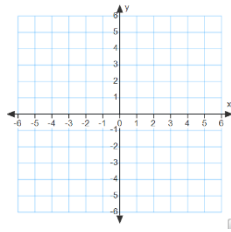


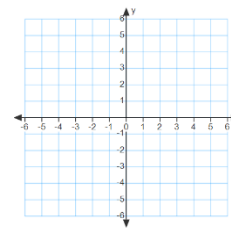
## Graphing Linear Inequalities; Systems of Linear Inequalities

Graph each inequality

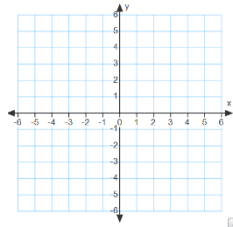
1.  $y \geq -3x + 1$



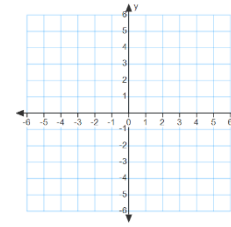
2.  $y \geq \frac{x}{2}$



3.  $x + 2y \leq 4$

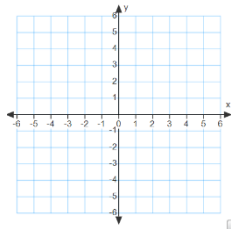


4.  $3x - y < 0$

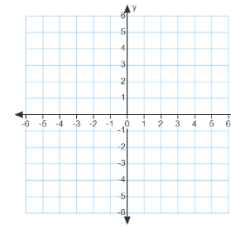


Graph each pair of inequalities and indicate the solution set of the system with crosshatching or shading.

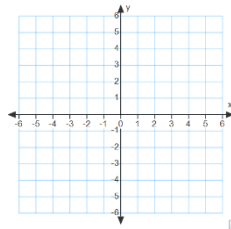
5.  $y > 2x - 3$   
 $x > 2y - 3$



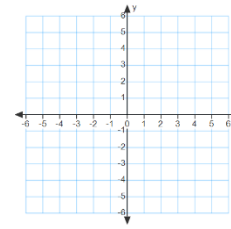
6.  $y \leq -x + 3$   
 $y \leq x - 4$



7.  $2x + 3y < 3$   
 $y > 0$



8.  $y > x$   
 $x - 1 \leq 0$



Graph the solution on a number line

9.  $-2x < 6$



10.  $-3 \leq x + 1 \leq 1$



11.  $3x - 2 > 7$  or  $2x + 1 < 5$

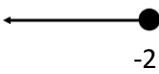
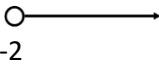
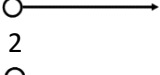



Order of Real Numbers; Solving Inequalities

Select each answer from the choices in parentheses. Write the answer in the blank.

12. The symbol for “is less than is \_\_\_\_\_ ( $\leq, <, \geq, >$ )
13. The symbol \_\_\_\_\_ means “is greater than or equal to.” ( $\leq, <, \geq, >$ )
14. Multiplying each side of an inequality by the same real \_\_\_\_\_ number reverses the order of the inequality. (positive, negative)
15. The absolute value of a number is never \_\_\_\_\_. (zero, positive, negative)

Match each inequality with the graph of its solution set. A graph may be used more than once.

- |                 |    |  |
|-----------------|----|--|
| 16. $-y < -2$   | A. |    |
| 17. $-y \geq 2$ | B. |   |
| 18. $3y < -6$   | C. |   |
| 19. $-3y < -6$  | D. |  |
| 20. $y - 1 > 1$ |    |  |

Draw the graph of each inequality

- |                            |                             |
|----------------------------|-----------------------------|
| 21. $3r + 5 < 20$          | 22. $2y + 1 \leq -5y + 8$   |
| 23. $8 \leq 2x - 8(x - 1)$ | 24. $8 - 3(x + 4) < -x - 6$ |

Graph

- |                   |                     |                           |                    |
|-------------------|---------------------|---------------------------|--------------------|
| 25. $y < -2x + 4$ | 26. $x + 3 \geq 3y$ | 27. $f(x) = x^2 - 6x + 8$ | 28. $y = -x^2 + 2$ |
| 29. $x - 2y = 6$  | 30. $x + 2y = 6$    |                           |                    |

31. Find the slope of the line whose equation is  $2x - y = 6$  .
32. Find an equation in standard form for the line with x-intercept 2 and y-intercept 3.
33. Find an equation in standard form for the line through (1, 2) and (3, 4).
34. What percent of 800 is 96?

