Algebra 1   Name_____ ID: 1

Distance Learning Spring 2020

Write each as an algebraic expression.

1) d to the 2nd is less than or equal to 43

2) 6 less than p is less than or equal to 18

Simplify each expression.

3) $9a - 6a$

4) $-7m + 4m$

5) $-2(x - 4) - 8(7 - 3x)$

6) $4(-3 - 6m) + 6m$

7) $-8(8 - 6m) - 4(1 - 7m)$

8) $-7x(6 - x) + 3x(x - 6)$

Solve each equation for the indicated variable.

9) $xm = \dfrac{n}{p}$, for x

Evaluate each expression.

10) $\left|-8\right| - (-1 + 9 + 6)$

11) $(-3 - (3 - 3)) \times 6$

Evaluate each using the values given.

12) $4^2 - \left|xz\right|$; use $x = -5$, and $z = -4$

13) $-6 + p - q - \left|q\right|$; use $p = -5$, and $q = -8$

Solve each equation.

14) $2(1 + 8k) + 7k = 2 - 5k$

15) $3b - 3(b - 8) = -4(b + 6) + 6b$

Solve each proportion.

16) $\dfrac{11}{12} = \dfrac{b}{2}$

17) $\dfrac{9}{10} = \dfrac{4}{a}$

Solve each equation.

18) $\left|2p\right| = -10$

19) $4\left|r - 2\right| + 4 = 24$

20) $5 - 4\left|\dfrac{b}{5}\right| = 1$

21) $8\left|1 - 6x\right| = -40$

Solve each inequality.

22) $\left|v + 2\right| - 4 \le 7$

23) $-2 + 8\left|n - 6\right| < 22$

Draw a graph for each inequality.

24) $-n \le -2$
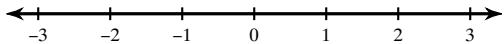
25) $x > -3$
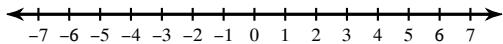

Find the slope of the line through each pair of points.

26) $\left(9,\ -8\right), \left(-19,\ 18\right)$

27) $\left(17,\ 15\right), \left(6,\ 13\right)$

Find the slope of each line.

28)
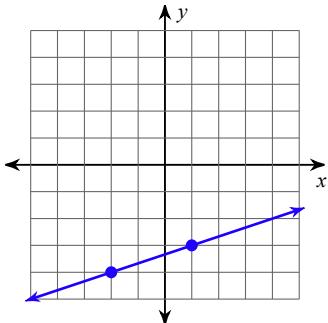
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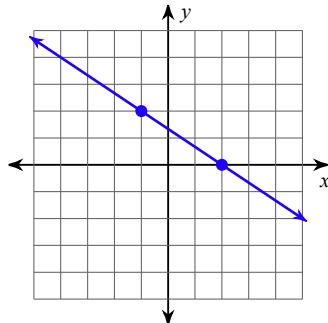
30) $y = \dfrac{2}{3}x$

31) $5x = 3y - 3$

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

32) $(-3, 4)$ and $(x, -4)$; slope: $-\dfrac{8}{3}$

33) $(-1, 0)$ and $(-2, y)$; slope: 5

Find the slope of a line perpendicular to each given line.

34) $-12x = 9y$

35) $y = 3x - 5$

Find the slope of a line parallel to each given line.

36) $-y = -4x + 3$

37) $-3 - \dfrac{3}{4}y = -2x$

Sketch the graph of each line.

38) $4x - 5y = -5$
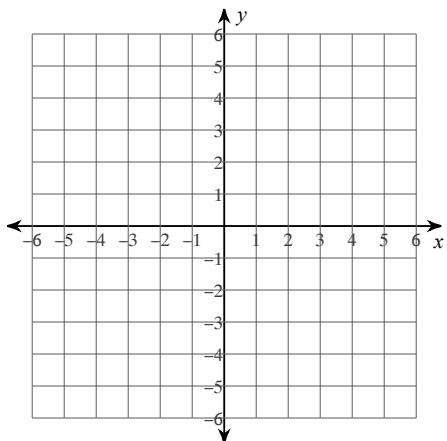
39) $x - 3y = 0$
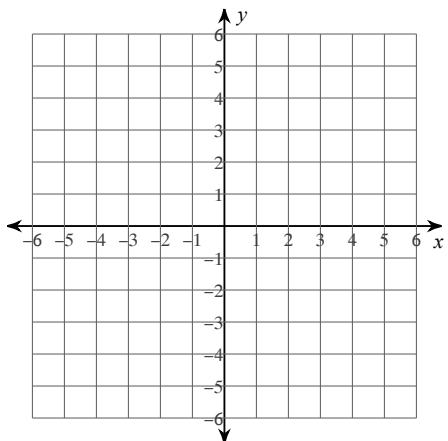
40) $6 = -2y$
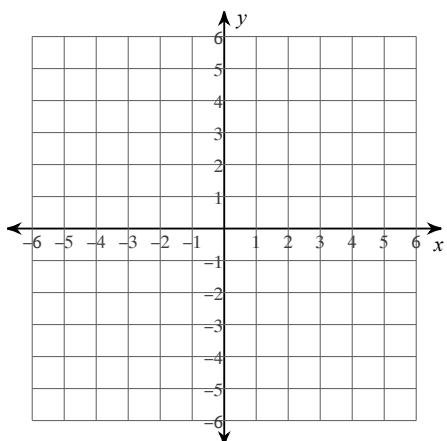
41) $x - \dfrac{4}{3} - \dfrac{4}{3}y = 0$
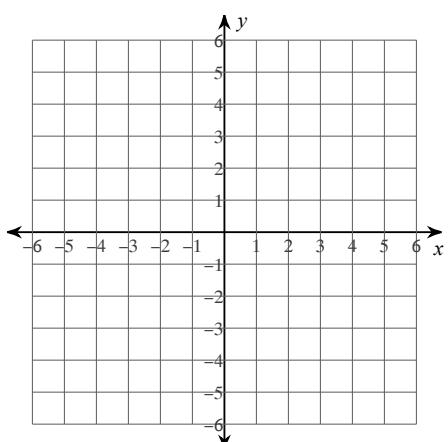
42) $4x - 1 = -y$
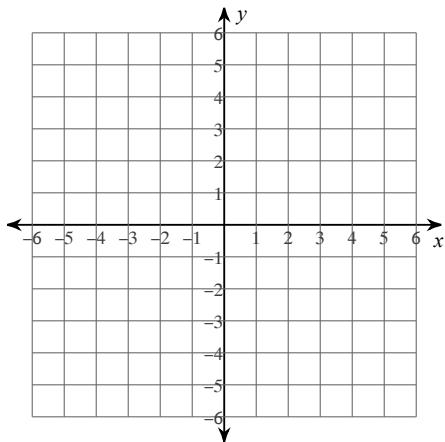
43) x-intercept $= -4$, y-intercept $= -1$
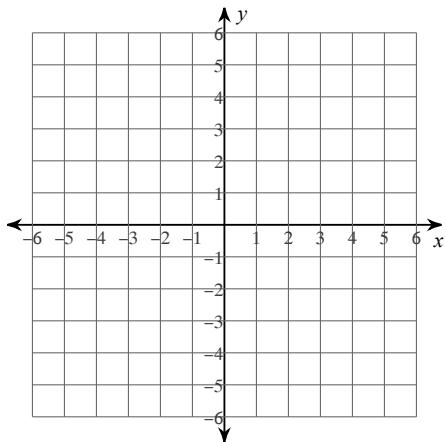
Write the slope-intercept form of the equation of each line.

