Algebra 2 Honors Summer Assignment

In preparation for your Algebra 2 course, please take the time to practice your Algebra 1 and Geometry skills. This assignment will be collected on the first full day of class and graded.

Print a paper copy of the assignment.

Show all work on the paper and circle your answers.

Turn in the completed assignment on the **first full day of class.** Be prepared for an assessment during the first week of school on the material.

Topics include:

Sets of numbers

Properties of numbers

Order of Operations

Simplifying Radical Expressions

Solving Linear Equations

Solving Linear Inequalities

Graphing Linear Equations

Slope

Factoring (GCF)

Factoring (quadratics)

Solving Quadratic Equations

The Quadratic Equation:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Name _____

Name the set or sets to which each number belongs. NOTE: N= Natural, W= Whole, Z= Integer, Q= Rational, I= Irrational, R= Real

1) $\sqrt{62}$

A) W, Z, Q, R B) Z, Q, R C) Q, R D) I, R

2) 0

A) Q, R B) Z, Q, R C) W, Z, Q, R D) N, W, Z, Q, R

3) –9

A) N, W, Z, Q, R B) Q, R C) W, Z, Q, R D) Z, Q, R

4) π

A) Z, Q, R B) Q, R C) N, W, Z, Q, R D) I, R

5) 11

A) Z, Q, R B) Q, R C) N, W, Z, Q, R D) W, Z, Q, R

6) $\frac{9}{10}$

A) W, Z, Q, R B) Z, Q, R C) N, W, Z, Q, R D) Q, R

Name each polynomial by degree and number of terms.

7) $10x^3 + 8x^2 + 6$

8) $3x^2 + 2x + 4$

9) $-8x + 2$

10) $3x^6$

11) $-\dfrac{3}{-6-(1-6)}$

12) $\left(\dfrac{6}{-2}\right)^2+2$

13) $\left|2-\dfrac{9}{5}\right|$

14) $-\dfrac{2}{3}\cdot\dfrac{4}{3}+\dfrac{1}{3}$

Evaluate each using the values given.

15) $x\left(y+\dfrac{2}{2}\right)$; use $x=-3$, and $y=-4$

16) $m|p|+2$; use $m=-2$, and $p=4$

17) $|x+y|-1$; use $x=\dfrac{3}{2}$, and $y=\dfrac{3}{4}$

18) $n-(p-m+n)$; use $m=-\dfrac{3}{2}$, $n=-\dfrac{5}{3}$, and $p=\dfrac{1}{6}$

Simplify each expression.

19) $(8 + 7x^4) + (8 - 6x^4)$

20) $(4x^3 + 7x) + (3x + 3x^3)$

Find each product.

21) $7x^2(6x + 1)$

22) $5(8x + 1)$

23) $(2x + 1)(6x - 7)$

24) $(8x + 7)(3x + 8)$

25) $(5x + 5)(x^2 + 6x + 3)$

Solve each equation.

26) $-x - 6(3 - 5x) = -163$

27) $6(2 - 3x) - 4x = -120$

28) $3(2x - 4) = -6(3x + 6)$

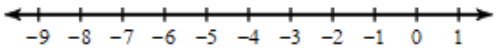
29) $-2(x + 6) = 1 + 3(x + 4)$

30) $\frac{|x - 7|}{10} = 1$

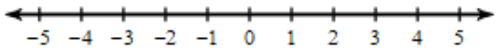
31) $|2 + 3x| + 8 = 13$

Solve each inequality and graph its solution.

32) $4(2x-2) > -12 + 6x$

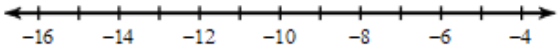


33) $4(-5-5x) - 2x \geq -3 - 5x$

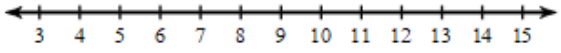


Solve each compound inequality and graph its solution.

34) $-12 \leq x - 5 < -11$

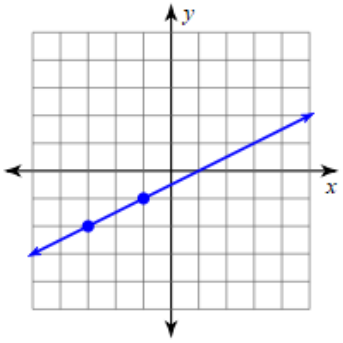


35) $\frac{x}{3} > 3$ or $x - 9 \leq -1$

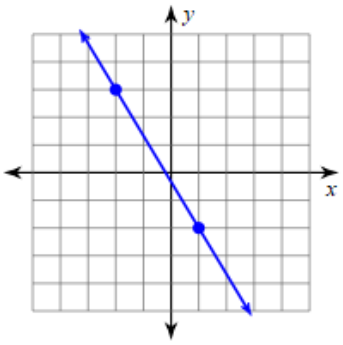


Find the slope of each line.

36)



37)



Find the slope of the line through each pair of points.

38) $(0, -1), (-14, 6)$

39) $(-5, 18), (14, -9)$

Find the slope of each line.

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

41) $y = -\frac{5}{4}x + 3$

Find the value of x or y so that the line through the points has the given slope.

