Summer Review

Write each number in scientific notation.

1) 40

2) 920000

Write each number in standard notation.

3) 5×10^2

4) 2.58×10^4

Place the following Real numbers in ascending order

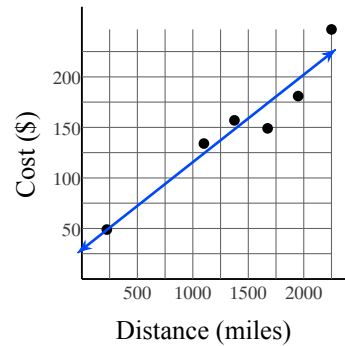5) $2.88, \; 2.8\%, \; \sqrt{8}, \; 2.8 \cdot 10^{-1}, 2.8$

6) Select each number that is between 535% and $6.01 \cdot 10^0$

$5.9, \; 5.8 \cdot 10^2, \; \dfrac{47}{8}, \; 5.3, \; 60\%, \; \sqrt{35}$

7) The cost of a flight is related to the distance traveled:

Miles	Cost ($)
225	48.9
1,100	134
1,375	157
1,675	149
1,950	181
2,250	247

This can be modeled by the equation $y = 0.0865x + 29.1$ where x is distance in miles and y is cost in dollars.
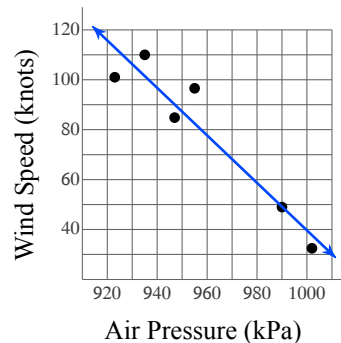

Distance (miles)

a) What does the y-intercept of this function represent?

b) Using this model, what would be the cost of a flight that travels 800 miles? Round your answer to the nearest dollar.

8) The Hurricane Hunters took the following measurements from a hurricane over several days as it developed:

Air Pressure (kPa)	Wind Speed (knots)
923	101
935	110
947	84.8
955	96.6
990	49
1,002	32.5

They found that the air pressure and wind speed are related in the following way: $y = -0.951x + 991$ where x is the air pressure in millibars (kPa) and y is the maximum sustained wind speed in knots (nautical miles per hour).


Air Pressure (kPa)

a) What does the y-intercept of this function represent?

b) Using the model, what would be the wind speed of a hurricane with an air pressure of 977 kPa? Round your answer to the nearest knot.

9) Ashley collects coins. Over a three-year period she collected 1,000 nickels. After organizing them by year, she found that the number of nickels from a given year was related to the number minted that year:

Minted (100 mill.)	In Sample
4.6	9
6.1	13
7.9	20
11.8	29
15.5	42
16.5	35

Ashley discovered that this can be modeled by the equation $y = 2.51x - 1.44$ where x is the number of nickels minted in a particular year in hundreds of millions and y is the number of nickels from that year in her sample.
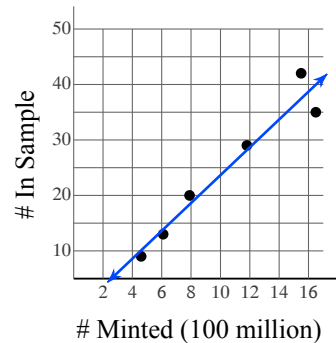
Minted (100 million)

a) What does the y-intercept of this function represent?

b) Using this model, in a sample of 1,000 nickels how many would you expect to be from a year in which 8.8 hundred million were minted? Round your answer to the nearest whole number.

10) Households consume much more electricity when the weather is warmer:

Temperature (°F)	Electricity (kWh)
58	31.7
64	35.6
72	39.2
74	42.2
79	42.1
83	45.7

This can be modeled by the equation $y = 0.535x + 1.04$ where x is the average daily temperature in °F and y is the average amount of electricity consumed in kilowatt-hours (kWh).
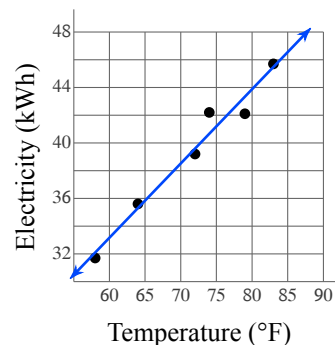

Temperature (°F)

a) What does the y-intercept of this function represent?

b) Using the model, how much electricity would be consumed if the average daily temperature was 60°F? Round your answer to the nearest kilowatt-hour.

11) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000:

Year	Marriage Licenses
2001	136,000
2003	139,000
2006	125,000
2010	114,000
2011	105,000
2013	98,000

This can be modeled by the equation $y = -3405.9x + 6956200$ where x is the year and y is the number of marriage licenses issued.
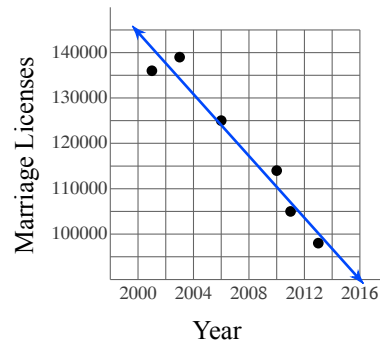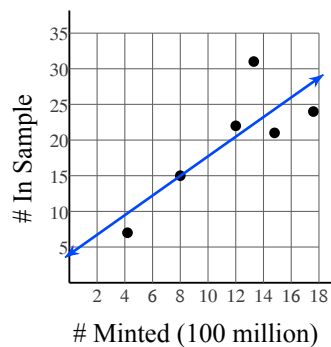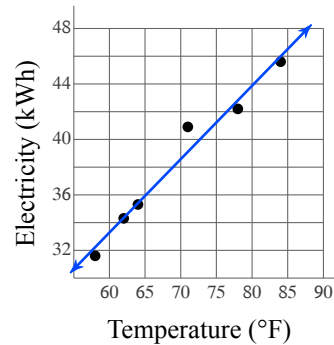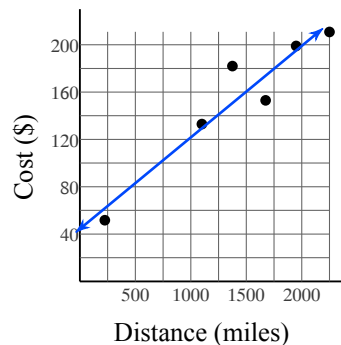

a) What does the y-intercept of this function represent?

b) According to the model, how many marriage licenses were issued in 2008? Round your answer to the nearest hundred.

