

Algebra Key Concepts

| Quiz 1 | |
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| a letter used to represent an unknown number | variable |
| to rewrite an expression in its simplest form [solve] | simplify |
| to replace variables with numbers and then simplify | evaluate |
| The _____ says that an expression may be replaced by another expression that has the same value. | substitution principle |
| words that mean addition | sum, plus, and, increased, more than |
| words that mean subtraction | difference, minus, decreased, less than, remainder |
| words that mean multiplication | product, times, of, by |
| words that mean division | quotient, divided, ratio, parts of |
| When translating "less than" | reverse the order |
| translate: a number is six less than twice another number | $x = 2y - 6$ |
| When translating _____, _____, and _____ you probably use (). ex. translate: twice the sum of a and b. | "the sum of __ and __", "the quantity", "which is" $2(a+b)$ |
| In a word problem the verb (usually "is") represents _____ | = |
| The order of operations used to simplify an expression is _____ | G – grouping (), [], $\frac{1+2}{3}$ E – exponents M – multiplication D – division A – addition S – subtraction |
| Represents two things that are equal to one another [problem with an = sign] | Equation |
| An equation with one or more variables | Open Sentence |
| Any value of a variable that turns an open sentence into a true statement [solution to an equation] | Root |
| One or more terms connected by plus or minus sign. [problem with out an = sign] (Ex. $3 + a$, $4y - z$) | Expression |
| The given set of numbers that a variable may represent. [input values] Written with the symbol _____ | Domain \in |
| The set of corresponding positive and negative numbers and zero (Ex. ..., -2, -1, 0, 1, 2, ...) | Integers |
| The entire collection of integers and positive and negative fractions | Rational numbers |
| Numbers that cannot be expressed as the ratio of two integers | Irrational numbers |
| The set of rational and irrational numbers | Real numbers |
| The representation of real numbers as points on a line | Number line (or number scale) |

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| The distance between a number and zero on the number line | Absolute value |
| Symbol used to represent the absolute value of a number, n | n |
| If one number is greater than another | Then it is higher or further to the right on a number line |
| The value of a number | a number's distance and direction from zero |
| The absolute value is | Absolutely positive! |
| Quiz 2 | |
| Commutative Property | the order in which you add or multiply real numbers does not affect the result. $a + b = b + a$ $ab = ba$ (for all real numbers a,b) |
| Associative Property | if you are only adding or multiplying real numbers the grouping of the numbers does not affect the result $(a + b) + c = a + (b + c)$ and $(ab)c = a(bc)$ (for all real numbers a,b,c) |
| _____ sometimes makes adding or multiplying groups of numbers much easier. ex. $4 \cdot 17 \cdot 25 \cdot 10 = \underline{\hspace{2cm}}$ | Associative property 17,000 |
| Distributive Property | $a(b + c) = ab + ac$ (for all real numbers a,b,c) |
| We use the distributive property for two reasons: | 1. when we get stuck simplifying with GEMDAS [to destroy parenthesis] 2. to simplify addition and multiplication. |
| Use the distributive property to multiply $3 \cdot 6.3$ | $3 \cdot 6.3 = 3(6 + 0.3)$ $= 18 + 0.9 = 18.9$ |
| Use the distributive property to solve $75 \cdot 17 + 25 \cdot 17$ | $17(75 + 25)$ $17(100) = 1,700$ |
| If equals are +, -, *, / to equals | The results are equal |
| Either a single number or letter or the product (or quotient) of several numbers or letters. [Things added together] ex. 7, $5ax$, $2(a+b)$, $3yz/2$. | Term |
| What happens when you divide a number by zero? (Ex. $5/0$, $y/0$, or $3/x$ if $x = 0$) | Undefined (meaningless) |
| Expressions that are equal to the same quantity are | Equal |
| To add numbers with the same sign | add the numbers and keep the sign |
| To add numbers with different signs | subtract the numbers and keep the sign of the larger number. |
| Rules for Multiplication: For any real number a $a \cdot 1 = \underline{\hspace{1cm}}$, $a \cdot 0 = \underline{\hspace{1cm}}$, $a(-1) = \underline{\hspace{1cm}}$ If two numbers have the same sign, their product is If two numbers have different signs their product is | a, 0, -a positive negative |
| A negative times a negative = | a positive |
| If you multiply an even number of negatives the answer will be _____ | positive |
| If you multiply an odd number of negatives the answer will be _____ | negative |

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| The reciprocal of $-3/4$ is _____ | $-4/3$ |
| Any real number divided by itself is _____ | 1 |
| Fill in the blanks: a) $-1 + \underline{\hspace{1cm}} = 0$ b) $2 + \underline{\hspace{1cm}} = 0$ c) $-3/4 + \underline{\hspace{1cm}} = 0$ d) $-1(\underline{\hspace{1cm}}) = 1$ e) $2(\underline{\hspace{1cm}}) = 1$ f) $-3/4(\underline{\hspace{1cm}}) = 1$ | a) 1 b) -2 c) $3/4$ d) -1 e) $1/2$ f) $-4/3$ |
| dividing by 2 is the same as multiplying by _____ | $1/2$ |
| Rules for division: If two numbers have the same (different) sign, their quotient is _____ (_____) | positive (negative) |