42) $(2, 8)$ and $(7, y)$; slope: $-\frac{8}{5}$

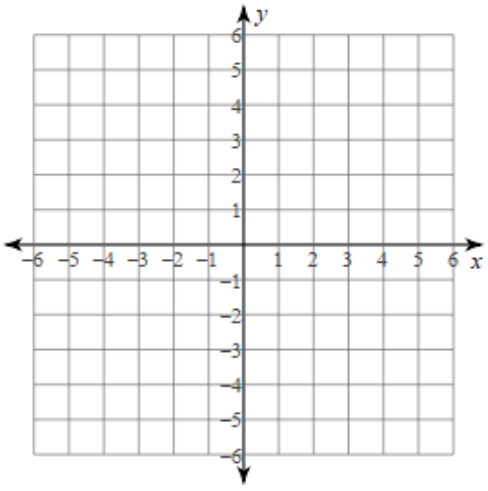
43) $(x, 5)$ and $(0, 3)$; slope: undefined

44) $(x, 5)$ and $(6, 7)$; slope: 2

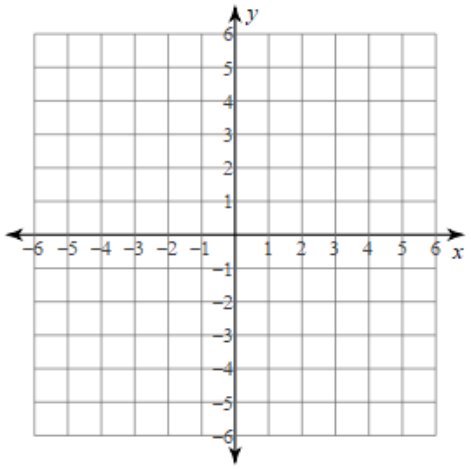
45) $(9, -7)$ and $(4, y)$; slope: 0

Sketch the graph of each line.

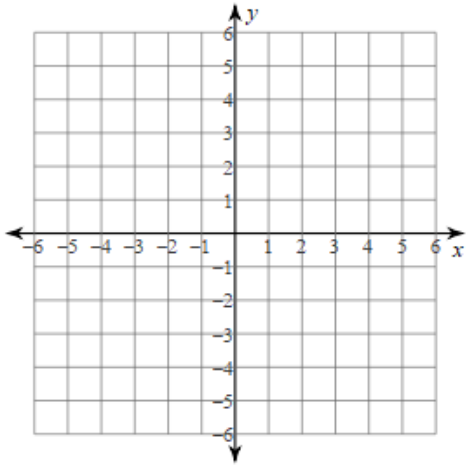
46) x-intercept $= 2$, y-intercept $= -5$



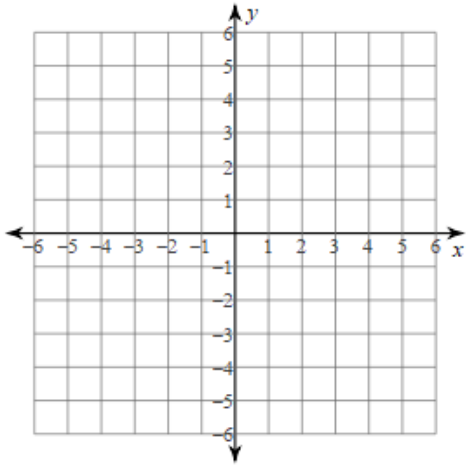
47) $y = 2x - 3$



48) $x + y = 5$



49) $2x - y = 0$



Simplify.

50) $4\sqrt{32x^2}$

51) $-4\sqrt{125x}$

52) $-2\sqrt{18x^2}$

53) $-4\sqrt{64x^2}$

54) $2\sqrt{27}+2\sqrt{2}+3\sqrt{3}$

55) $2\sqrt{24}-3\sqrt{3}-\sqrt{24}$

56) $\sqrt{6}\left(\sqrt{3x}+\sqrt{2}\right)$

57) $\left(\sqrt{5}-2\right)\left(\sqrt{5x}-1\right)$

Factor the common factor out of each expression.

58) $-5x^2 - 10$

59) $7x^2 + 14x$

60) $48x - 64x^2 + 24x^7$

61) $-6x^2 + 6x + 3$

Factor each completely.

62) $x^2 + 4x + 3$

63) $x^2 - 9$

64) $2x^2 + 22x + 48$

65) $5x^2 - 320$

66) $3x^2 + 14x + 8$

67) $2x^2 - 3x - 27$

Solve each equation by factoring.

68) $x^2 - 3x - 4 = 0$

69) $x^2 - 1 = 0$

Solve each equation by taking square roots.

70) $x^2 + 6 = 87$

71) $x^2 + 10 = 49$

Solve each equation with the quadratic formula.

72) $2x^2 - 2x - 3 = 0$

73) $4x^2 + 10x + 5 = 0$

MATCH each equation with the property it illustrates.

1. _____ $11 + 0 = 11$
2. _____ $x \times (y \times z) = (x \times y) \times z$
3. _____ $8 + (-8) = 0$
4. _____ $14 + 20 = 20 + 14$
5. _____ $2 \times \frac{1}{2} = 1$
6. _____ $22 \times 1 = 22$
7. _____ $(19 + 12) + 8 = 19 + (12 + 8)$
8. _____ $a \times 9 = 9 \times a$
9. _____ $7(4 + 11) = 7(4) + 7(11)$

a. commutative property of addition

b. commutative property of multiplication

c. associative property of addition

d. associative property of multiplication

e. additive identity

f. multiplicative identity

g. distributive property

h. additive inverse

i. multiplicative inverse