

Prompt	Answer	Synonyms	Mnemonic	Image
Variable	A letter or symbol used to stand for an unknown number in a math problem.			
Constant	A number that stays the same and doesn't change.			
Expression	A group of numbers and symbols that show a mathematical operation or value.			
Equation	A math sentence with an equal sign showing that two expressions are equal to each other.			
Coefficient	A number that is multiplied by a variable in a math problem.			
Term	A number, a variable, or a combination of both that are separated by addition or subtraction signs.			
Inequality	A math sentence that shows the relationship between two values using symbols such as > (greater than), < (less than), or = (equal to).			
Absolute Value	The distance of a number from zero on the number line.			
Function	A math rule that relates one input value to one output value.			
Exponent	A small number written above and to the right of a number or a variable that tells how many times that number or variable is multiplied by itself.			
What is the first step in order of operations?	Perform operations inside parentheses first. Ex. Simplify the expression $4 \times (5 - 2) + 1$ . Answer is $4 \times 3 + 1 = 13$ .			
What is the second step in order of operations?	Evaluate exponents (powers and square roots). Ex. Simplify the expression $3^2 + 4 \times \sqrt{16}$ . Answer is $3^2 + 4 \times 4 = 19$ .			
What is the third step in order of operations?	Multiply and divide from left to right. Ex. Simplify the expression $9 \div 3 \times 2 - 1$ . Answer is $3 \times 2 - 1 = 5$ .			
What is the fourth step in order of operations?	Add and subtract from left to right. Ex. Simplify the expression $8 - 4 + 6 \div 2$ . Answer is $8 - 4 + 3 = 7$ .			
What do you do if there are multiple operations inside parentheses?	Perform the operations from left to right. Ex. Simplify the expression $6 - (3 + 1) \times 2$ . Answer is $6 - 4 \times 2 = -2$ .			
What do you do if there are nested parentheses?	Work from the inside out. Ex. Simplify the expression $5 \times (2 - (3 + 1))$ . Answer is $5 \times (2 - 4) = -10$ .			
How do you handle negative signs in order of operations?	Treat them as part of the number they're attached to. Ex. Simplify the expression $-4 \times 3 + 7$ . Answer is $-12 + 7 = -5$ .			
What happens if there are no parentheses in an expression?	Move on to the next step in order of operations. Ex. Simplify the expression $6 + 3^2 + 3 \times 2$ . Answer is $6 + 9 + 3 \times 2 = 6 + 6 = 12$ .			
How do you handle fractions in order of operations?	Simplify them first. Ex. Simplify the expression $3 + \frac{1}{4} \times 8$ . Answer is $3 + 2 = 5$ .			
What happens if there are multiple operations with the same level?	Work from left to right. Ex. Simplify the expression $4 \times 3 \div 6 - 1$ . Answer is $12 \div 6 - 1 = 2 - 1 = 1$ .			
Identity property of addition	Adding zero doesn't change the value. Ex. $5 + 0 = 5$ .			
Identity property of multiplication	Multiplying by one doesn't change the value. Ex. $7 \times 1 = 7$ .			
Commutative property of addition	Order doesn't change the sum. Ex. $3 + 7 = 7 + 3$ .			
Commutative property of multiplication	Order doesn't change the product. Ex. $4 \times 6 = 6 \times 4$ .			
Associative property of addition	Grouping doesn't change the sum. Ex. $(2 + 4) + 6 = 2 + (4 + 6)$ .			
Associative property of multiplication	Grouping doesn't change the product. Ex. $(3 \times 5) \times 2 = 3 \times (5 \times 2)$ .			
Distributive property	Multiplying a sum distributes the multiplication to each addend. Ex. $3 \times (4 + 2) = 3 \times 4 + 3 \times 2$ .			
Inverse property of addition	Every number has an opposite that adds to zero. Ex. $5 + (-5) = 0$ .			
Inverse property of multiplication	Every number (except 0) has a reciprocal that multiplies to one. Ex. $2 \times \frac{1}{2} = 1$ .			
Zero property of multiplication	Any number times zero equals zero. Ex. $9 \times 0 = 0$ .			
$3x + 2 = 11$ , Solve for x	$x = 3$ .			
$2y - 7 = 11$ , Solve for y	$y = 9$ .			
$5(x + 4) = 45$ , Solve for x	$x = 5$ .			
$2y/3 + 4 = 10$ , Solve for y	$y = 9$ .			
$2x - 7 = 3x + 1$ , Solve for x	$x = -8$ .			
$5y/2 - 3 = 7$ , Solve for y	$y = 5$ .			
$4(x + 3) - 2x = 14$ , Solve for x	$x = 1$ .			
$3y - 2 = 7y/2 - 1$ , Solve for y	$y = 4$ .			
$2(x + 5) + 3x = 19$ , Solve for x	$x = 2$ .			
$4y/3 + 7 = 9$ , Solve for y	$y = 3$ .			
