

**Section 1: Simplifying Algebraic Expressions****Simplify the expression.**

1)  $5a + 6b + 7a$

2)  $(4p - 7q) - (5q - 8p)$

3)  $5x^2 + 3x - 2 - 4x^2 + 5x - 4$

4)  $4(2x^2 + y) + 5(x^2 - 3y)$

**Section 2: Evaluating Algebraic Expressions****Evaluate the expression for the given value of the variable.**

5)  $x + 2x - x - 1; x = 2$

6)  $5c^3 - 6c^2 ; c = -5$

7)  $4a + 7b - 3 + 6b; a = 2, b = 5$

8)  $\frac{3k+2(k-4)}{k+8}; k = -3$

**Section 3: Solving Linear Equations****Solve the equation. Check your solution.**

9)  $5c - 9 = 8 - 2c$

10)  $5(2 - a) = 0$

11)  $6(n - 4) = 3n$

12)  $4x - 8 = 2(x - 5)$

13)  $\frac{3}{4}x - 1 = 5$

14)  $\frac{x}{6} = \frac{9}{2}$

15)  $-3(a + 4) - 4a = -5$

16)  $3(n - 6) = -18 - 4n$

**Section 4: Writing and Graphing Linear Equations**

**Slope Formula:**  $m = \frac{y_2 - y_1}{x_2 - x_1}$

**Slope-Intercept Form of Line:**  $y = mx + b$

**Point-Slope Form of a Line:**  $y - y_1 = m(x - x_1)$

**Write the slope-intercept form of the equation of each line given the slope and y-intercept.**

17) Slope = 2, y-intercept = -2

18) Slope =  $-\frac{3}{5}$ , y-intercept = 2

**Write the slope-intercept form of the equation of the line that passes through the given point with the given slope.**

19) Through: (-3, 5), slope = -1

20) Through: (5, 0), slope =  $-\frac{3}{5}$

**Write the slope-intercept form of the equation of the line that passes through the given points.**

21) Through: (-4, -2) and (3, -1)

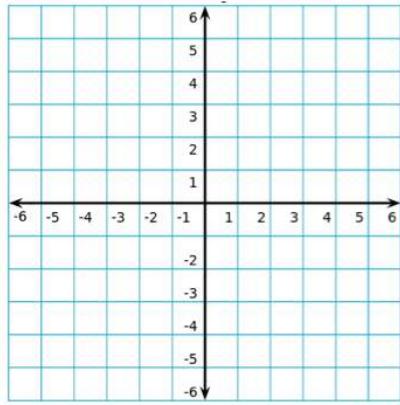
22) Through: (0, -2) and (4, 4)

23) Write the equation of the line parallel to  $y = 3x + 2$  that passes through (-1, -2).

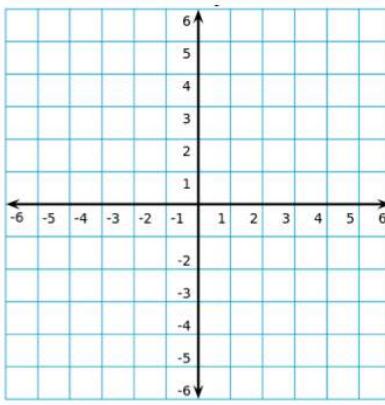
24) Write the equation of a line perpendicular to  $y = \frac{1}{4}x - 5$  that passes through (1, 1).