12) John collects coins. Over a three-year period he collected 1,000 nickels. After organizing them by year, he found that the number of nickels from a given year was related to the number minted that year:

Minted (100 mill.)	In Sample
4.2	7
8	15
12	22
13.3	31
14.8	21
17.6	24

John discovered that this can be modeled by the equation $y = 1.38x + 3.98$ where x is the number of nickels minted in a particular year in hundreds of millions and y is the number of nickels from that year in his sample.

a) What does the y-intercept of this function represent?

b) Using this model, in a sample of 1,000 nickels how many would you expect to be from a year in which 9.1 hundred million were minted? Round your answer to the nearest whole number.

13) Households consume much more electricity when the weather is warmer:

Temperature (°F)	Electricity (kWh)
58	31.6
62	34.3
64	35.3
71	40.9
78	42.2
84	45.6

This can be modeled by the equation $y = 0.529x + 1.54$ where x is the average daily temperature in °F and y is the average amount of electricity consumed in kilowatt-hours (kWh).

a) What does the y-intercept of this function represent?

b) Using the model, how much electricity would be consumed if the average daily temperature was 75°F? Round your answer to the nearest kilowatt-hour.

14) The cost of a flight is related to the distance traveled:

Miles	Cost ($)
225	51.7
1,100	133
1,375	182
1,675	153
1,950	199
2,250	211

This can be modeled by the equation $y = 0.0774x + 44.4$ where x is distance in miles and y is cost in dollars.

a) What does the y-intercept of this function represent?

b) Using this model, what would be the cost of a flight that travels 800 miles? Round your answer to the nearest dollar.

Determine whether the scenario involves independent or dependent events.

15) A spinner has an equal chance of landing on each of its eight numbered regions. You spin twice. The first spin lands in region one and the second spin lands in region two.

16) A basket contains eight apples and seven peaches. You randomly select one piece of fruit and eat it. Then you randomly select another piece of fruit. Both pieces of fruit are apples.

17) There are five boys and eight girls in a class. The teacher randomly selects one student to answer a question. Later, the teacher randomly selects a different student to answer another question. The first student is a boy and the second student is a girl.

18) A bag contains four red marbles and four blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. The first marble is red and the second marble is blue.

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

19) -8

20) $\dfrac{-10}{-16}$

21) $\sqrt{16}$

22) $\sqrt{\dfrac{234}{3}}$

23) $\dfrac{30}{55}$

24) π

Find each square root.

25) $\sqrt{256}$

26) $\sqrt{36}$

27) $\sqrt{361}$

28) $\sqrt{64}$

29) $\sqrt{400}$

Find each square root. Round to the nearest whole number.

30) $\sqrt{257}$

31) $\sqrt{364}$

32) $\sqrt{283}$

33) $\sqrt{442}$

34) $\sqrt{489}$

Solve each problem.

35) 188.7 is 26% of what?

36) What is 41% of 406?

37) 6% of 224 is what?

38) 3% of 260 is what?

39) 327.3 is what percent of 351?

Find the selling price of each item.

40) Original price of a car: $16,500.00
    Discount: 50%

41) Original price of a sweater: $41.50
    Discount: 40%

Name the relationship: complementary, supplementary, vertical, or adjacent.

42)
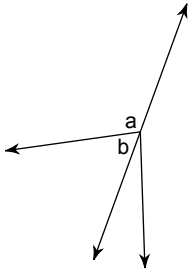
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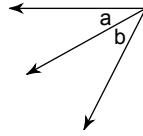
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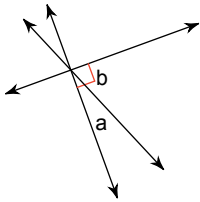
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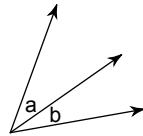
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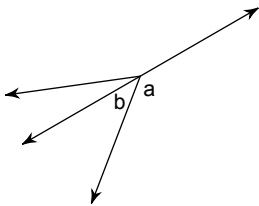
47)
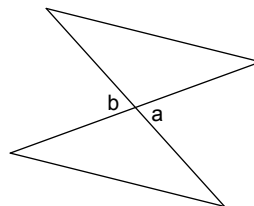
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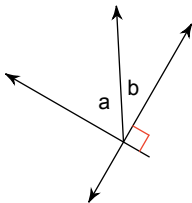
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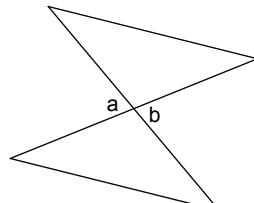
Find the surface area of each figure. Round to the nearest tenth.

50)

2 cm

7.1 cm

51)

8 in

12 in

52)

3 cm 8 cm

10 cm

10 cm

3 cm

53)

9.8 ft

8 ft

8 ft
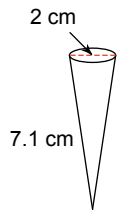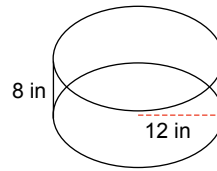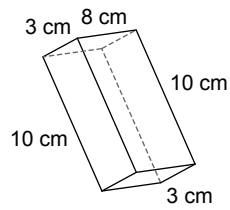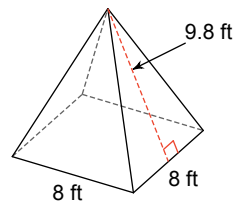
Find the volume of each figure. Round to the nearest tenth.