44)
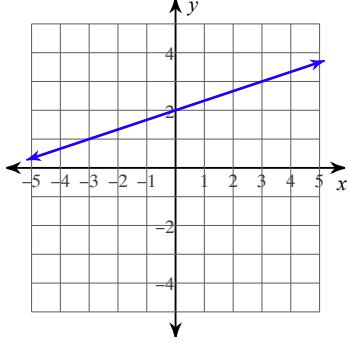
45)
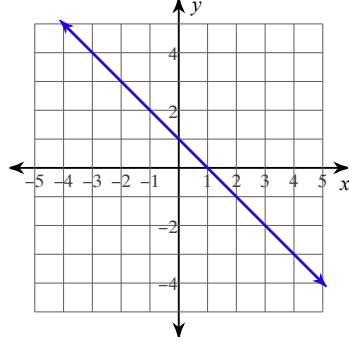
Write the slope-intercept form of the equation of each line given the slope and y-intercept.

46) Slope $= -5$, y-intercept $= 5$

47) Slope $= \dfrac{9}{4}$, y-intercept $= 5$

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

48) through: $(-2, 3)$ and $(-5, 1)$

Write the slope-intercept form of the equation of the line described.

49) through: $(-5, -5)$, parallel to $y = \dfrac{2}{5}x - 2$

50) through: $(-3, 0)$, perp. to $y = 2$

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

51) Slope = 8, y-intercept = -5

State if there appears to be a positive correlation, negative correlation, or no correlation.

52)

53)

54)

55)

56)
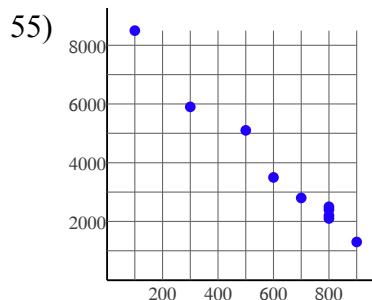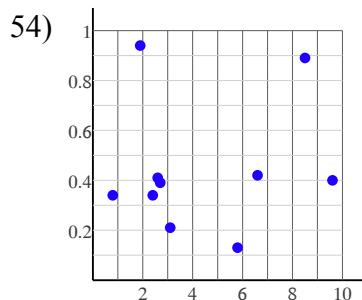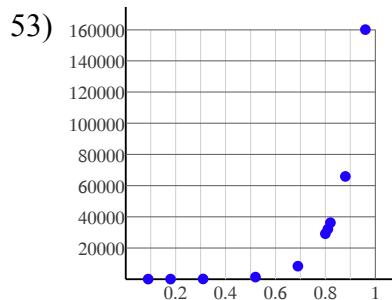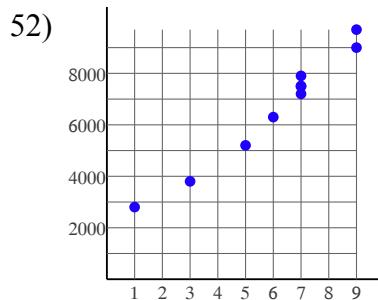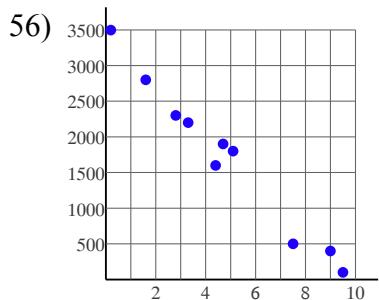
57) Scientists have steadily increased the amount of grain that farms can produce each year. The yield for farms in the United Kingdom is given by $y = 78.4x - 150000$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).
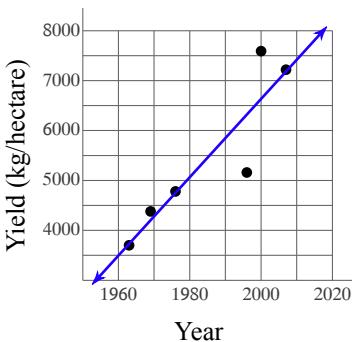
According to the model, what was the crop yield in 1980? Round your answer to the nearest whole number.