$(2x - 5)(x + 4) = 3/2$ , Solve for x	$x = 1$ .			
$(3y - 2)(2y + 7) = 1/4$ , Solve for y	$y = 3$ .			
$\sqrt{2x + 3} = 5$ , Solve for x	$x = 11$ .			
$(y - 2)^2 - 5 = 12$ , Solve for y	$y = 7$ or $y = -3$ .			
$e^{2y + 1} = 10$ , Solve for y	$y = \ln(5)/2 - 1/2$ .			
$3\cos(x) + 1 = 2\sin(x)$ , Solve for x	$x = \pi/6$ or $x = 11\pi/6$ .			
What is a linear equation?	An equation that forms a straight line. Ex. $y = 2x + 3$ .			
How do you graph a linear equation?	Plot points and draw a line. Ex. Graph $y = -3x + 4$ .			
What is the slope-intercept form of a linear equation?	$y = mx + b$ . Ex. Equation with slope 2 and y-intercept -3.			
How do you find the slope of a line?	Change in y over change in x. Ex. Slope of line passing through (2, 5) and (4, 9).			
What is the y-intercept of a line?	The y-coordinate where the line crosses the y-axis. Ex. y-intercept of $y = -2x + 7$ .			
What is the x-intercept of a line?	The x-coordinate where the line crosses the x-axis. Ex. x-intercept of $y = 3x - 6$ .			
What is the point-slope form of a linear equation?	$y - y_1 = m(x - x_1)$ . Ex. Equation passing through (1, 4) with slope -2.			
What is the standard form of a linear equation?	$Ax + By = C$ . Ex. Equation $2x - 3y = 6$ in standard form.			
What are parallel lines?	Lines with same slope and never intersect.			
What are perpendicular lines?	Lines that intersect at a right angle and have negative reciprocal slopes.			
What is factoring?	Rewriting an expression as simpler expressions. Ex. Factoring $x^2 - 4$ as $(x - 2)(x + 2)$ .			
What is the GCF?	The largest factor that divides evenly into all terms.			
What is the difference of squares formula?	$a^2 - b^2 = (a + b)(a - b)$ . Ex. Factoring $25 - x^2$ as $(5 + x)(5 - x)$ .			
What is the sum or difference of cubes formula?	$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ or $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$ .			
What is factoring by grouping?	Grouping terms with common factors and factoring out the GCF of each group.			
What is factoring Trinomials of the form $ax^2 + bx + c$ ?	Finding two numbers that multiply to $ac$ and add to $b$ , then factoring as $(mx + n)(px + q)$ .			
Factor $x^2 + 5x + 6$ .	$(x + 2)(x + 3)$			
Factor $2x^2 + 5x + 3$ .	$(2x + 3)(x + 1)$			
Factor $3x^2 - 6x - 9$ .	$3(x - 3)(x + 1)$			
Factor $x^2 - 7x + 12$ .	$(x - 3)(x - 4)$			
Factor $4x^2 - 16$ .	$4(x + 2)(x - 2)$			
Factor $2x^2 - 4x^2 - 4x$ .	$2x(x - 2)(x + 1)$			
Factor $5x^2 + 20x - 15$ .	$5(x + 1)(x - 3)$			
Factor $9x^2 - 16$ .	$(3x - 4)(3x + 4)$			
Factor $x^2 - 2x - 24$ .	$(x - 6)(x + 4)$			
Factor $6x^2 - 54x$ .	$6x(x - 3)(x + 3)$			
What is an exponent?	A number that shows how many times a base is multiplied by itself. Ex. $2^2 = 2 \times 2 = 4$ .			
What is a radical?	A symbol that represents the root of a number. Ex. $\sqrt{16} = 4$ , because $4 \times 4 = 16$ .			
What is the product rule of exponents?	To multiply two powers with the same base, add the exponents. Ex. $3^2 \times 3^3 = 3^{2+3} = 3^5$ .			
What is the quotient rule of exponents?	To divide two powers with the same base, subtract the exponents. Ex. $2^4 \div 2^2 = 2^{4-2} = 2^2$ .			
What is the power rule of exponents?	To raise a power to another power, multiply the exponents. Ex. $(2^3)^2 = 2^{3 \times 2} = 2^6$ .			
What is a function?	A relation where each input (x) corresponds to exactly one output (y). Ex. $y = 2x + 1$ is a function.			
Find the range of $y = 3x - 2$ when x ranges from -2 to 2.	$[-8, 4]$ . Explained. For $x = -2$ to $x = 2$ , y ranges from -8 to 4.			
Find the domain of $y = \sqrt{x - 3}$ .	$[3, \infty)$ . Explained. $x - 3$ must be non-negative for the square root to be real, so $x \geq 3$ .			
Determine if $y = x^2 + 1$ is a function.	Yes. Explained. Each x-value corresponds to exactly one y-value.			

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