54)

3 km

10 km

11 km

11 km

10 km

55)

6 m

12 m

56)

9 in

5 in

5 in

57)

6 km

20 km
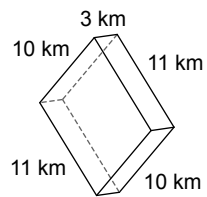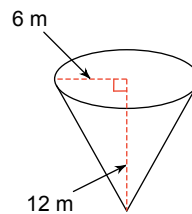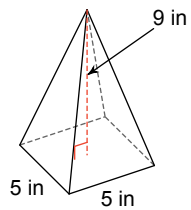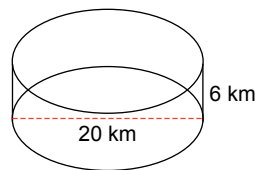
Graph the image of the figure using the transformation given.

58) reflection across the y-axis
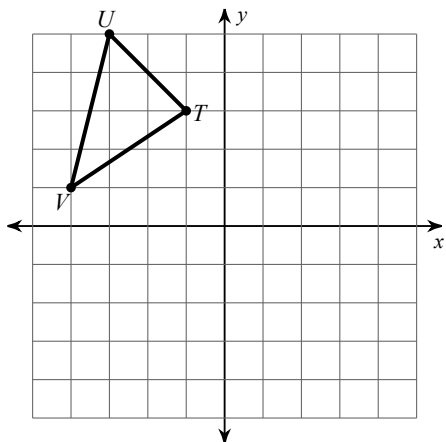
59) translation: 6 units right
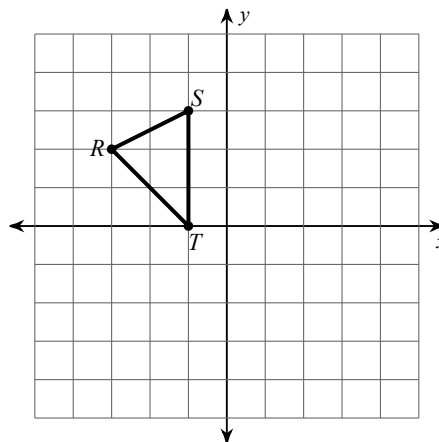
Find the coordinates of the vertices of each figure after the given transformation.

60) reflection across $x = 1$
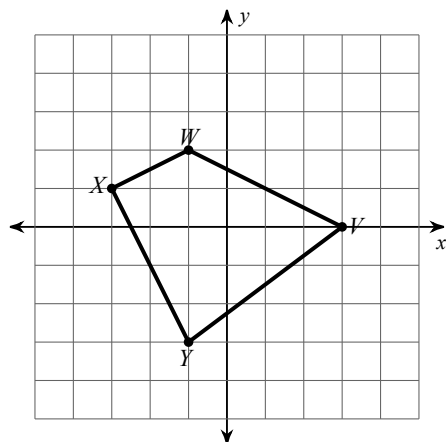
61) translation: 2 units left and 2 units down
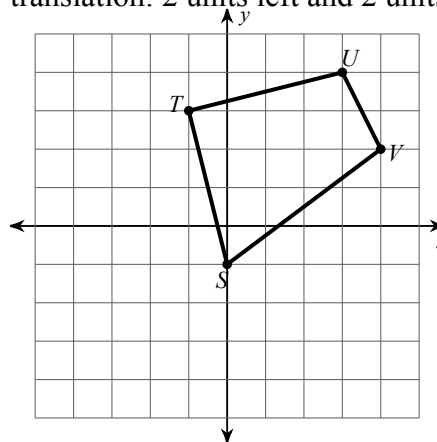
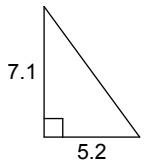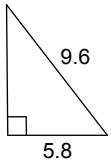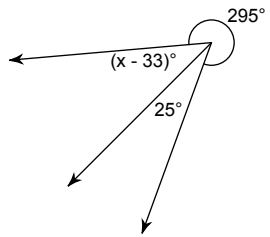**Find each missing length to the nearest tenth.**

62)

8.3

9.2

63)

6.2

13

64)

7.1

5.2

65)

3.3

1.2

66)

9.6

5.8

67)

8.3

2.6

Find the value of x.

68)

295°

(x - 33)°

25°

69)

4x°

(x + 15)°

70)

(6x + 2)°

68°

71)

135°

5x°
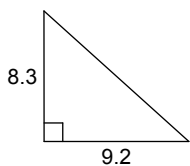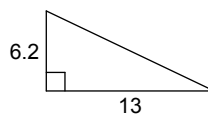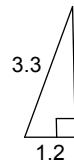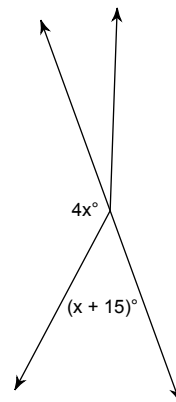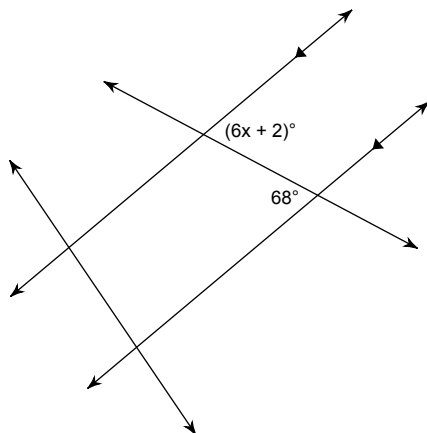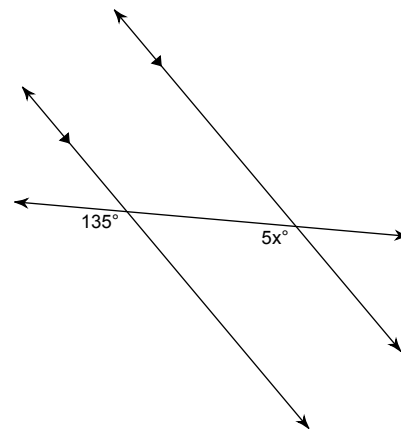
Draw a box-and-whisker plot for each data set.