58) The average amount of electricity consumed by a household in a day is strongly correlated to the average daily temperature for that day. This relationship is given by $y = 0.389x + 11.4$ where x is the temperature in °F and y is the amount of electricity consumed in kilowatt-hours (kWh).
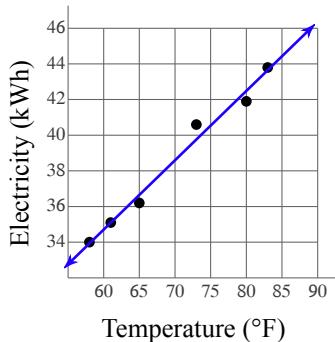
Using the model, how much electricity would be consumed if the average daily temperature was 69°F? Round your answer to the nearest kilowatt-hour.

For each question, determine if the given information represents a function.

59)
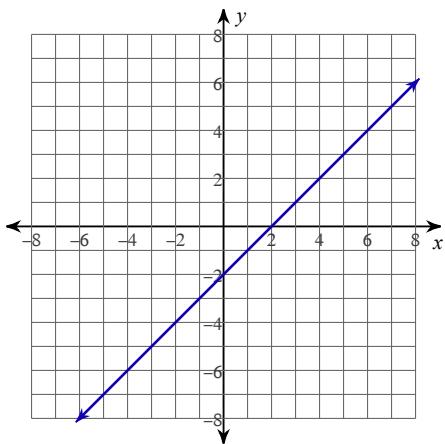
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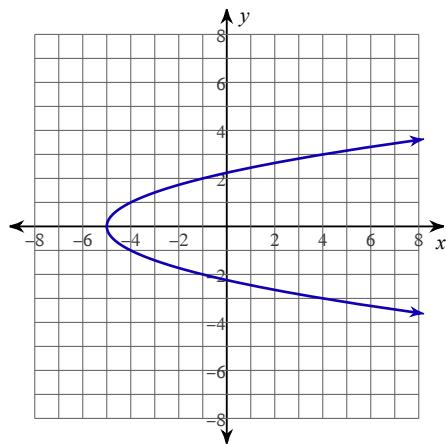
61)
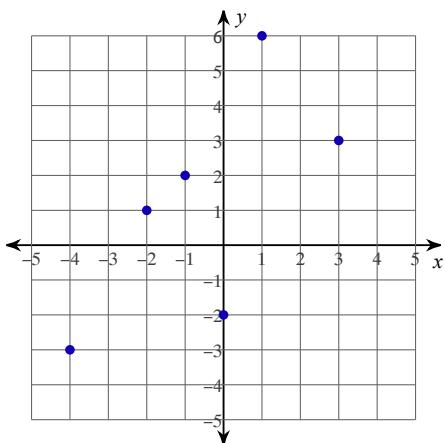
62)
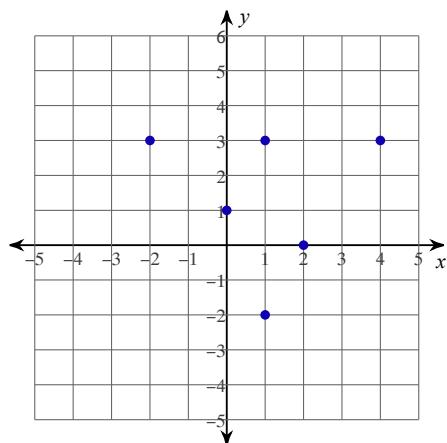
Solve each system by graphing.

63) $-16 + 3x = -2y$
$7 - 6x = -y$
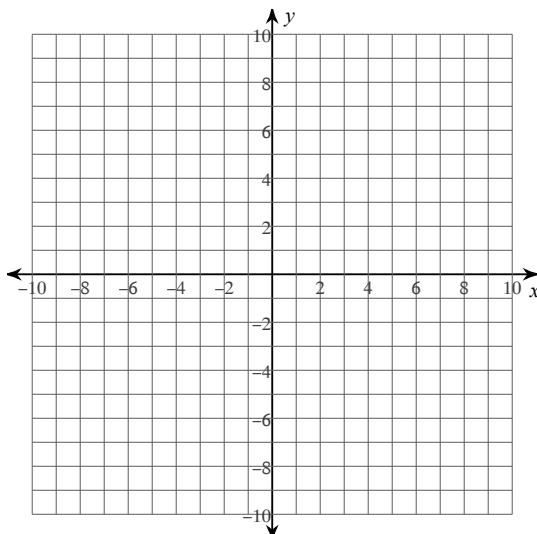
64) $7 - y + \dfrac{3}{7}x = 0$
$-6x - 7y = 14$

