GCF

Find the greatest common factor of the following group of numbers.

Watch: https://www.khanacademy.org/math/pre-algebra/pre-algebra-factors-multiples/pre-algebra-greatest-common-divisor/v/greatest-common-divisor-factor-exercise

1) 24,72

2) 18,108

Answer _____

Answer _____

3) 36,72,144

4) 42,63,108

Answer _____

Answer _____

LCM

Find the lowest common multiple of the following groups of numbers.
Watch: https://www.khanacademy.org/math/algebra2/rational-expressions-equations-and-functions/adding-and-subtracting-rational-expressions/v/least-common-multiple-exercise

5) 12,18

6) 24,36

Answer _____

Answer _____

7) 6,14,20

8) 5,12,20

Answer _____

Answer _____

Operations with fractions

Perform the given operation. Write your answers in simplest form.

9) $\dfrac{2}{3} \bullet \dfrac{4}{5}$

Answer _____

10) $\dfrac{5}{18} \bullet \dfrac{2}{15}$

Answer _____

11) $\dfrac{5}{6} \div \dfrac{2}{6}$

Answer _____

12) $\dfrac{18}{7} \div \dfrac{27}{14}$

Answer _____

13) $\dfrac{4}{5} + \dfrac{7}{3}$

Answer _____

14) $\dfrac{5}{8} + \dfrac{14}{3}$

Answer _____

15) $\dfrac{4}{9} + \dfrac{3}{7}$

Answer _____

16) $\dfrac{5}{12} - \dfrac{5}{18}$

Answer _____

Order of operations

Use the order of operations to evaluate the following expressions.

17) $2 + (3-7)^2 \div 2 \cdot 4$

18) $6 + 3 \div 3(7-2)^3$

          Answer _____

          Answer _____

19) $16 \div 4 + 4(2^2 - 6)^2 \div 2 \cdot -1$

20) $2 + 3 \cdot 5 \div (2-3)^3 - 6$

          Answer _____

          Answer _____

Combining like terms and the Distributive Property

Simplify the following expressions.

21) $x^3 - 3x^2 + 4x - 7x^2 + x^3 + 7$

22) $3x^4 + x^3 + 2xy^2 - x^2y + 7xy^2$

Answer _____

Answer _____

23) $\left(8x^3 - y^4\right) + 3\left(7x^3 + 5y^3 - 2y^4\right)$

24) $-2\left(3x^2 - 4x + 5\right) - (7x - 4x^2 - 3)$

Answer _____

Answer _____

<u>**Evaluating Expressions**</u>

Evaluate each expression for the value stated.

25) $x^2 + 6x + 9; x = -3$

26) $-5x^2 - 2x + 1; x = -2$

Answer _____

Answer _____

27) $|5 - 7x| - 8; x = -4$

28) $7x + x(3 + x); x = -2$

Answer _____

Answer _____

Answer _____

29) $2x^3 - 3x^2 + 2; x = -1$

30) $2|x^2 - 3| - 4x; x = -3$

Answer _____

Answer _____

Properties of Exponents

Simplify the following expressions. Answers should not contain negative exponents.

31) $\left(3y\right)^3$

        Answer _____

32) $(-2x)^{-4}$

        Answer _____

33) $(-6)^0$

        Answer _____

34) -5^2

        Answer _____

35) 9^{-5}

        Answer _____

36) $(-3m)^{-4}$

        Answer _____

37) $6^2 \cdot 6^6$

        Answer _____

38) $\left(9y^2\right)\left(2y^3\right)$

        Answer _____

39) $\left(3x^2y^2\right)^3$

        Answer _____

40) $\dfrac{9^{-4}}{9^{-6}}$

        Answer _____

41) $x^5 y^2 x^{-6} y$

42) $\dfrac{c^2 d^{-3}}{c^3 d^{-1}}$

Answer _____

Answer _____

43) $(2x^2 y^4)^{-5} (y^{-1} x^7)^6$

44) $\left(\dfrac{4n}{2n^2} \right)^3$

Answer _____

Answer _____

45) $\dfrac{-14 a^{14} b^{-5}}{-18 a^{-2} b^{-10}}$

46) $\left(\dfrac{-4 x^4 y^{-2}}{5 x^{-1} y^4} \right)^{-4}$

Answer _____

Answer _____

Multiplying Polynomials

Multiply the polynomials and simplify if possible.