72) Age at First Job

13	11	18	15	17	18	12
23	14	17	16	16	13	15
14	16	21	21	11	13	13
18						

73) Campers at National Parks

Park	Tent Campers	Park	Tent Campers	Park	Tent Campers
Badlands	8,859	Devils Postpile	2,432	Everglades	8,684
Arches	26,321	Kenai Fjords	801	Cape Hatteras	40,944
Dinosaur	9,411	Klondike Gold Rush	1,780	Colorado	9,120
Lake Meredith	2,727	Grand Teton	10	Mammoth Cave	31,043
Acadia	109,030	Hot Springs	4,084	Natural Bridges	3,646
Mount Rainier	56,892	Rocky Mountain	75,804	Devils Tower	5,050
Obed W&SR	1,019	Big Bend	37,576	Great Basin	19,661

74) Average Time to Maturity

Plant	Days	Plant	Days	Plant	Days	Plant	Days
Celery	95	Bok Choi	45	Lima Bean	75	Red Potato	80
Gooseneck Gourd	120	Garlic	120	Cowpeas	80	Zucchini	50
Cucumber	58	Cherry Tomato	65	Broccoli	71	Jersey Tomato	74
Corn (Silver Queen)	92	Cheyenne Pepper	64	Tomatillo	100	French Bean	75
Mustard	37	Yukon Gold Potato	65	Corn (Golden Bantam)	80	Purple King Bean	75
Artichoke	95	Roma II Bush Bean	53				

75) Mens Heights (Inches)

71	72	72	69	67	77	67
67	75	68	69	72	79	73
64	67	74	72	69	64	67
64	75					

76) Games per World Series

7	4	7	4	7	6	7	6
7	4	5	5	7	4	6	5

77)

Large US Cities

City	Population	City	Population	City	Population	City	Population
Miami	399,457	Irvine	212,375	St. Louis	319,294	Minneapolis	382,578
Madison	233,209	Bakersfield	347,483	Fort Wayne	253,691	Reno	225,221
Fort Worth	741,206	North Las Vegas	216,961	Seattle	608,660	Aurora	325,078
Phoenix	1,445,632	Oklahoma City	579,999	Chesapeake	222,209	Scottsdale	217,385

78)   Single Family Home Prices

265,400	259,600	272,100	267,400
274,700	269,900	250,100	257,000
264,500	250,100	256,600	288,700
281,000	269,100	261,500	275,600
290,400			

79)   Land Area of US States/Territories

Place	Area (km²)	Place	Area (km²)	Place	Area (km²)
Maine	79,883	Guam	543	Louisiana	111,898
Colorado	268,431	Rhode Island	2,678	Northern Mariana Islands	472
South Carolina	77,857	West Virginia	62,259	District of Columbia	158
Pennsylvania	115,883	Florida	138,887	Mississippi	121,531
Virginia	102,279	Vermont	23,871	Wisconsin	140,268
Delaware	5,047	North Dakota	178,711		

Evaluate each expression.

80) $\left(\dfrac{-2}{-2}\right) \times 7 + 3$

81) $\dfrac{(-12) - (-3)}{(-7) - (-4)}$

82) $\left(\dfrac{14}{7}\right)^3 - 5$

83) $(-6) + \dfrac{5}{9 - 4}$

Evaluate each using the values given.

84) $\dfrac{q^2(p-q)}{4}$; use $p = -5$, and $q = 2$

85) $p + q + q - p + 3$; use $p = 4$, and $q = -5$

86) $z - (|z - x| + z)$; use $x = 7$, and $z = 1$

87) $|x + x| - y + x$; use $x = -9$, and $y = -7$

88) $p + 2\left(\dfrac{p}{6} - q\right)$; use $p = 6$, and $q = -7$

89) $y + 10(x - (z + z))$; use $x = 4$, $y = -10$, and $z = 4$

90) $y + x - 1 + |6|$; use $x = 10$, and $y = -3$

91) $m - m - (q + 8^2)$; use $m = -1$, and $q = -10$

Sketch the graph of each line.