65) $-3y - 9 = -x$
$36 + 21x = 18y$
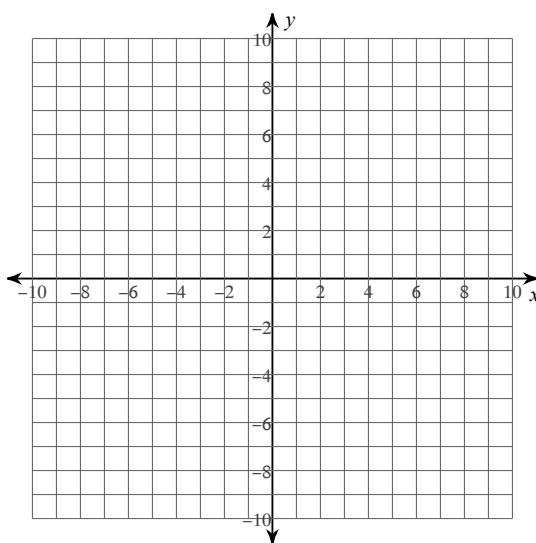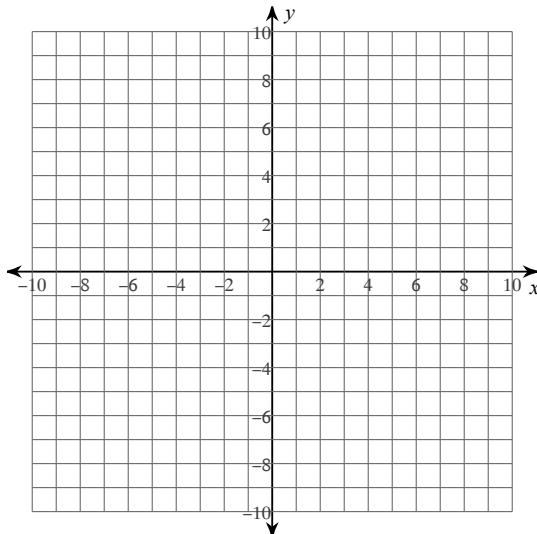
66) $2x = -5y - 20$
$9x = -35 + 5y$
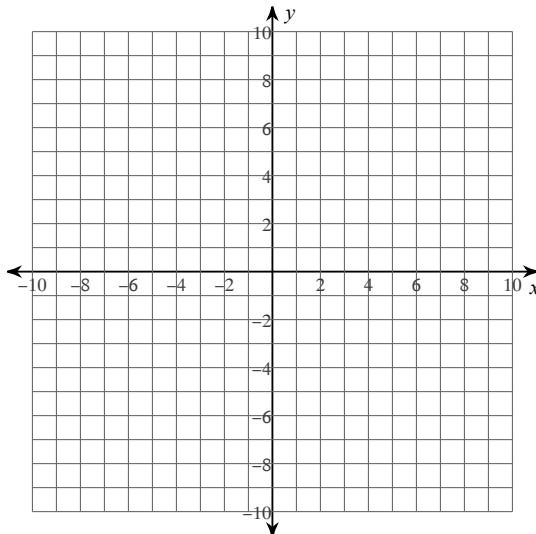
67) $y = -4x - 3$
$6x - 4y = -32$
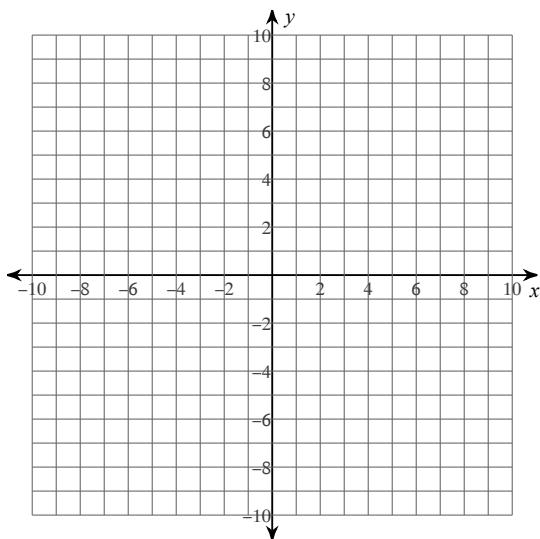
Solve each system.

68) $-x - 3y = -21$
$x + 4y = 27$

69) $-7x - 4y = -17$
$7x + 4y = 17$

70) $5x - 7y = 28$
$5x - 2y = -17$

71) $-8x + 6y = 6$
$-8x + 8y = 8$

72) $-10x - 10y = -10$
$-2x - y = -3$

73) $4x - 12y = -28$
$3x + 6y = 9$

74) $x - 9 - \dfrac{2}{3}y = 0$

$\dfrac{9}{5}y = -x + \dfrac{8}{5}$

75) $x = 1 + \dfrac{1}{2}y$

$-6 + 6x + 5y = 0$

76) $7x + 2y = -7$
$y = 8x - 15$

77) $y = 3x + 12$
$5x + 2y = -20$

78) $y = -3x + 21$
$y = 5x - 19$

79) $y = -7x + 4$
$y = 6x + 4$

80) $-2x - 3y = 19$
$x - 8y = 0$

81) $3x + y = -12$
$7x - 2y = -2$

Sketch the graph of each linear inequality.