Write the ration in simplest form.

35. 15 min to 3 h

36. 5 m to 2 km

37. Solve for  $b$ :  $\frac{a}{b} = \frac{c}{d}$

38. Write 0.0000205 in scientific notation.

39. A rectangle is twice as long as it is wide. Its area is  $288 \text{ m}^2$ . Find the dimensions of the rectangle.

40. Geri paid \$11.20 for a pair of gloves that were on sale for 30% off. What was the original price of the gloves?

41. Find three consecutive integers such that the square of the first plus the square of the third is 102 more than the square of the second integer.

42. A two-digit number is four times the sum of its digits. The number with its digits reversed is 36 more than the original number. Find the original number.

Simplify. Give answers in terms of positive exponents

43.  $\frac{3^2}{3^{-1}}$       44.  $(4x^{-2})^3$

Simplify

45.  $7\sqrt{48}$       46.  $\sqrt{169}$       47.  $\sqrt{245x^4}$       48.  $\sqrt{\frac{1}{8}}$       49.  $(\sqrt{3} + 3)^2$       50.  $\frac{2}{\sqrt{3}-1}$

Solve

51.  $y + 8 = y^2$       52.  $\frac{y-1}{y} = \frac{y}{4}$       53.  $\frac{2}{5}(10x - 15) - \frac{1}{10}(30x - 20) = 3$

54.  $3\sqrt{2x} = 6$       55.  $b - \frac{b}{2} = 5 + \frac{b}{4}$       56.  $\frac{1}{x-1} + \frac{1}{2} = \frac{2}{x^2-1}$       57.  $x^2 + 4x + 4 = 0$

Solve each system

58.  $-x + 2y = 5$       59.  $4x + 5y = 3$       60.  $3x + 4y = -10$       61.  $x - y = 9$   
 $4x + 3y = -20$        $-2x + 5y = -9$        $x + 6 = 0$        $x + y = 12$

Express the answers in simplest form. Assume that no denominator is zero

62.  $\frac{14x^3y^3}{15x^6y} \div \frac{98x^2y}{21x^2y^3}$       63.  $\frac{c-1}{8} \cdot \frac{4}{1-c^2}$       64.  $\frac{8}{c-1} + \frac{4}{c^2-1}$       65.  $\frac{y^2-5y}{8} \cdot \frac{16y}{2y-10}$

66.  $(x^2 + 7x + 10) \div (x + 2)$       67.  $(x^3 - 8) \div (x - 2)$       68.  $\frac{c^2-2c}{6c-2} \div \frac{2-c}{1-3c}$

$$69. \frac{4}{x^2-4x} + \frac{1}{4-x} \quad 70. \frac{5x+7}{x^2+7x+12} - \frac{5}{x+3} \quad 71. \left(y - \frac{2}{y}\right) \div \left(y + \frac{2}{y}\right)$$

Solve. If an equation is an identity or has no solution state that fact.

$$72. 14 + 8x = -26 \quad 73. 14 + 8x = -26 + 3x \quad 74. 12(x - 3) = 8(3 - x)$$

$$75. 4 - 2(x - 3) = 4x - 2 \quad 76. \frac{2y}{-3} = 12 \quad 77. 9 - x = 16 \quad 78. |x| + 8 = 2$$

$$79. 8 + \frac{3}{4}m = 14 \quad 80. 4x = -16x^2 \quad 81. (y - 3)(y + 6) = (y - 5)^2$$

82. The sum of the measures to two angles is  $90^\circ$ . One angle is  $28^\circ$  larger than the other. Find the measure of each angle.

83. The width and length of a rectangle are consecutive integers. The perimeter of the rectangle is 154 cm. Find the width and the length.

84. One jet travels 30 mi/h faster than another jet. Both jets left Atlanta, traveling in opposite directions, at 9:00 am. At noon they were 2490 miles apart. Find their rates.