92) $y = 3x + 3$
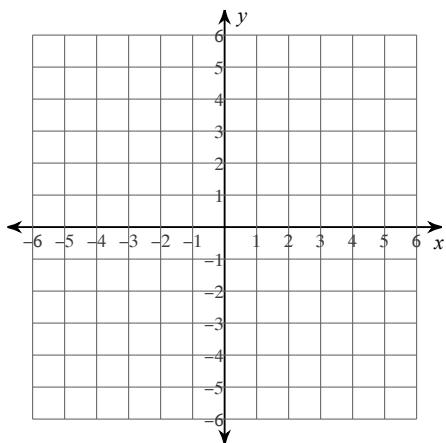
93) $y = \dfrac{1}{3}x - 1$
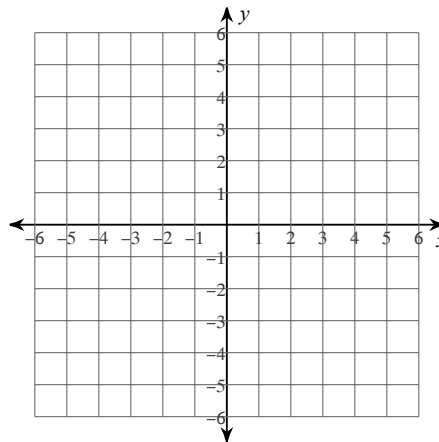
94) $y = -4x - 4$
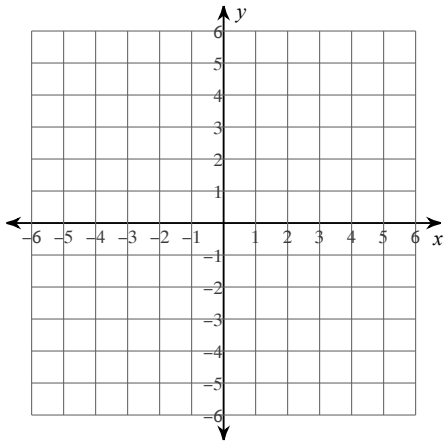
95) $x = -2$
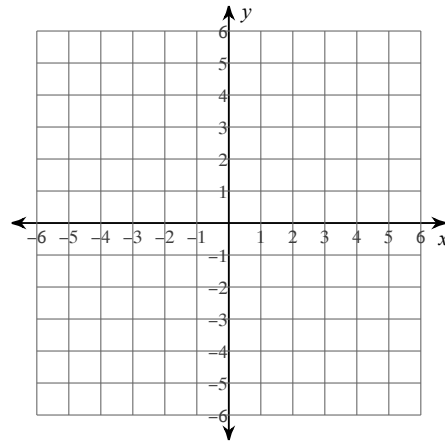
96) $y = -\dfrac{4}{3}x - 2$
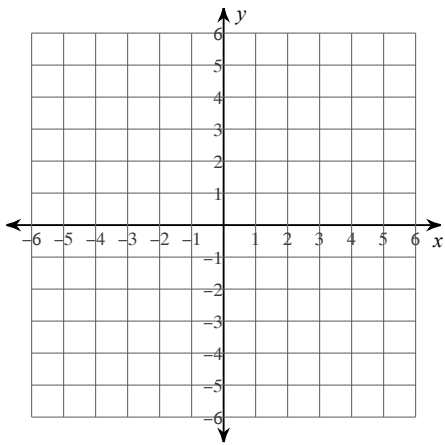
97) $y = -3x - 4$
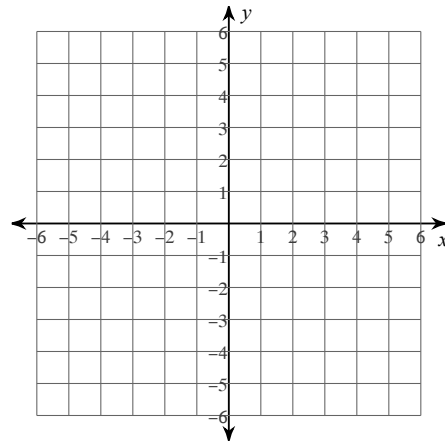
98) $y = \dfrac{7}{4}x + 4$
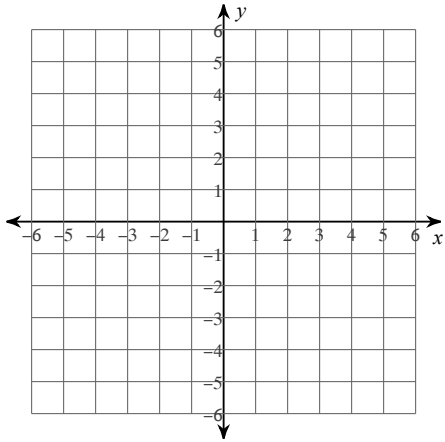
99) $y = -5x - 4$
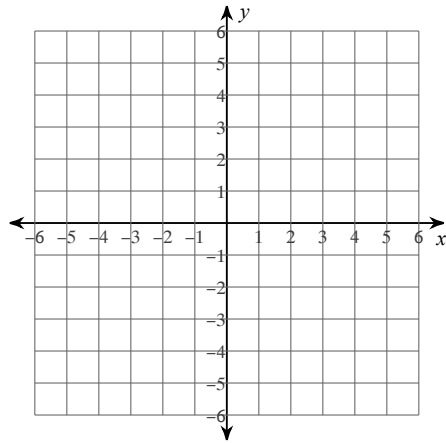
100) $x = -4$
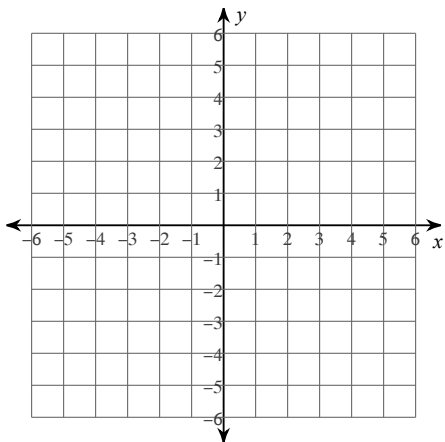
101) $y = \dfrac{1}{4}x - 1$
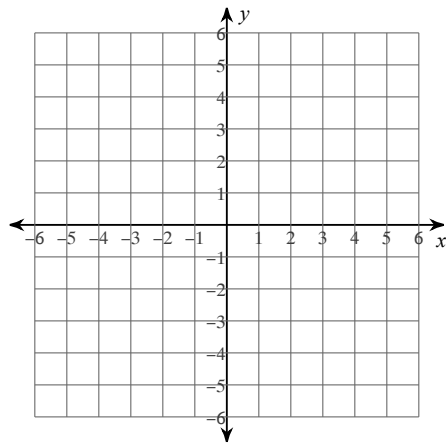
102) $y = -x - 3$
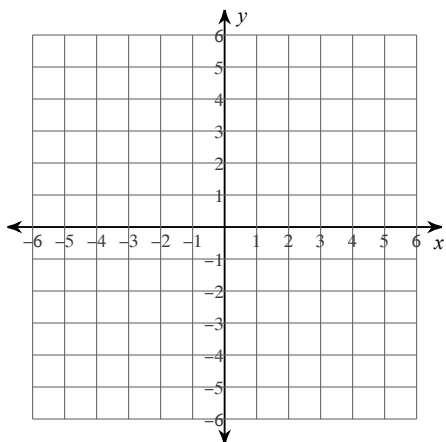
103) $y = 1$
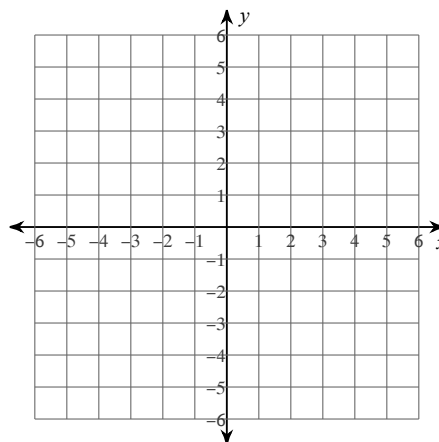
Find the slope of each line.

