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Extra Help Link:



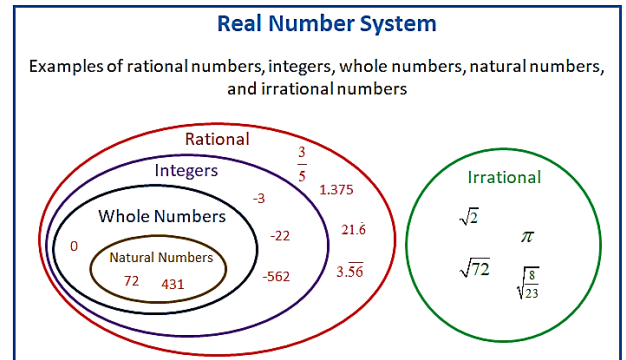
Algebra 1 Pre-Requisite Summer Packet 2023

IMPORTANT: Questions should be completed with a 4-function calculator only. You will be assessed on this content the first week of school, and must be able to do the problems with only a basic (non-scientific) calculator. [\(Here is a link if you do not have one.\)](#) Be sure to show all of your work on each problem.

Sets of Real Numbers

1. Decide whether each statement is true or false. If false, give a counterexample. (Make sure you know the definitions of each number set.)

- a) _____ All integers are rational numbers.
- b) _____ All natural numbers are real numbers.
- c) _____ All real numbers are whole numbers.



Computation with Fractions

2. Write the answer to each of the following as a fraction in simplest form.

a) $\frac{1}{2} + \frac{2}{3}$	b) $\frac{4}{3} - \frac{14}{9}$
c) $\left(-\frac{3}{5}\right) \cdot \left(-\frac{15}{2}\right)$	d) $-\frac{2}{7} \div \frac{8}{21}$

Order of Operations

3. Simplify the following by using the order of operations. (PEMDAS)

a) $(4^2 + (16 \div 4 + 3^2)) + 3^2$	b) $8 \div 2 \div (6 - 4) - (8 - (9 - 3))$
c) $-2^3 + (-2)^3$	d) $3 + 4[13 - 2(6 - 3)]$
e) $-(-3)^2$	f) $10 - (2^3 + 4) \div 3 - 1$

Working with Radicals

4. Simplify each radical.

a) $\sqrt{81}$	b) $-\sqrt{100}$	c) $\sqrt[3]{64}$
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Evaluating Expressions

5. Evaluate the following expressions where $n = -4$, $p = 4$, $q = -3$.

a) $2 + \left(\frac{3n^2}{4}\right)$	b) $\frac{2 + 3n^2}{4}$
c) $2p^2 + 2q^2$	d) $2p^2 + (2q)^2$
e) $4p^2 + 7q^3$	

6. Evaluate the following expressions for the indicated values:

a) $5x - \left(\frac{x}{5} - y\right)$ for $x = 5$ and $y = 1$	b) $x^2 \left(y + \frac{x}{5} + 4\right)$ for $x = -5$ and $y = -5$
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Distributive Property

7. Simplify each expression by using the distributive property and combining like terms. Show all steps.

a) $\frac{1}{2}(-2x - 10y + 6)$	b) $-12n + \frac{3}{4}(4 + 16n)$
c) $-4(-3x + 5y) - (2x + 8y)$	d) $8 - (4x - 1) - 2(3x - 1)$
e) $15 - 2(-3x + 4) - (x - 2)$	f) $24x - \frac{2}{3}(18x - 9)$

Solving Equations

8. Solve each of the following equations.

a) $2x + 4 = 12$	b) $\frac{x}{5} = 12$
c) $-8(2x - 1) = 36$	d) $2x + 7 = -(3 - 2x)$
e) $1.2 = 2.4 - 0.6x$	f) $4(2y + 1) = 2(y - 13)$
g) $\frac{1}{2}(6x - 4) = 3x - 2$	h) $\frac{x - 5}{2} = \frac{x}{7}$

Linear Equations

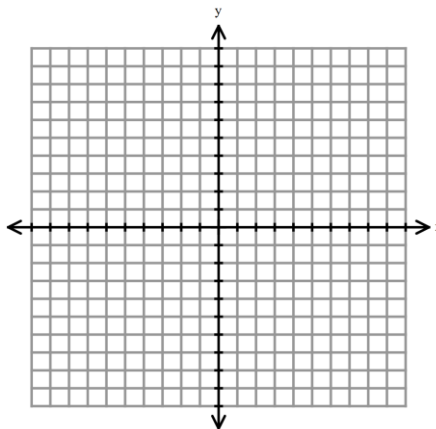
9. Plot and label each point.