47) $3x\left(2x^2 - 4x + 1\right)$

48) $-2x^2\left(x^4 - 3x^3\right)$

Answer _____

Answer _____

49) $\left(x + 4\right)\left(2x - 5\right)$

50) $\left(x^2 - 4\right)\left(2x^2 - 5\right)$

Answer _____

Answer _____

51) $\left(2x + 3\right)^2$

52) $\left(4 - 3x\right)^2$

Answer _____

Answer _____

Simplify Radicals and Operations with Radicals

Simplify the following radical expressions.

53) $\sqrt{32}$

54) $\sqrt{72}$

Answer _____

Answer _____

55) $\sqrt{108} \cdot \sqrt{12}$

56) $\sqrt{18} \cdot \sqrt{24}$

Answer _____

Answer _____

57) $2\sqrt{18} + 3\sqrt{72}$

58) $3\sqrt{108} - \sqrt{27}$

Answer _____

Answer _____

59) $\sqrt{\dfrac{16}{25}}$

60) $\sqrt{\dfrac{20}{49}}$

Answer _____

Answer _____

61) $\sqrt{\dfrac{44}{99}}$

62) $\dfrac{\sqrt{12}}{\sqrt{72}}$

Answer _____

Answer _____

63) $\dfrac{6\sqrt{120}}{18\sqrt{240}}$

64) $\dfrac{3\sqrt{2}+5\sqrt{18}}{4\sqrt{6}}$

Answer _____

Answer _____

Solving linear equations

Solve the following equations. Answers should be in simplest form.

65) $-2x + 9 = 4x - 5$

66) $-3(x + 2) + 7 = 4x + 3$

Answer _____

Answer _____

67) $\frac{1}{2}(x - 6) + 5 = \frac{2}{3}(6x - 9)$

68) $\frac{2x}{3} + 5 = \frac{5}{7}x - 3$

Answer _____

Answer _____

Graphing linear equations

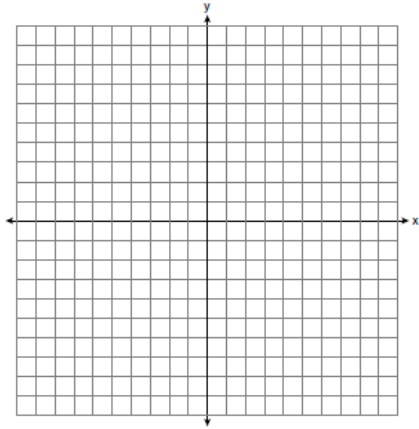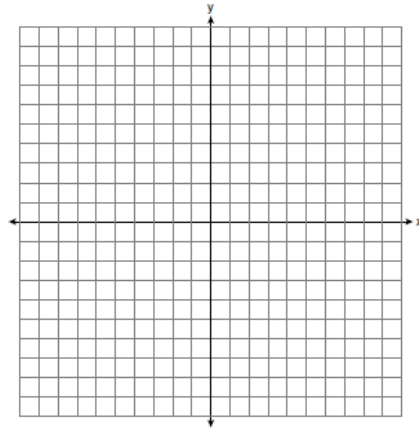**Graph each of the following linear equations. Identify the slope of the line.**