104)
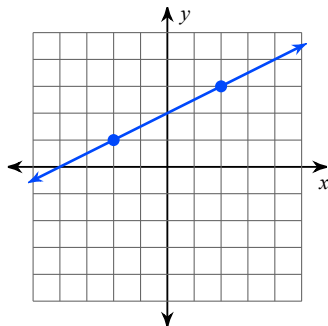
105)
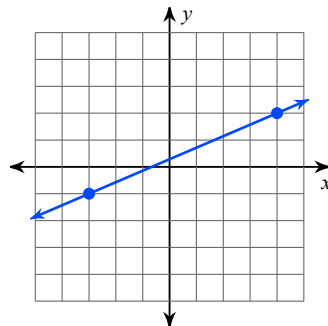
106)
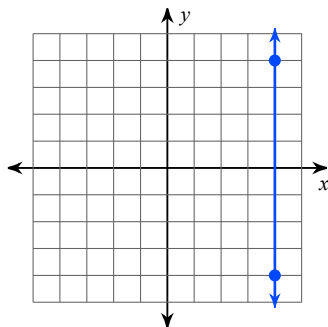
107)
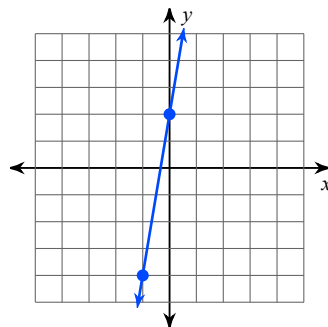
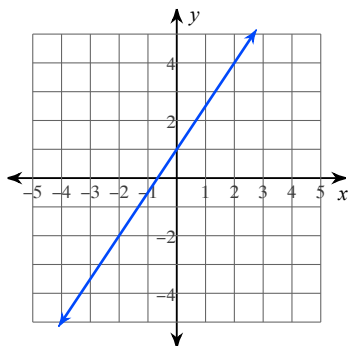**Find the slope of the line through each pair of points.**

108) $(-11, 2), (-16, -14)$
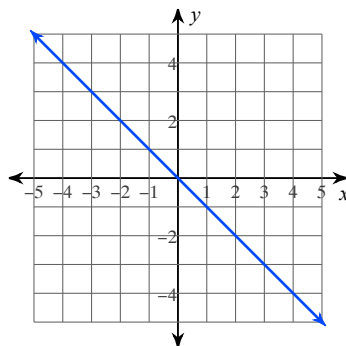
109) $(10, 11), (-16, 4)$

110) $(-7, 19), (-15, -3)$

111) $(12, -18), (-11, -18)$

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

112)

113)

114)
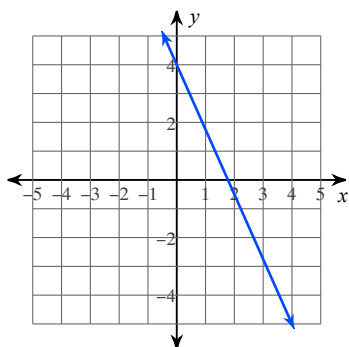
115)
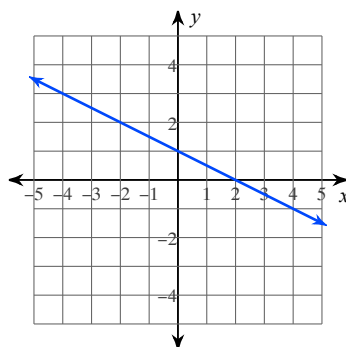
Solve each equation.

116) $-110 = -6 + 8(8 - 3x)$

117) $175 = 5(7r + 7) - 7r$

118) $192 = -6(-8 + 3x)$

119) $-84 = -6(v + 8)$

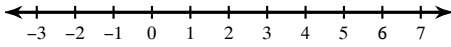120) $-6x - 4(1 + 7x) = -6(6x + 2) + 6x$

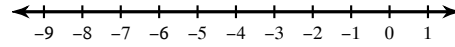121) $-(1 + 7r) = 3(r - 4) + 1$

122) $-5(5n - 1) = -5(4n + 8)$

123) $8(k - 5) = 4(k + 3)$

Solve each inequality and graph its solution.
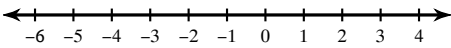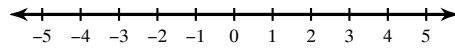
124) $-6(5k + 3) > -8k - 40$

−3 −2 −1 0 1 2 3 4 5 6 7

125) $18 + 5v \le -4v - 5(8 + 4v)$

−9 −8 −7 −6 −5 −4 −3 −2 −1 0 1

126) $-6p - 3(6p + 6) < 16 - 7p$

−6 −5 −4 −3 −2 −1 0 1 2 3 4

127) $3k + 6(k + 1) \ge 8 + 7k$

−5 −4 −3 −2 −1 0 1 2 3 4 5

Write an inequality for each graph.

