

Algebra Holiday Review and Mid-Term Preparation

Absolute Value: Solving equations

Solve for x: $8 = |x - 4| + 2$

Absolute Value Graphs:

Graph the equation: $2y = -4|x - 3| + 2$

Axis of Symmetry:

Write the equation to the axis of symmetry for $-3y = -6|x - 3| + 3$

Equations-graph from table of values

Make a table of values and graph this equation: $y = -4x + 3$

Equations-Slope Intercept Form

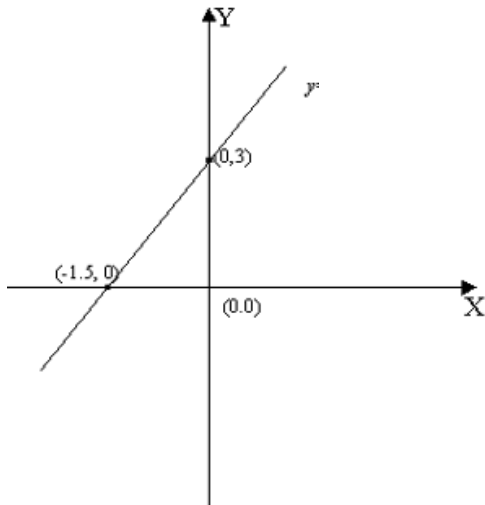
Give the slope and y-intercept for this equation: $y = \frac{2}{5}x - 6$

Equations-Standard Form

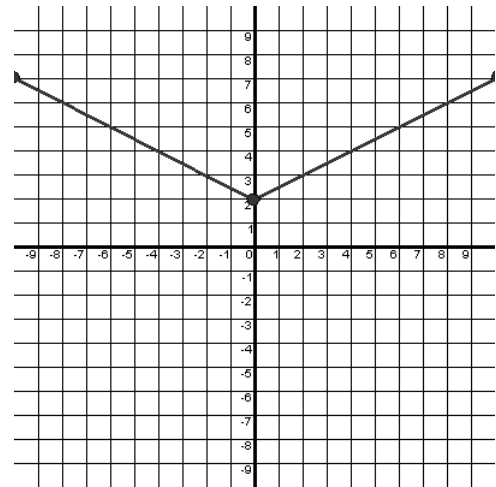
Rewrite this equation in Standard Form: $y = \frac{2}{3}x + 9$

Equations-writing equations from a graph

Write the equation of this line:



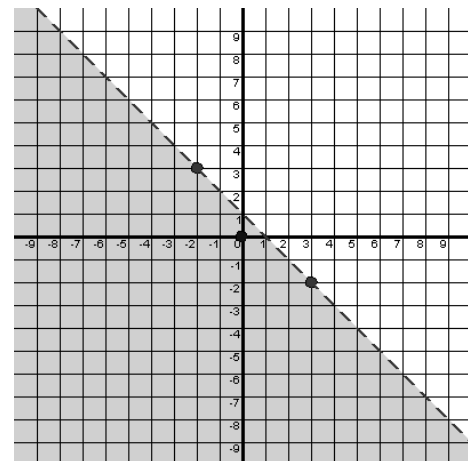
Write the absolute value equation:



Equation-writing linear equations from a table

Write the equation represented by this:

x	y
-1	5
0	7
1	9
2	11



Complete the following problems. Some of these topics you learned last year and may need to look back to review.

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Equations: solving one step equations

Find the solution: $x - 5 = -16$

Equations – solving multi-step equations

Find the solution: $-4x + 15 = -1$

Equations – solving with fractions

Find the solution: $\frac{2}{5}x + 7 = -1$

Equations – solving with Distributive Property

Find the solution: $-5(x - 3) + 8x = -21$

Equations – solving with variables on both sides

Find the solution: $-5x - 6 = -9x + 10$

Exponents: Multiplication Properties

Simplify: $(x^9)(x^5)(x^3)$ and $(-6a^5)(-a^5)$

Exponents: Division Properties

Simplify: $\frac{x^{18}}{x^9}$ and $\frac{12v^5}{2v^{10}}$

Exponents: Raising a Power to a Power

Simplify: $(d^7)^2$ and $(2x^4)^3$

Exponents: Zero and Negative

Simplify: 5^0 and x^{-5}

Exponents: Challenge Problems

Simplify: $(3x^6y^5)(2x^{-3})^4$ and $\frac{-4x^{-2}y^3}{8x^{-5}y^2}$ and -4^2

Factoring: Using GCF

Factor: $2x^2 + 7x$ and $18b^2 - 30$ and $8a^2 + 20a$

Fraction/Decimal/Percent

Write each as a fraction, a decimal, and a percent:

$\frac{2}{5}$ $\frac{1}{3}$ $0.\overline{6}$ $33\frac{1}{3}\%$

Fractions: Adding and Subtracting

$\frac{2}{5} + \frac{6}{11}$ and $\frac{9}{14} - \frac{1}{3}$

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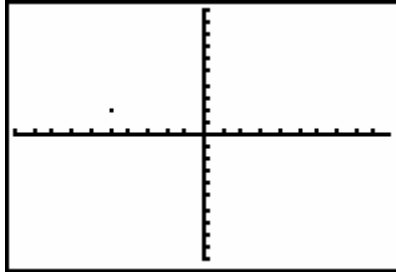
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Fractions: Multiplying and Dividing

$$\frac{3}{8}\left(\frac{32}{39}\right) \quad \text{and} \quad \frac{4}{7} \div \left(\frac{20}{21}\right)$$

Graphing – Coordinate Plane

Give the coordinates of the point and name the quadrant where it is located:



Graphs based on events:

Make a graph to show that a car is traveling at a steady rate of 45 mph.

Independent and Dependent Variables: Identify the independent and dependent variable in this situation: The cost to rent DVD's at \$3.50 each.

Inequality Symbols:

Name each symbol: \leq $>$

Inequalities solving:

Solve this inequality: $-3x + 21 > 42$

Inequalities-solving advanced

Solve: $-3(x - 7) < 2x + 5(x - 4)$

Inequalities: Graph on a number line

Graph: $x \geq 3$

Integers: adding

Simplify: $-15 + 5$ $12 + (-9)$ $-8 + (-13)$

Integers: subtracting

Simplify: $21 - (-8)$ $-24 - 6$ $-14 - (-6)$

Integers: multiplying and dividing

Simplify: $6(-7)$ $-24 \div (-6)$

Integers: combining

Simplify: $-5 + 7 + 8 + (-3) + (-12)$

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Mean-Mode-Median-Range-Minimum-Maximum

Find each for this data: 3, 8, 1, 10, 15, 8, 6, 4

Order of Operations: Simplify: $10 - 15(8 - 5)^3 - |-5 - 9|$

Parallel and Perpendicular Lines

Decide if the equations represent parallel or perpendicular lines:

$$y = -2x + 3 \text{ and } 4x + 2y = 1$$

Percent of a number: Find "What is 15% of 62?"

Point of Symmetry: Find the point of symmetry to the y-intercept for the equation:

$$2y = -4|x - 3| + 2$$

Properties: Associative, Commutative, Identities

The commutative property says that $7 + (-10) + 3 = \underline{\hspace{2cm}}$

The associative property says that $-3 + (4 + 8) = \underline{\hspace{2cm}}$

Properties: Distributive

$$\text{Multiply: } 2x(4x^2 - 2x + 6)$$

Proportions: basic

$$\text{Solve for x: } \frac{5}{21} = \frac{12}{x}$$

Proportions: complex

$$\text{Solve for x: } \frac{2x + 3}{4} = \frac{2x - 5}{5}$$

Rate of change: Slope

Find the slope between the points: (4, -3) and (-1, -8)

Rational and Irrational Numbers:

Decide if these numbers are rational or irrational: $-\frac{1}{2}, \sqrt{12}, \sqrt{100}, 3.5, 0.5\bar{6}$

Scientific Notation: Put each number in scientific notation:

7,150,000 0.0000007

Scientific Notation: Operations of multiplication and division

$$8.3 \times 10^{-4} (2.0 \times 10^6) \qquad \frac{4.6 \times 10^6}{2.3 \times 10^2}$$

Systems: solve by graphing.

Graph each equation on a coordinate plane and find the solution:

$$y = 3x - 2 \text{ and } y = 4x - 5$$

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Systems: solve using Combinations

$$\begin{cases} 10x - 4y = 20 \\ 5x - 3y = 10 \end{cases}$$

Systems: solve using Substitution

$$\begin{cases} 5x + 4y = 17 \\ y = 2x + 1 \end{cases}$$

Vertex: Identify the vertex of the equation $-4y = 8|x - 3| - 8$ when graphed.

Word Problems:

Consecutive values: The sum of three consecutive odd integers is 87. Find the integers.

Age problems: Jason is one fifth as old as his grandfather. In 4 years, the sum of their ages will be 80. How old was each 5 years ago?

Shape problems: The width of a rectangle is 6 cm shorter than the length. A second rectangle, with a perimeter of 54 cm, is 3 cm wider and 2 cm shorter than the first. What are the dimensions of each rectangle? Find their areas.

Money problems: Martha has some nickels and dimes worth \$6.25. She has three times as many nickels as dimes. How many nickels does she have?

X and y intercepts: Find the x and y intercepts for this equation: $6x - 4y = -12$

Have a safe and enjoyable
vacation!

SEE YOU NEXT YEAR!!!!



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