A (3, 0)

B (0, -8)

C (7, -2)

D (-3, 5)



10. Find the slope of the line that passes through the following points. Know the slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

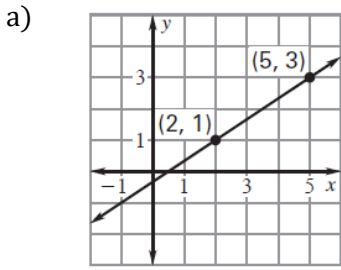
a) (3,4) and (-5,0)

b) (-7,1) and (1,5)

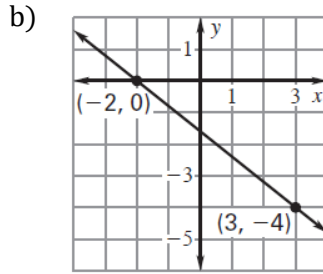
c) (4, -3) and (4, 2)

d) (-4, 3) and (5, 3)

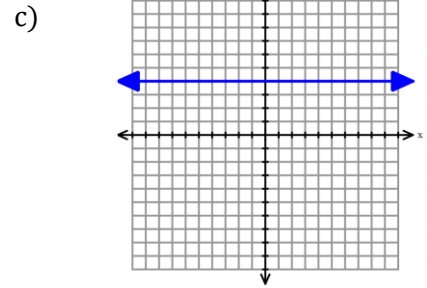
11. Find the slope of the line.



$m =$ _____



$m =$ _____



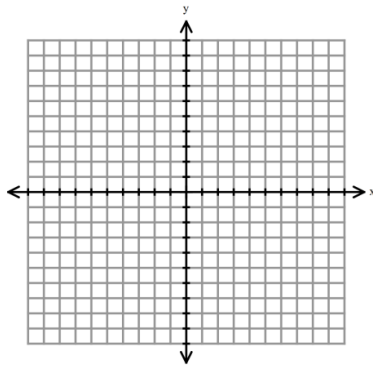
$m =$ _____

12. Graph the following equations in slope-intercept form. Identify the slope and the y-intercept for each. Know the slope-intercept form for a linear equation: $y = mx + b$

a) $y = -\frac{2}{3}x - 1$

Slope = _____

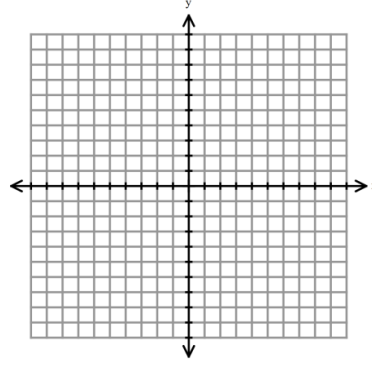
Y-intercept = _____



b) $y = 2x + 3$

Slope = _____

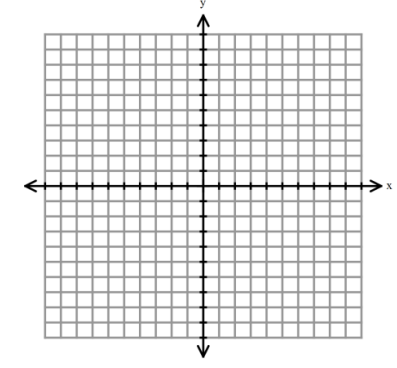
Y-intercept = _____



c) $x = -5$

Slope = _____

Y-intercept = _____



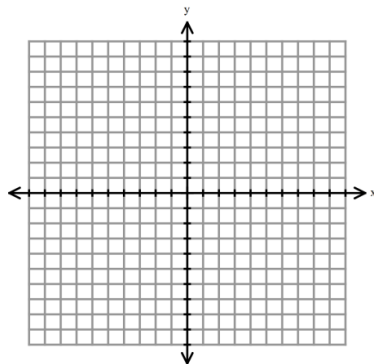
13. A line passes through the given points. Write an equation for the line in point-slope form. Know the point-slope form for a linear equation: $y - y_1 = m(x - x_1)$.