**Graph the equation.**

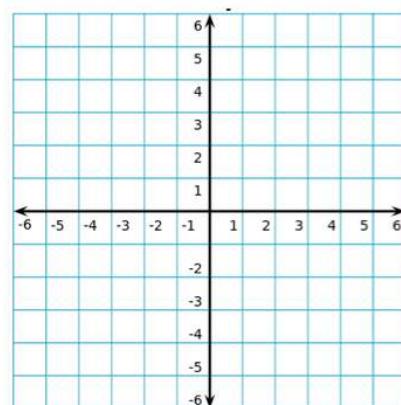
25)  $y = \frac{5}{4}x + 4$



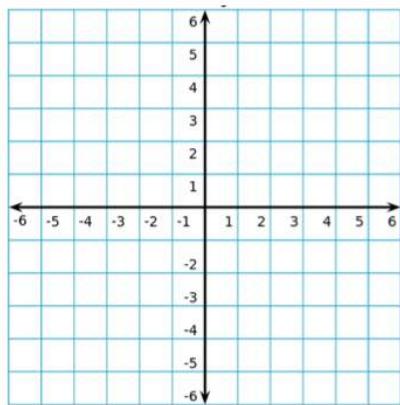
26)  $y = -\frac{2}{3}x + 2$



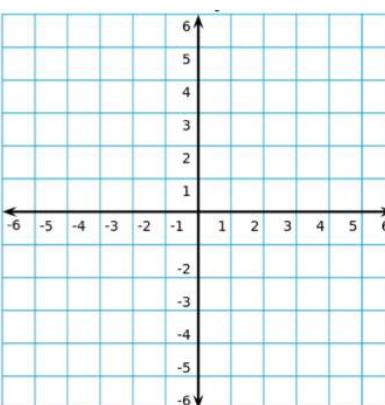
27)  $y = -4$



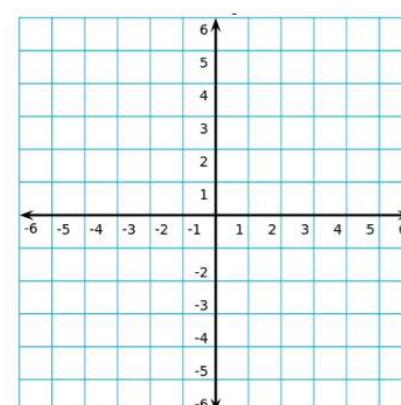
28)  $x = 3$



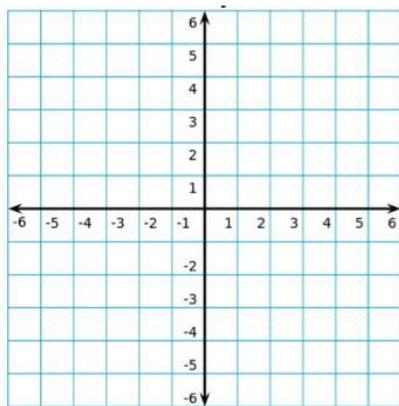
29)  $5x - y = 5$



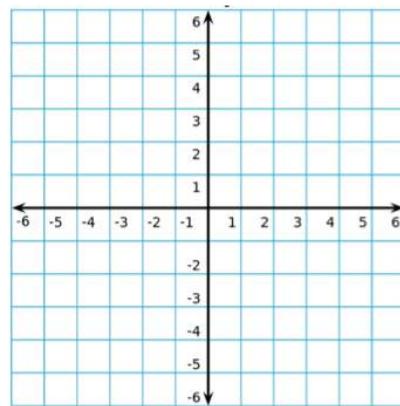
30)  $12 - 3y = -4x$



31.)  $y = 3x - 1$   
 $x + y = 4$



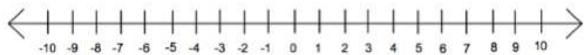
32.)  $y = \frac{3}{2}x$   
 $3x - 2y = 6$



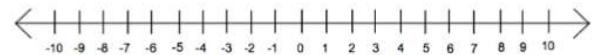
### Section 5: Solving and Graphing Inequalities

Solve each inequality and graph its solution.