85. Find two numbers whose sum is 13 and whose squares total 85.

Perform the indicated operations.

$$86. 5a - a \quad 87. 5a(a + 3 - b) \quad 88. (5a + 6) - (4 - 3a) \quad 89. (x + 5)(x - 6)$$

$$90. 6 + 3(x - 4) \quad 91. (-4m^2n^3p)^2 \quad 92. (2x - 3)(x - 5) \quad 93. (2x - 3)(2x + 3)$$

$$94. (2x - 3)^2 \quad 95. x(x + 1)(x + 2)$$

Evaluate if  $a = -3$ ,  $b = \frac{1}{2}$ , and  $c = 2$

$$96. b(a - c) \quad 97. b \cdot |a - c| \quad 98. a + 4b - c \quad 99. a + b \quad 100. ab \quad 101. \frac{a-c}{1-b}$$

Factor completely. If the polynomial cannot be factored, write "prime."

$$102. x^2 + 7x + 12 \quad 103. 3x^2 + 21x + 36 \quad 104. 2x^2 + 13x + 15 \quad 105. 4x^2 - 9$$

$$106. y^2 - 7 - 30 \quad 107. x^3 + x^2 - 12x \quad 108. 4y^2 - 100 \quad 109. 4x^2 - 12x + 7$$

$$110. xy + 3y + 5x + 15 \quad 111. x^3 - x + 3x^2 - 3$$

Find the slope of each line

$$112. y = 3x + 2 \quad 113. 2x + 3y = 1 \quad 114. y = 2$$

Solve

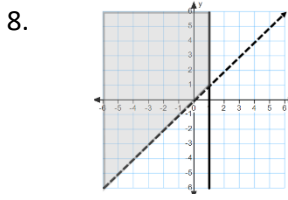
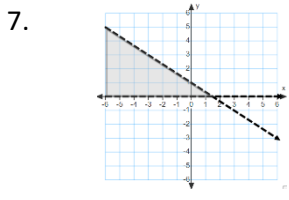
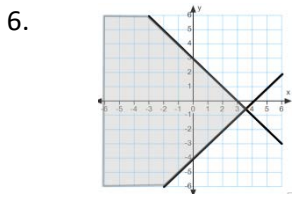
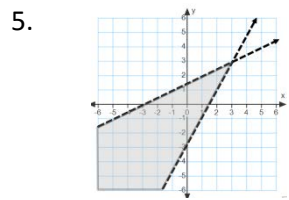
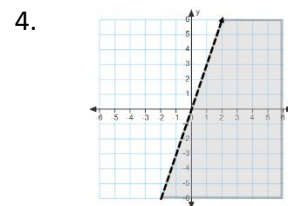
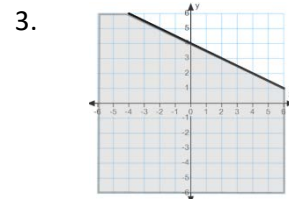
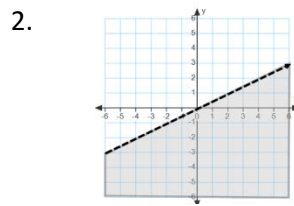
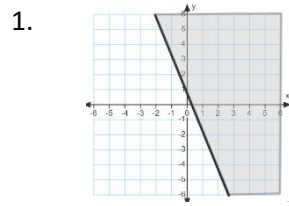
115.  $\frac{x-2}{2x-4} = \frac{1}{2}$

Given the function with this table of values

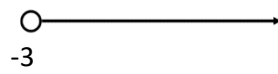
x	y
0	2
1	5
2	8
3	11

116. State the domain

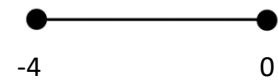
117. State the range



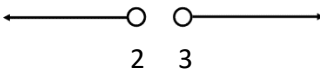
9.  $x > -3$



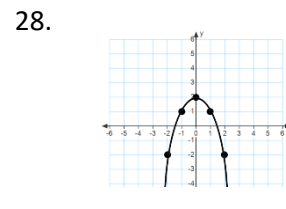
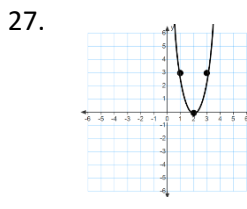
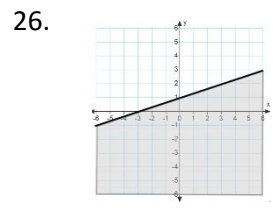
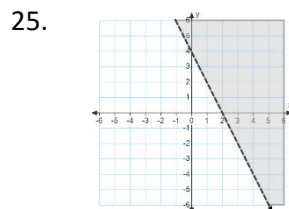
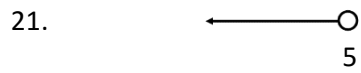
10.  $-4 \leq x \leq 0$