128)

−7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7

129)

−7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7

130)

−7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7

131)

−7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7
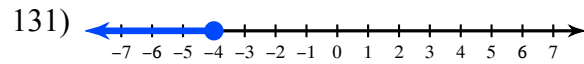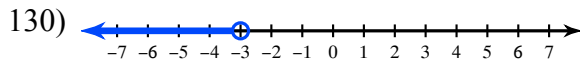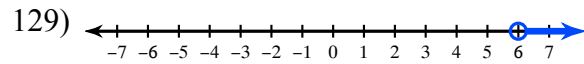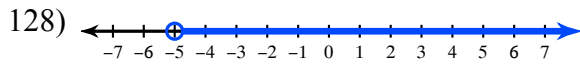
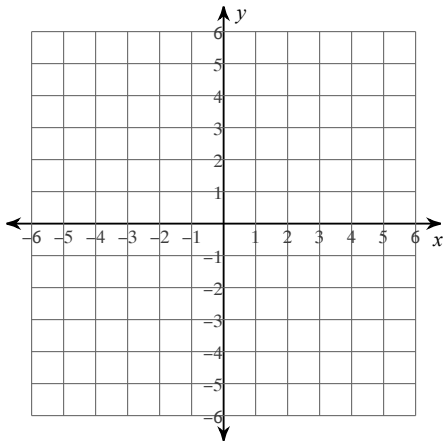**Sketch the graph of each linear inequality.**

132) $y < -x - 3$
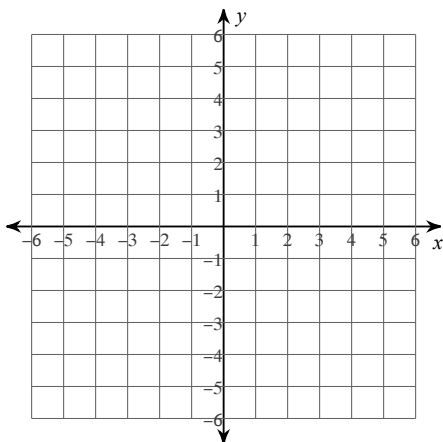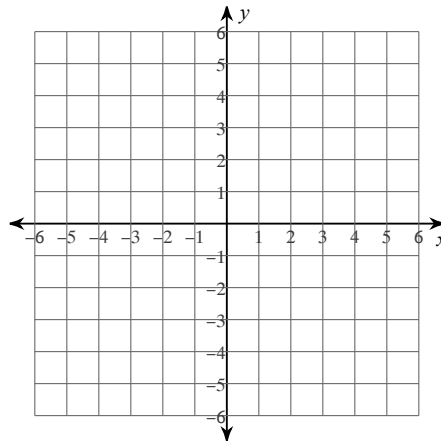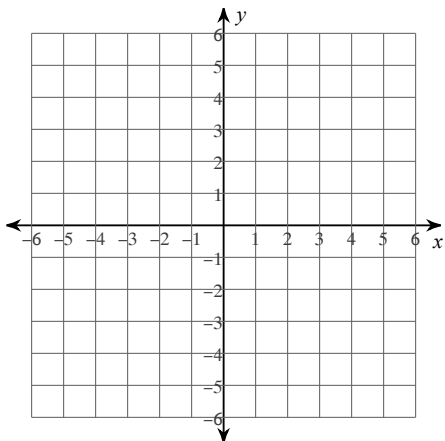
133) $y > -\dfrac{4}{3}x - 3$

134) $y \le -\dfrac{1}{2}x - 4$

135) $y > -4x - 3$

State if there appears to be a positive correlation, negative correlation, or no correlation. When there is a correlation, identify the relationship as linear or nonlinear. Also find the slope-intercept form of the equation of the line that best fits the data.

136)

X	Y
830	9
620	2

X	Y
10	10
310	4

X	Y
930	2
10	1

137)

X	Y
10	770
30	420

X	Y
60	170
100	210

X	Y
80	140
50	250

138)

X	Y
8.4	1
2.9	4

X	Y
5.9	3
4.7	3

X	Y
1	5
6.5	3

139)

X	Y
1,000	90
700	840
300	36,980

X	Y
100	363,130
200	138,610
700	1,450

Answers to Summer Review

1) 4×10^1 2) 9.2×10^5 3) 500   4) 25800

5) 2.8%, $2.8 \cdot 10^{-1}$, 2.8, $\sqrt{8}$, 2.88

6) 5.9, $\dfrac{47}{8}$, $\sqrt{35}$

7) Y-intercept: The cost of a flight that doesn't go anywhere
   $98

8) Y-intercept: The wind speed of a hurricane with an air pressure of 0 kPa
   62 knots

9) Y-intercept: Number of nickels in a sample of 1,000 from a year in which none were minted
   21 nickels

10) Y-intercept: The average electricity consumption for a daily average temperature of 0°F
   33 kWh

11) Y-intercept: The number of marriage licenses issued in the year 0
   117,200

12) Y-intercept: Number of nickels in a sample of 1,000 from a year in which none were minted
   17 nickels

13) Y-intercept: The average electricity consumption for a daily average temperature of 0°F
   41 kWh