82) $6x + 5y < 10$
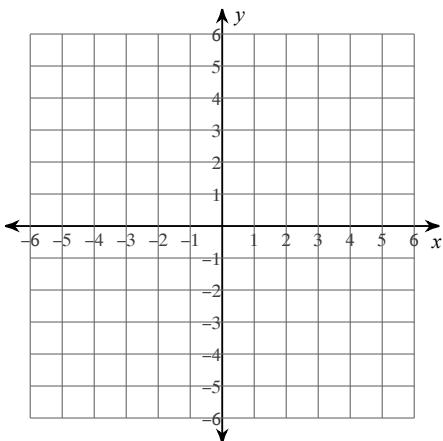
83) $y \leq 5$
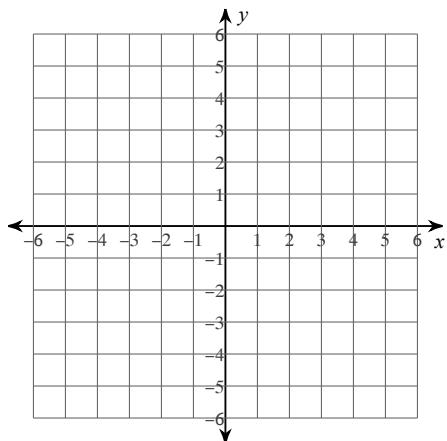
84) $10x - y \leq -5$
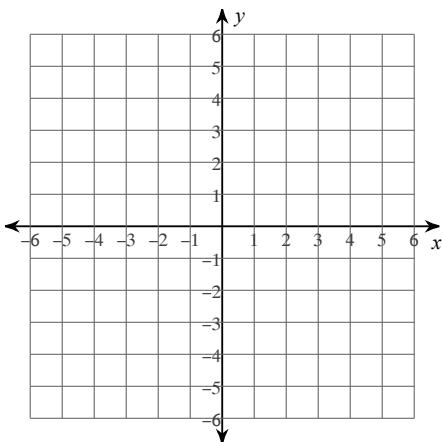
85) $y \geq -\dfrac{2}{3}x - 2$
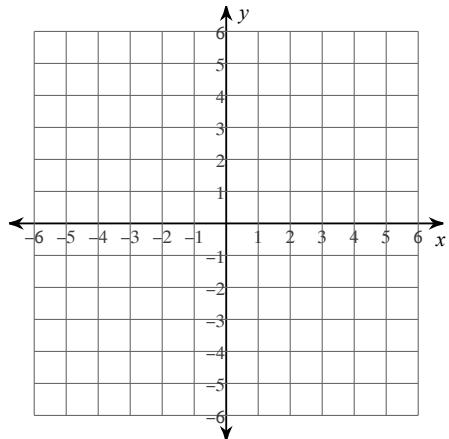
86) $y < -\dfrac{5}{3}x + 4$
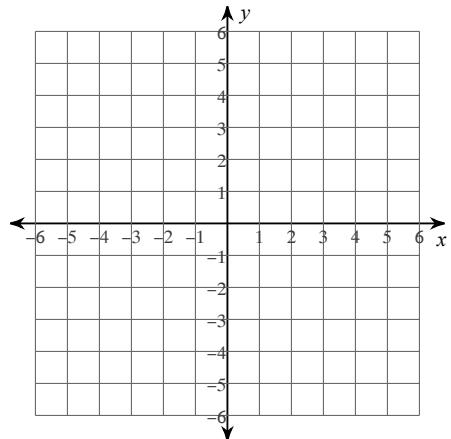
87) $y > -4x + 1$
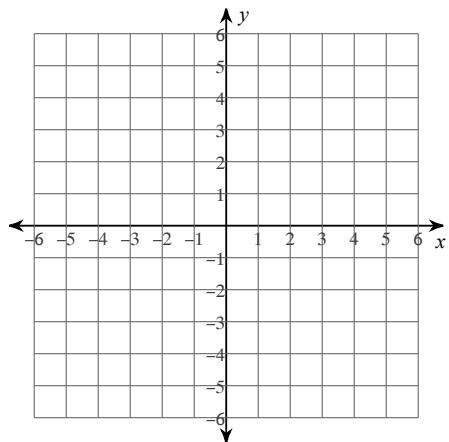
Sketch the solution to each system of inequalities.

88) $y \le -\dfrac{1}{3}x + 2$
$y > -2x - 3$
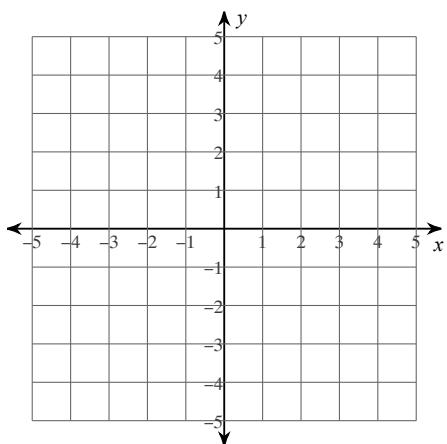
89) $y < -5x + 3$
$y \ge -2$
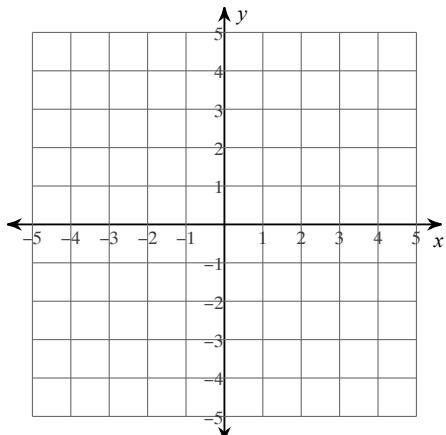
90) $x + 2y \le 2$
$2x + y \ge -2$
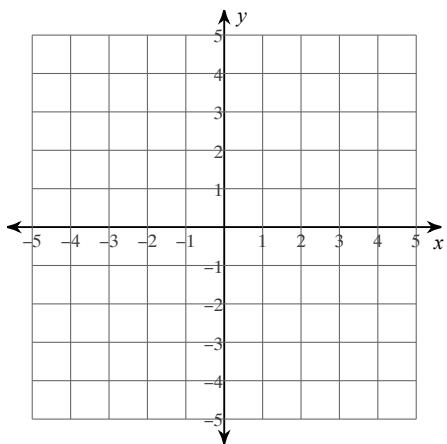
91) $y \le 1$
$4x + 3y \ge -9$
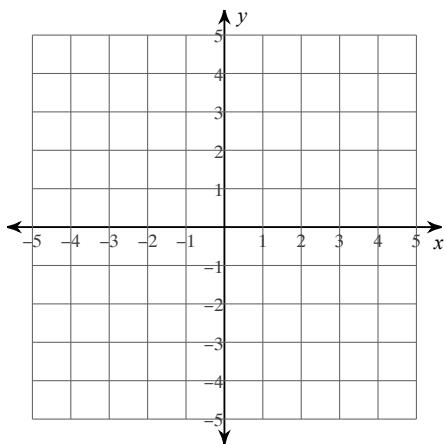
92) The senior classes at High School A and High School B planned separate trips to the water park. The senior class at High School A rented and filled 5 vans and 3 buses with 246 students. High School B rented and filled 6 vans and 3 buses with 261 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

93) The county fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 2 vans and 1 bus with 84 students. High School B rented and filled 4 vans and 4 buses with 280 students. Each van and each bus carried the same number of students. Find the number of students in each van and in each bus.