$(-3, 5)$ and $(-1, 6)$

Equation: _____

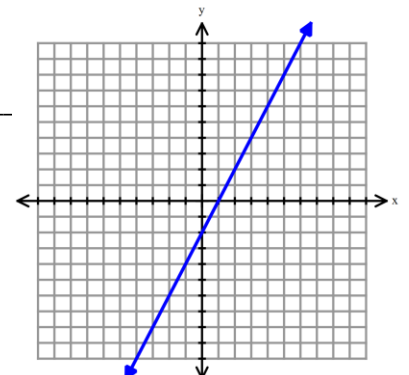
14. Write an equation of the line in **slope-intercept form** with slope $-\frac{4}{5}$ and y-intercept 7. Graph the line.

Equation: _____

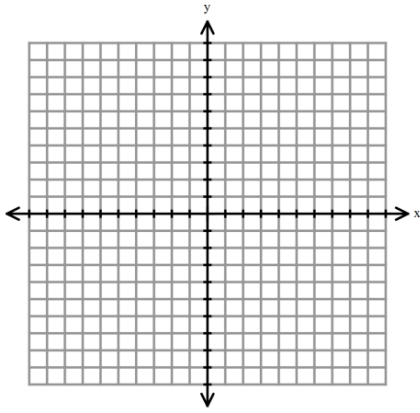


15. Given the graph of the line, write an equation in **slope-intercept form**.

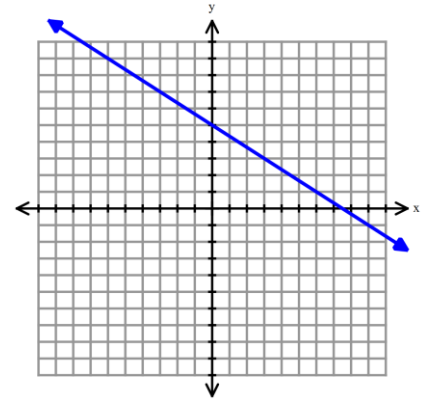
Equation: _____



16. Graph the linear equation: $y = -3x + 4$



17. Given the graph of the line, write an equation in point-slope form.



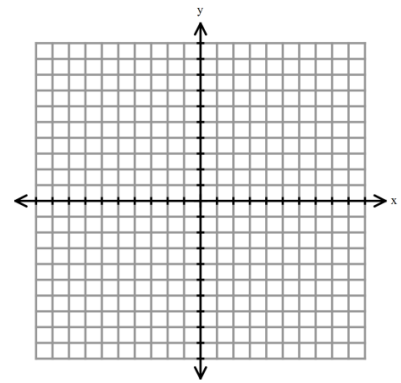
Equation: _____

System of Equations

18. Solve the system of equations by either substitution or graphing.

a) $y = 3x$
 $x + y = -32$

b) $y = 2x + 7$
 $y = x - 1$



Algebraic Expressions

19. Write each of the following statements as an algebraic expression.

a) 32 more than a number n	b) 9 less than the product of 6 and a number x
c) twice the sum of a number x and 8	d) the quotient of 5 and three times a number x
e) the difference of a number y and 6	

20. Bob and his best friend Bill have the same birthday, but Bob is 3 years older than Bill. Let the variable x represent Bob's age and y represent Bill's age. Which equation models the relationship between Bill's age and Bob's age?

Exponents

21. Simplify the following expressions.

a) $3^2 x^3 x^4$	b) $(x^2 y)^4$	c) $\frac{3x^5 y}{6xy^2}$
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