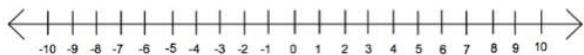
33)  $a + 8 < 5$



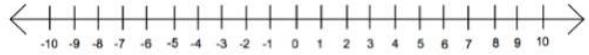
34)  $20v \leq 110$



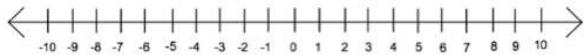
35)  $-11 > n - 8$



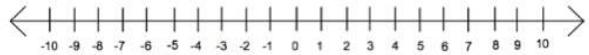
36)  $-8(r + 3) < -88$



37)  $x - 20 \geq -11$



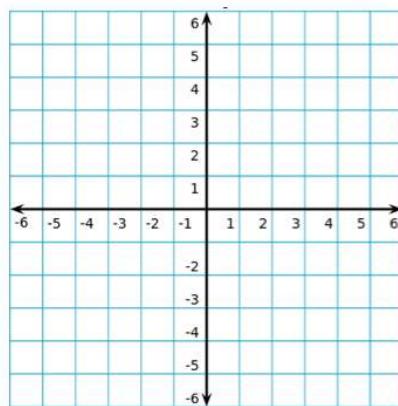
38)  $-13m < 39$



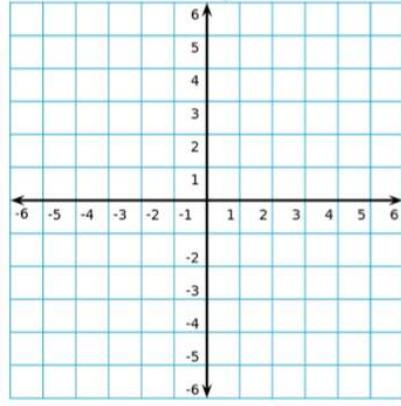
### Section 6: Graphing Linear Inequalities

Graph each linear inequality.

39)  $y \geq -x - 2$



40)  $y < \frac{2}{3}x + 1$



### **Section 7: Solving Linear Systems**

**Solve the following systems of equations by substitution.**

$$41) \begin{aligned}x + y &= 7 \\x &= y + 9\end{aligned}$$

$$42) \begin{aligned}y &= 2x + 32 \\2x + y &= 60\end{aligned}$$

**Solve the following systems of equations by elimination.**

$$43) \begin{aligned}x + 2y &= 3 \\8x - 2y &= 8\end{aligned}$$

$$44) \begin{aligned}-3x + 2y &= 14 \\2x - 2y &= -6\end{aligned}$$

### **Section 8: Multiplying Polynomial Expressions**

**Use the FOIL method to multiply the following binomials.**

$$45) (2x + 3)(x + 1)$$

$$46) (3x - 2)^2$$

$$47) (x - 4)(x + 3)$$

### **Section 9: Factoring Polynomial Expressions**

**Factor out the Greatest Common Factor.**

$$48) 10x^2y^2 + 15xy^3 - 5xy^2$$

$$49) -6rs - 12r^2s + 9rt$$

**Factor by Difference of Squares. If the expression is not factorable, write "N.F."**

50)  $x^2 - 81$

51)  $4t^2 - 25$

52)  $z^2 + 36$

53)  $x^2 - 49$

**Factor each trinomial into two binomials. (Remember to check for GCF.)**

54)  $x^2 - 12x + 32$

55)  $x^2 + 19x + 90$

56)  $x^2 - 4x + 4$

57)  $x^2 + x - 12$

58)  $2x^2 - 9x - 18$

59)  $2x^2 - 6x - 8$

60.)  $3x^2 - 11x - 4$

61.)  $xy - 3y + 4x - 12$

62.)  $x^2 - 2xy + xy - 2y^2$

### Section 10: Simplifying Radical Expressions

**Simplify the radicals.**

63)  $\sqrt{25}$

64)  $\sqrt{200}$

65)  $\sqrt{96}$

66)  $-5\sqrt{32}$

67)  $\sqrt{80x^2}$

68)  $\sqrt{125x^3}$

**Simplify the radical expressions.**

69)  $2\sqrt{3} + 5\sqrt{3}$

70)  $6\sqrt{12} - 4\sqrt{3}$

71)  $3\sqrt{3} \cdot 4\sqrt{5}$