Simplify. Your answer should contain only positive exponents.

94) $\dfrac{\left(2p^2 \cdot 2p^4\right)^0}{p^0}$

95) $\dfrac{\left(2x\right)^0 \cdot \left(x^3\right)^0 \cdot x^4}{\left(x^3\right)^2}$

96) $\left(\dfrac{\left(v^0\right)^{-3} \cdot 2v^4}{\left(2v^{-1}\right)^{-3}}\right)^0$

97) $\left(\dfrac{2n^0 \cdot 2n^{-3}}{2n^{-2}}\right)^{-1}$

98) $\dfrac{\left(2x \cdot 2x^4\right)^4}{x^0 \cdot 2x^{-2}}$

99) $\dfrac{n^{-4}}{2m^4n^2 \cdot nm^{-3}}$

100) $\dfrac{\left(x^{-1}y^0\right)^{-1} \cdot \left(2x^2y^2\right)^4}{\left(2x^{-2} \cdot 2xy\right)^4}$

Sketch the graph of each function.

101) $y = \dfrac{1}{3} \cdot 6^x$
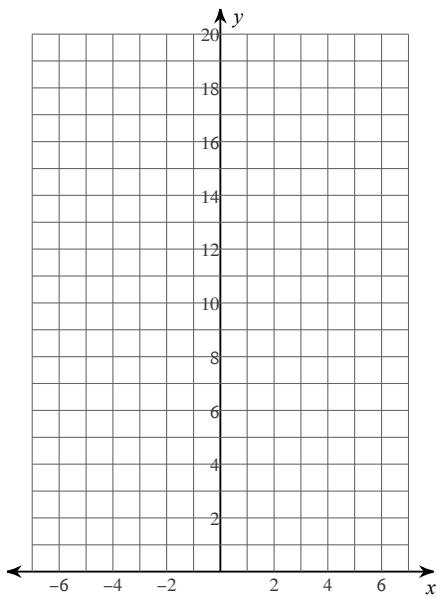
102) $y = -2 \cdot \left(\dfrac{1}{2}\right)^x$
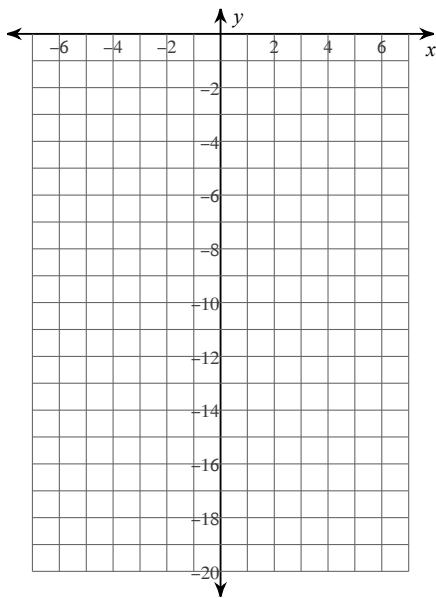
103) $f(x) = -\dfrac{1}{3} \cdot 2^x$
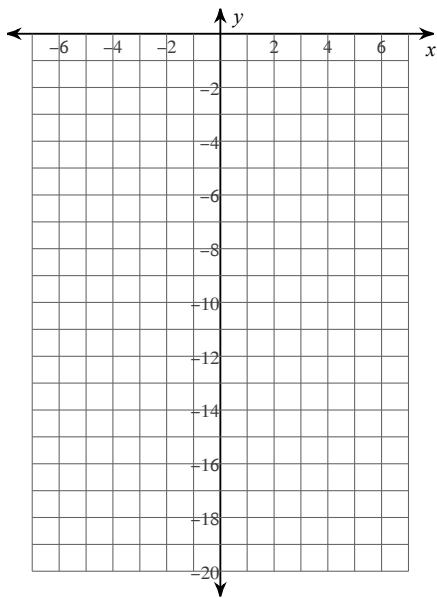
104) $f(x) = 4 \cdot 2^x$
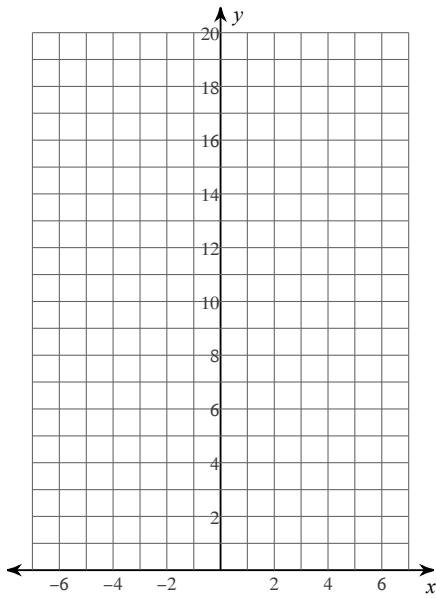
Simplify.

