20 or 1 to 20. A scale is a ratio that compares a length in a scale drawing to the corresponding length in the actual object.

scatter plot

scatter plot



scatter plot



A graphic tool used to display the relationship between two quantitative (numerical) variables.

scientific notation

scientific notation

 $2,600,000,000 = 2.6 \times 10^9$

 $0.0000017 = 1.7 \times 10^{-6}$

scientific notation

 $2,600,000,000 = 2.6 \times 10^9$

 $0.0000017 = 1.7 \times 10^{-6}$

Scientific notation is the way that scientists easily handle very large numbers or very small numbers.

sequence

2, 5, 8, 11, 14, 17...

sequence

What is the pattern?

sequence

2, 5, 8, 11, 14, 17...

What is the pattern?

A set of numbers arranged in a special order or pattern.

similar figures









When two figures are similar, the ratios of the lengths of their corresponding sides are equal.

similar triangles

similar triangles



similar triangles



Two triangles are similar if and only if the corresponding sides are in proportion and the corresponding angles are congruent.

slope



slope





Slope describes steepness, incline, or grade of a line. A higher slope value indicates a steeper incline. The slope of a line is the ratio of the change in y over the change in x.

slope formula

slope formula



slope formula



The formula used to find the slope of a line. Slope is often represented with the variable m.

slope =
$$\frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}$$

 $m = \frac{y_2 - y_1}{x_2 - x_1}$, where $x_2 - x_1 \neq 0$

slope intercept form

slope intercept form



slope intercept form



The equation of a straight line in the form y = mx + bwhere *m* is the slope of the line and *b* is its *y*-intercept

solution

solution

solution

Examples:

- The only solution for the equation 2x 15 = -3 is x = 4.
- The solutions which satisfy the inequality $2x + 3 \le 7$ are all values which are less than or equal to *x*, denoted $x \le 2$, or $(-\infty, 2]$.



Examples:

- The only solution for the equation 2x 15 = -3 is x = 4.
- The solutions which satisfy the inequality $2x + 3 \le 7$ are all values which are less than or equal to *x*, denoted $x \le 2$, or $(-\infty, 2]$.



Any and all value(s) of the variable(s) which; satisfies an equation, or inequality.

square root

square root

 $5 \times 5, 5^2 = 25$ $\sqrt{25} = 5 = 2$

 $9 \times 9, 9^2 = 81$ $\sqrt{81} = 9$

square root $5 \times 5, 5^2 = 25$ $\sqrt{25} = 5 = 2$

 $9 \times 9, 9^2 = 81$ $\sqrt{81} = 9$

The square root of a number is a number when it is multiplied by itself, equals the original number.

table of values

table of values

table of values

x	f(x)
0	1
1	4
2	7
3	10
4	13
5	16
6	19

A list of numbers that are used to substitute one variable, such as within an equation of a line or other functions, to find the value of the other variable.

x	f(x)
0	1
1	4
2	7
3	10
4	13
5	16
6	19

terminating decimal

terminating decimal

$$\frac{1}{4} = 0.25 \qquad \frac{1}{5} = 0.2$$
$$\frac{1}{8} = 0.125 \qquad \frac{1}{10} = 0.1$$

terminating decimal

$$\frac{1}{4} = 0.25 \qquad \frac{1}{5} = 0.2$$
$$\frac{1}{8} = 0.125 \qquad \frac{1}{10} = 0.1$$

A decimal which has a finite number of digits.

transformation

transformation



transformation



To change the position of a shape on a coordinate plane. There are three basic transformations: translations reflections rotations

translation

translation



translation



A transformation that moves points the same distance in the same direction.

transversal



truncate

truncate

 $\pi = 3.14159265358979323...$ $\pi \approx 3.14$

truncate

 $\pi = 3.14159265358979323...$

 $\pi \approx 3.14$

A method of approximating a decimal number by dropping all decimal places past a certain point without rounding.

two-dimensional figure

two-dimensional figure



two-dimensional figure



Having length and width. Having area, but not volume. (also known as a plane figure)

two-way frequency table

two-way frequency table

	For	Against	No Opinion	TOTAL
Ages 21-40	25	20	5	50
Ages 41-60	30	30	15	75
Over 60	50	20	5	75
TOTAL	105	70	25	200

two-way frequency table

	For	Against	No Opinion	TOTAL
Ages 21-40	25	20	5	50
Ages 41-60	30	30	15	75
Over 60	50	20	5	75
TOTAL	105	70	25	200

A frequency table is a table that shows the total for each category or group of data.

unit rate

unit rate







The ratio of two measurements in which the second term (denominator) is 1.

variable

variable

variable



A quantity that changes or can have different values. A symbol, usually a letter that can stand for a variable quantity.

2n + 3 = 11

variable

vertical axis



vertical axis



The *y*-axes in a plane Cartesian coordinate plane.

vertical intercept

vertical intercept



vertical intercept



A vertical intercept is a point where a line crosses the vertical axis, or y-axis, on the Cartesian coordinate plane.

volume (cone)





volume (cone)

h $V = \frac{1}{3}\pi r^2$ The amount of 3-dimensional space a cone occupies. Volume is capacity.

volume (cylinder)

volume (cylinder)

 $V = \pi r^2 h$



volume (cylinder)

 $V = \pi r^2 h$



The amount of 3-dimensional space a cylinder occupies. Volume is capacity.

volume (sphere)





volume (sphere)



The amount of 3-dimensional space a sphere occupies. Volume is capacity.

x-axis



x-coordinate

x-coordinate



x-coordinate



In an ordered pair, the value that is always written first.

x-intercept



x-intercept



A point where a line crosses the horizontal axis, or *x*-axis, on the Cartesian coordinate plane.

y-axis



y-axis



In a Cartesian grid, the vertical axis.

y-coordinate

y-coordinate (7, 2) y-coordinate y-coordinate

y-coordinate



In an ordered pair, the value that is always written second.

y-intercept

y-intercept



y-intercept



A point where a line crosses the vertical axis, or y-axis, on the Cartesian coordinate plane. -----_____