69) $y = -3x + 2$
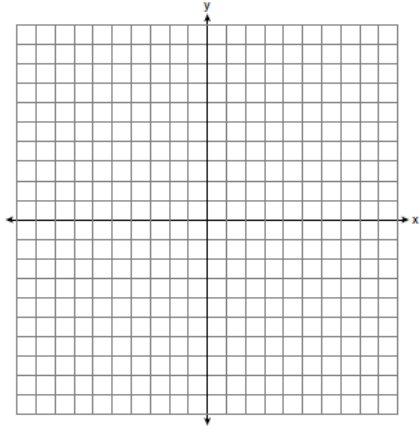
70) $y = \frac{2}{3}x - 4$
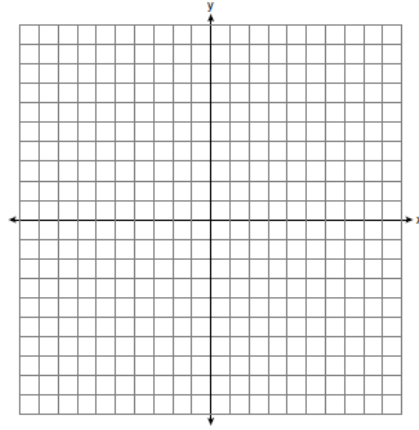
71) $y - 2 = -2(x + 3)$

72) $y + 4 = \frac{1}{3}(x - 1)$

Writing Linear Equations

Write the equation of the line, in both point-slope and slope intercept form, with the given description.

73) Line going through $(-2,4)$ with slope -3

74) Line going through $(3,-2)$ and $(-2,-5)$

Answer _____

Answer _____

75) Line parallel to $y = -2x + 4$ going through $(-3,-1)$

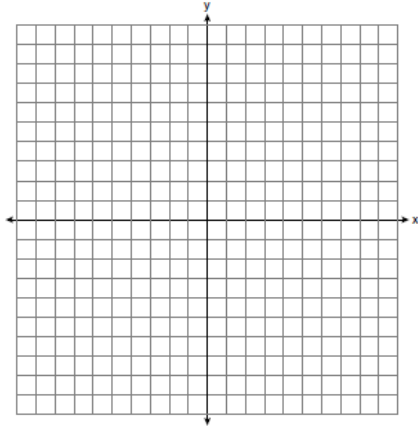**76)** Line perpendicular to $y = -3x + 4$ going through $(6,2)$
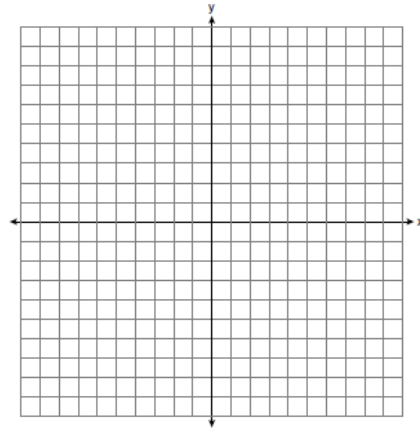
Answer _____

Answer _____

Graphing linear inequalities
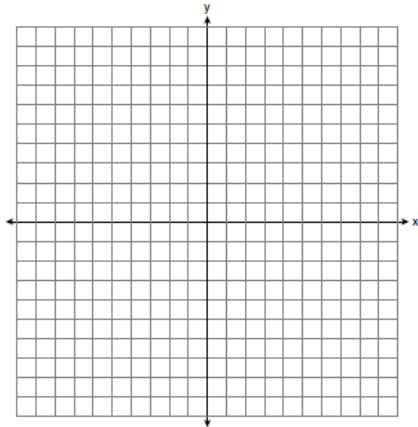
Graph each of the following linear inequalities.

77) $y < -3x + 2$

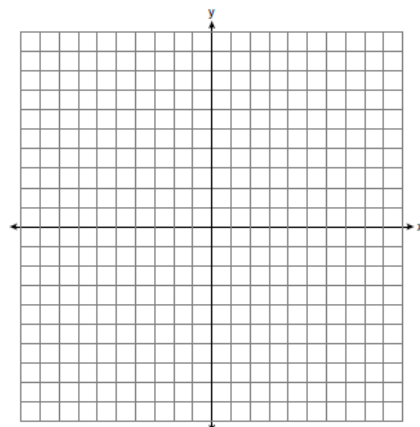**78)** $y \geq \frac{3}{4}x - 2$

79) $x < 3$

80) $y \geq -4$

<u>**Solving linear inequalities**</u>

Solve each of the following linear inequalities.