105) $-7\sqrt{96r}$

106) $-7\sqrt{27r^3}$

107) $-3\sqrt{216v^2}$

108) $-5\sqrt{96r^2}$

109) $6\sqrt{343m^2}$

110) $\sqrt{150x^4y^4}$

111) $\sqrt{63xy^3}$

112) $3\sqrt{5} + 3\sqrt{2} - 3\sqrt{2}$

113) $3\sqrt{5} - 3\sqrt{6} - 2\sqrt{5}$

114) $-3\sqrt{3} + 2\sqrt{3} - 2\sqrt{8}$

115) $-\sqrt{3} + 2\sqrt{6} + 3\sqrt{3}$

116) $-2\sqrt{27} + 2\sqrt{5} + 3\sqrt{12}$

117) $-3\sqrt{54} - \sqrt{6} - \sqrt{24}$

118) $3\sqrt{6} + 2\sqrt{2} - 3\sqrt{18}$

119) $\sqrt{20} \cdot -3\sqrt{10}$

120) $\sqrt{3} \cdot \sqrt{12}$

121) $-4\sqrt{2} \cdot -2\sqrt{8}$

122) $5\sqrt{3} \cdot \sqrt{6}$

123) $\sqrt{15} \cdot \sqrt{12}$

124) $\sqrt{10k^2} \cdot \sqrt{6k^3}$

125) $\sqrt{15x^3} \cdot \sqrt{6x^3}$

Answers to Distance Learning Spring 2020 (ID: 1)

1) $d^2 \le 43$

2) $p - 6 \le 18$

3) $3a$

4) $-3m$

5) $22x - 48$

6) $-12 - 18m$

7) $-68 + 76m$

8) $-60x + 10x^2$

9) $x = \dfrac{n}{mp}$

10) -6

11) -18

12) -4

13) -11

14) $\{0\}$

15) $\{24\}$

16) $\left\{\dfrac{11}{6}\right\}$

17) $\left\{\dfrac{40}{9}\right\}$

18) No solution.

19) $\{7, -3\}$

20) $\{5, -5\}$
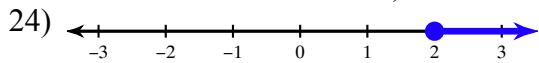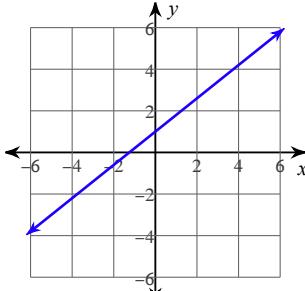
21) No solution.

22) $-13 \le v \le 9$

23) $3 < n < 9$

24)

25)

26) $-\dfrac{13}{14}$

27) $\dfrac{2}{11}$

28) $\dfrac{1}{3}$

29) $-\dfrac{2}{3}$

30) $\dfrac{2}{3}$

31) $\dfrac{5}{3}$

32) 0

33) -5

34) $\dfrac{3}{4}$

35) $-\dfrac{1}{3}$

36) 4

37) $\dfrac{8}{3}$

38)

39)
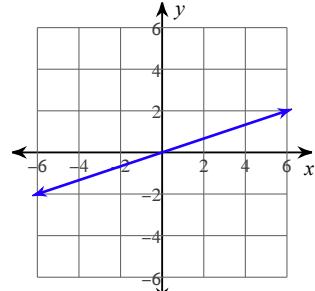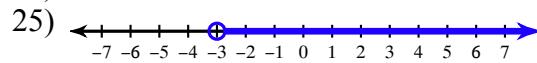
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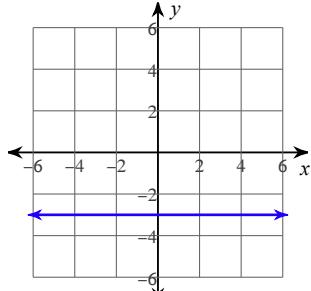
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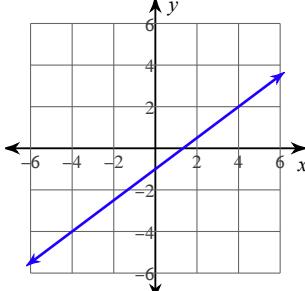
42)

43)

44) $y = \dfrac{1}{3}x + 2$

45) $y = -x + 1$

46) $y = -5x + 5$

47) $y = \dfrac{9}{4}x + 5$

48) $y = \dfrac{2}{3}x + \dfrac{13}{3}$

49) $y = \dfrac{2}{5}x - 3$

50) $x = -3$

51) $8x - y = 5$
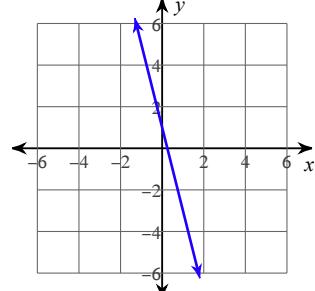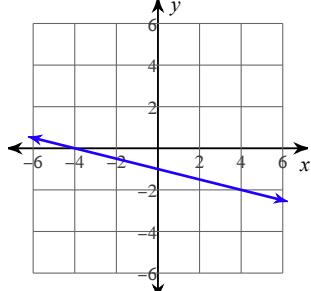
52) Positive correlation