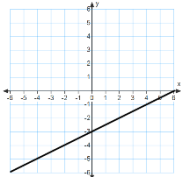
11.  $x > 3$  or  $x < 2$



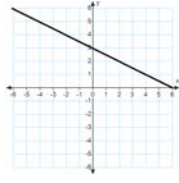
12. < 13.  $\geq$  14. Negative 15. Negative 16. C 17. A 18. B 19. D 20. C



29.



30.



31. 2

32.  $3x + 2y = 6$

33.  $x - y = -1$

34. 12%

35. 1 to 8

36. 1 to 400

37.  $b = \frac{ad}{c}$

38.  $2.05 * 10^{-5}$

39. Length = 24m; Width = 12m

40. \$16

41. 9, 10, 11 or -11, -10, -9

42. 48

43.  $3^3$

44.  $\frac{4^3}{x^6}$

45.  $28\sqrt{3}$

46. 13

47.  $7x^2\sqrt{5}$

48.  $\frac{\sqrt{2}}{4}$

49.  $12 + 6\sqrt{3}$

50.  $\sqrt{3} + 1$

51.  $\frac{1 \pm \sqrt{33}}{2}$

52.  $y = 2$

53.  $x = 7$

54.  $x = 2$

55.  $b = 20$

56.  $x = -3$

57.  $x = -2$

58. (-5, 0)

59. (2, -1)

60. (-6, 2)

61.  $(10\frac{1}{2}, 1\frac{1}{2})$

62.  $\frac{y^4}{5x^3}$

63.  $-\frac{1}{2(c+1)}$

64.  $\frac{8c+12}{(c-1)(c+1)}$

65.  $y^2$

66.  $x + 5$

67.  $x^2 + 2x + 4$

68.  $\frac{c}{2}$

69.  $-\frac{1}{x}$

70.  $\frac{-13}{(x+3)(x+4)}$

71.  $\frac{y^2-2}{y^2+2}$

72.  $x = -5$

73.  $x = -8$

74.  $x = 3$

75.  $x = 2$

76.  $y = -18$

77.  $x = -7$

78. No solution

79.  $m = 8$

80.  $x = 0$  or  $x = -\frac{1}{2}$

81.  $y = \frac{43}{13}$

82.  $31^\circ$  and  $59^\circ$ 

83. Width 38cm

Length 39cm

84. 400mi/h and 430mi/h

85. 6 and 7

86. 4a

87.  $5a^2 + 15a - 5ab$

88.  $8a + 2$

89.  $x^2 - x - 30$

90.  $3x - 6$

91.  $16m^4n^6p^2$

92.  $2x^2 - 13x + 15$

93.  $4x^2 - 9$

94.  $4x^2 - 12x + 9$

95.  $x^3 + 3x^2 + 2x$

96.  $-2\frac{1}{2}$  or  $-\frac{5}{2}$

97.  $2\frac{1}{2}$  or  $\frac{5}{2}$

98. -3

99.  $-2\frac{1}{2}$  or  $-\frac{5}{2}$

100.  $-1\frac{1}{2}$  or  $-\frac{3}{2}$

101. -10

102.  $(x + 3)(x + 4)$

103.  $3(x + 3)(x + 4)$

104.  $(2x + 3)(x + 5)$

105.  $(2x + 3)(2x - 3)$

106.  $(y - 6)(y + 5)$

107.  $x(x - 3)(x + 4)$

108.  $4(y + 5)(y - 5)$

109. Prime

110.  $(y + 5)(x + 3)$

111.  $(x + 3)(x + 1)(x - 1)$

112. 3

113.  $-\frac{2}{3}$

114. 0

115. All real numbers except  $x = 2$ .

116. {0,1,2,3}

117. {2, 5, 8, 11}