14) Y-intercept: The cost of a flight that doesn't go anywhere
   $106

15) Independent   16) Dependent   17) Dependent   18) Independent
19) Z, Q, R   20) Q, R   21) N, W, Z, Q, R   22) I, R
23) Q, R   24) I, R   25) 16   26) 6
27) 19   28) 8   29) 20   30) 16
31) 19   32) 17   33) 21   34) 22
35) 725.8   36) 166.5   37) 13.4   38) 7.8
39) 93.2%   40) $8,250.00   41) $24.90   42) supplementary
43) adjacent   44) complementary   45) adjacent   46) supplementary
47) vertical   48) complementary   49) vertical   50) 25.4 cm²
51) 1508 in²   52) 268 cm²   53) 220.8 ft²   54) 330 km³
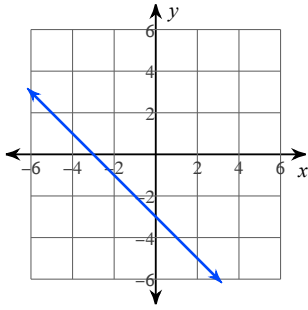55) 452.4 m³   56) 75 in³   57) 1885 km³

58)

59)
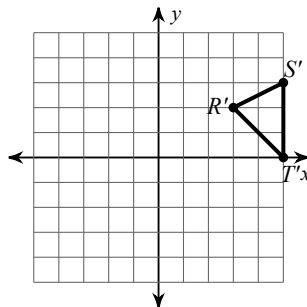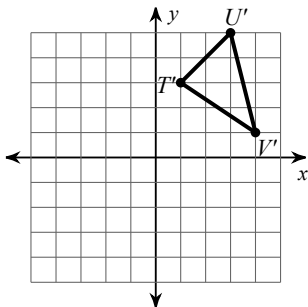
60) $X'(5, 1)$, $W'(3, 2)$, $V'(-1, 0)$, $Y'(3, -3)$
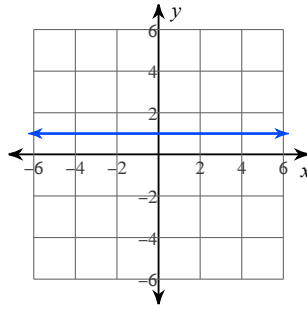62) 12.4   63) 14.4
66) 7.6   67) 7.9
70) 11   71) 27

61) $S'(-2, -3)$, $T'(-3, 1)$, $U'(1, 2)$, $V'(2, 0)$
64) 8.8   65) 3.1
68) 73   69) 33

72)

73)

74)

75)

76)

77)

78)

79)

80) 10

81) 3

82) 3

83) −5

84) −7

85) −7

86) −6

87) 16

88) 22

89) −50

90) 12

91) −54

92)

93)

94)

95)

96)

97)

98)

99)

100)

101)
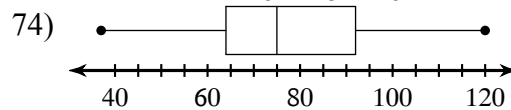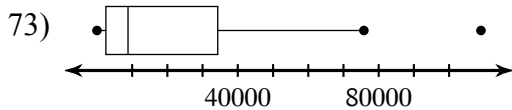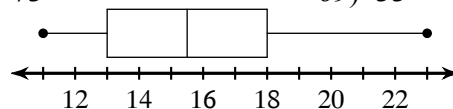
102)

103)

104) $\dfrac{1}{2}$

105) $\dfrac{3}{7}$

106) Undefined

107) 6

108) $\dfrac{16}{5}$

109) $\dfrac{7}{26}$

110) $\dfrac{11}{4}$

111) 0

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

113) $y = -x$

114) $y = -\dfrac{9}{4}x + 4$
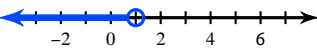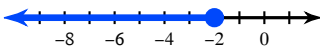
115) $y = -\dfrac{1}{2}x + 1$

116) $\{7\}$
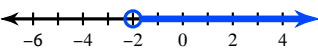
117) $\{5\}$

118) $\{-8\}$

119) $\{6\}$

120) $\{2\}$

121) $\{1\}$
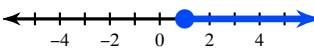
122) $\{9\}$
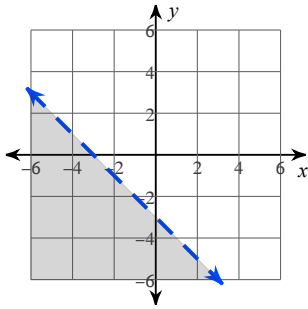
123) $\{13\}$

124) $k < 1$:

125) $v \le -2$:

126) $p > -2$:

127) $k \ge 1$:

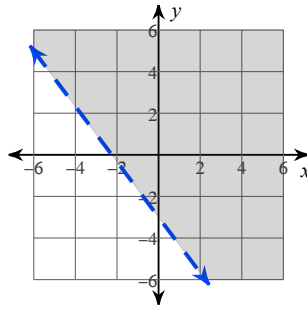128) $n > -5$
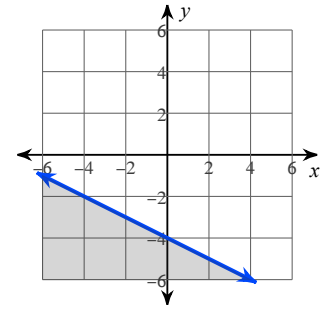
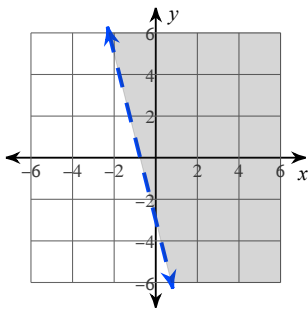129) $m > 6$

130) $p < -3$

131) $p \le -4$

132)

133)

134)

135)

136) No correlation

137) Negative correlation
Nonlinear
$y = -6.0935x + 661.81$

138) Negative correlation
Linear
$y = -0.47918x + 5.5146$

139) Negative correlation
Nonlinear
$y = -312.46x + 246420$