53) Positive correlation

54) No correlation

55) Negative correlation

56) Negative correlation

57) 5,232 kg/ha

58) 38 kWh

59) yes

60) no

61) yes

62) no

63) $(2, 5)$

64) $(-7, 4)$

65) $(-6, -5)$

66) $(-5, -2)$

67) $(-2, 5)$

68) $(3, 6)$

69) Infinite number of solutions

70) $(-7, -9)$

71) $(0, 1)$

72) $(2, -1)$

73) $(-1, 2)$

74) $(7, -3)$

75) $(1, 0)$

76) $(1, -7)$

77) $(-4, 0)$

78) $(5, 6)$

79) $(0, 4)$

80) $(-8, -1)$

81) $(-2, -6)$

82)
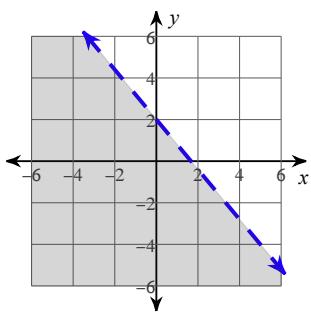

83)
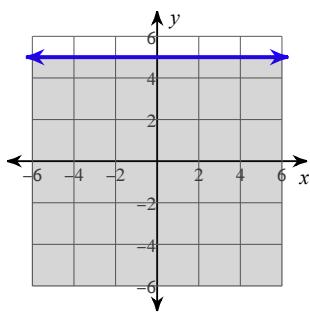
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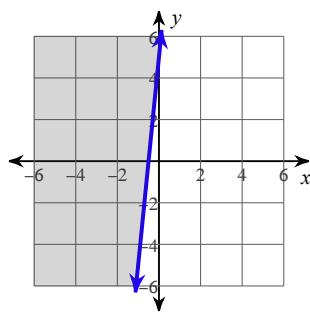
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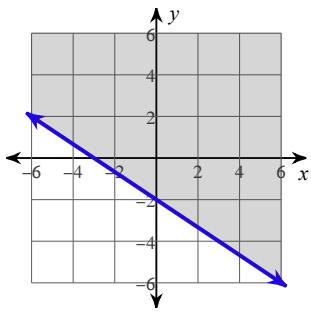
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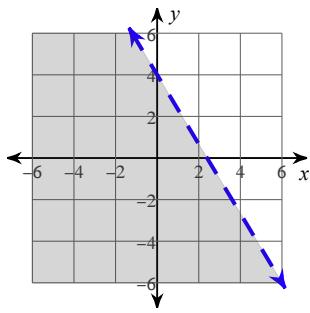
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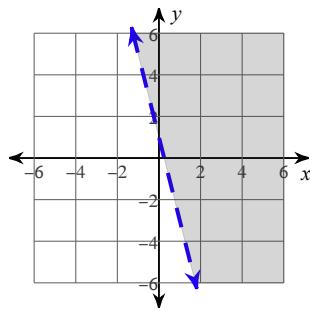
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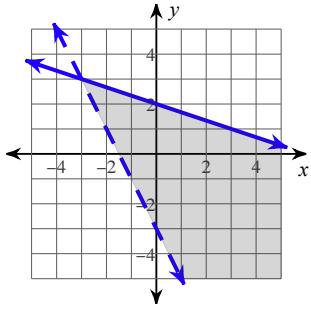
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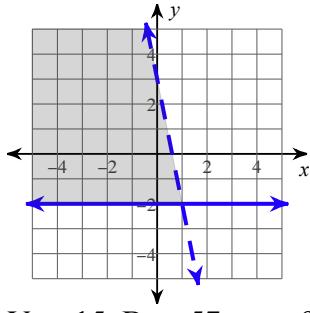
90)
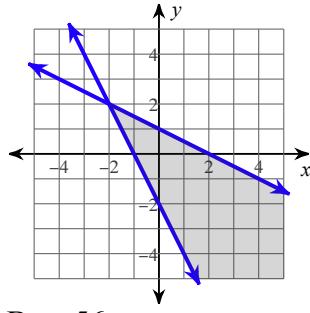
91)
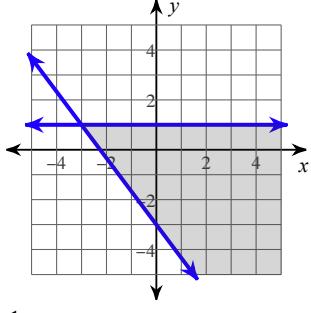
92) Van: 15, Bus: 57

93) Van: 14, Bus: 56

94) 1

95) $\dfrac{1}{x^2}$

96) 1

97) $\dfrac{n}{2}$

98) $128x^{22}$

99) $\dfrac{1}{2n^7m}$

100) $\dfrac{x^{13}y^4}{16}$

101)
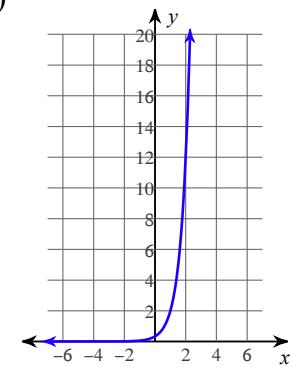
102)
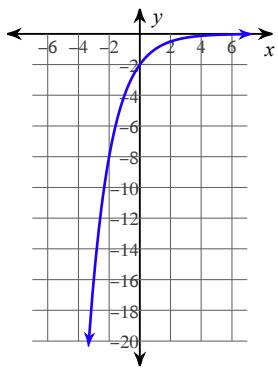
103)
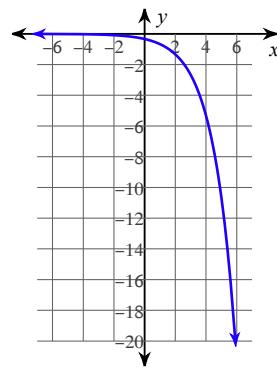
104)
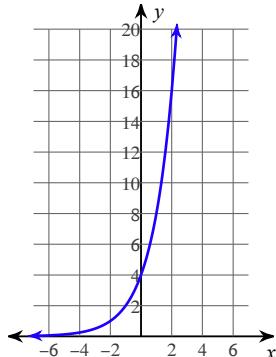
105) $-28\sqrt{6r}$

106) $-21r\sqrt{3r}$

107) $-18v\sqrt{6}$

108) $-20r\sqrt{6}$

109) $42m\sqrt{7}$

110) $5x^2y^2\sqrt{6}$

111) $3y\sqrt{7xy}$

112) $3\sqrt{5}$

113) $\sqrt{5}-3\sqrt{6}$

114) $-\sqrt{3}-4\sqrt{2}$

115) $2\sqrt{3}+2\sqrt{6}$

116) $2\sqrt{5}$

117) $-12\sqrt{6}$

118) $3\sqrt{6}-7\sqrt{2}$

119) $-30\sqrt{2}$

120) 6

121) 32

122) $15\sqrt{2}$

123) $6\sqrt{5}$

124) $2k^2\sqrt{15k}$

125) $3x^3\sqrt{10}$