81) $2x + 3 < 5x - 2$

82) $-3x + 2 > 6$

Answer _____

Answer _____

83) $-2 \le -3x + 2 < 6$

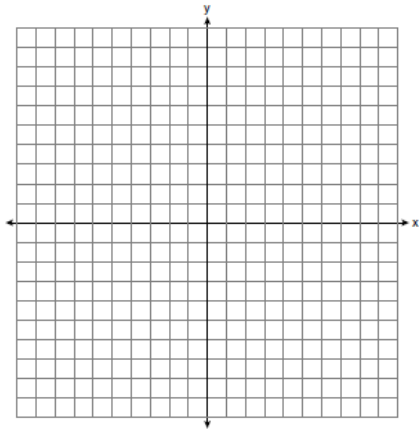**84)** $-\frac{3}{4}x + 4 < -3$
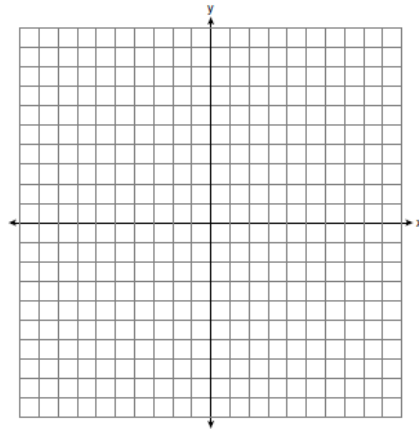
Answer _____

Answer _____

Solving Systems of Equations

Solve each system of equations by graphing.

85) $y = x + 3$

$y = -\frac{1}{2}x + 6$

86) $4x + 3y = 12$

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

Solve each system of equations using substitution or linear combinations (elimination). Your answer should be an ordered pair.

87) $y = x + 4$

$3x + y = 16$

88) $3x + y = 1$

$x - y = 7$

Answer _____

Answer _____

89) $3x + 5y = 17$

$2x + 3y = 11$

90) $6x - 7y = 12$

$5x - 4y = 10$

Answer _____

Answer _____

Factoring Polynomial Expressions

Factor each of the expressions completely.

91) $x^2 + 5x + 4$

92) $x^2 - 16$

Answer _____

Answer _____

93) $3x^3 - 9x^2$

94) $x^2 - x - 6$

Answer _____

Answer _____

95) $4x^2 - 9$

96) $5x^3 - 5x$

Answer _____

Answer _____

97) $4x^2 - 8x - 32$

98) $-2x^4 + 12x^3 + 54x^2$

Answer _____

Answer _____

99) $3x^2 - 5x + 12$

100) $-4x^4 - 26x^3 - 30x^2$

Answer _____

Answer _____

101) $2 - 32x^2$

102) $2x^4 - 6x^3 - 4x + 12$

Answer _____

Answer _____

103) $9x^2 + 25$

104) $-12x^2 + x + 6$

Answer _____

Answer _____

Translating Words to Mathematics

105)   A housecleaning service charges $10 per visit plus $7.50 per hour.

    a) Write an equation for the cost, C, of cleaning a house that takes h hours to clean.

    b) How much would this service charge if it took $3\frac{1}{2}$ hours to clean a house?

    c) If the bill for cleaning Natasha's house is $28.75, how long did it take to clean?

106)   Erika's Baby-Sitting Service charges $8.50 per job plus $6.75 per hour.

    a) Write an equation for the charge, C, for baby-sitting h hours.

    b) What is the cost of an 8-hours job?

    c) If Brittney was charged $55.75 for her nephew's care, how many hours was he in Erika's care?

107) The time that a traffic light remains yellow is 1 second more than 0.05 times the speed limit.

    a) Write an equation that represents Y, the length of time the light is yellow at x miles per hour.

    b) Find the length of time the light is yellow at 30 miles per hour.

    c) If the light is yellow for 4 seconds, find the speed limit.

108) The final exam in the Skiing and Snowboard class is 30% of the total semester points.

    a) Write an equation to find the value of the final exam, F.

    b) If the total points before the final is 700, find the point value of the final.

    c) If the final was worth 360 points, find the point total before the exam.