eSpyMath Pre-Algebra

Level: 3

Round each to the place indicated.

1) 2.29265

2) 1<u>5</u>5,484,864

Write each numeral in words.

3) 921,057,084.062

4) 8,000,000.861

Evaluate each expression.

5) $37 + 74 -)52 - (- 53$

6) $38 - 71 - (-15) + (-20)$

Find each product.

7) $8 - \times 6 - \times 3$

8) $-4 \times -9 \times -4$

Find each quotient.

9) $31 - \div 961 -$

10) $224 \div -16$

Write the prime-power factorization of each.

11) $15p^2$

12) $89x^2$

Find the GCF of each.

13) $05n84, 07, {}^2n$

14) $40, 56y, 80x$

Find the LCM of each.

15) $04m06, {}^2m^3n, 04m^4$

16) $36x^3, 36yx, 27y^2x$

Simplify each. Write your answer as a mixed number when possible.

17) $\dfrac{156}{96}$

18) $\dfrac{180}{126}$

Write each as a fraction.

19) 79%

20) 53%

Write each as an algebraic expression.

21) the 7th power of n is less than or equal to 25

22) half of t is equal to 18

Evaluate each using the values given.

23) $y - x - (-9 - (x - y))$; use $x = 2$, and $y = 10$

24) $m(nm - n^2)$; use $m = -3$, and $n = -5$

Simplify each expression.

25) $-4(r + 7) - 4(1 + 5r)$

26) $4(2 + 4b) - 6b(1 + b)$

Solve each equation.

27) $151 = 72 - x$

28) $42n = 2730$

29) A hungry elf ate 12 of your muffins. That was $\dfrac{2}{3}$ of all of them! How many are left?

30) If the weight of a package is multiplied by $\dfrac{2}{3}$ the result is 62.2 pounds. Find the weight of the package.

Solve each equation.

31) $\dfrac{x - 11}{9} = 3$

32) $\dfrac{17 + x}{11} = 5$

33) A wise man once said, "500 reduced by 4 times my age is 108." What is his age?

34) Eduardo bought seven boxes. A week later half of all his boxes were destroyed in a fire. There are now only 22 boxes left. With how many did he start?
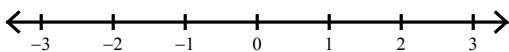
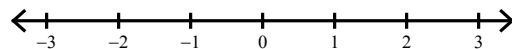**Solve each equation.**

35) $12(p + 1) = 6(p - 4)$

36) $-5(4 + 10x) = -2(10 - 6x)$

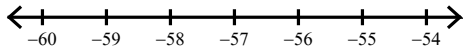**Draw a graph for each inequality.**

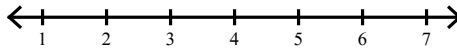37) $-n > 0$

38) $-k \geq \dfrac{1}{2}$
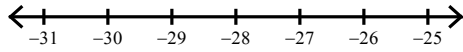
Solve each inequality and graph its solution.

39) $-84x < 4788$
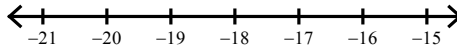

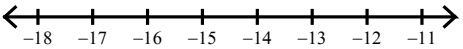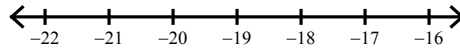40) $-60r \le -240$

41) $3 + 3n \ge -78$

42) $\dfrac{b - 11}{-7} \ge 4$

43) $-6(x - 10) + 9x > -3(6 + x)$

44) $-7v - 8v \le 12(v + 7) + 3(-8v - 8)$

Each number is divisible by which of the following: 2, 3, 5, 6, 9, 10?

45) 8305

46) 8308

Simplify. Your answer should contain only positive exponents.

47) $\dfrac{9v^{-4} \cdot -9u^{-2}v^{-1}}{-7u^3}$

48) $\dfrac{-2x^2 y^5 \cdot -4x^{-5}y^5 \cdot -6x^{-2}}{-2yx^{-5}}$

Write each number in scientific notation.

49) 400

50) 664000

Simplify. Write each answer in scientific notation.

51) $\left(9.28 \times 10^5\right)\left(2.2 \times 10^{-3}\right)$

52) $\left(5.1 \times 10^{-8}\right)\left(2 \times 10^{-8}\right)$

State if each pair of ratios forms a proportion.

53) $\dfrac{34}{47.5}$ and $\dfrac{6.8}{9.5}$

54) $\dfrac{5.5}{8.3}$ and $\dfrac{11}{16.6}$

Solve each proportion.

55) $-\dfrac{b}{5} = \dfrac{19}{10}$

56) $-\dfrac{7}{16} = -\dfrac{15}{r}$

Answer each question. Round your answer to the nearest tenth. Round dollar amounts to the nearest cent.

57) Jose reduced the size of a frame to a height of 6 in. What is the new width if it was originally 26 in wide and 30 in tall?
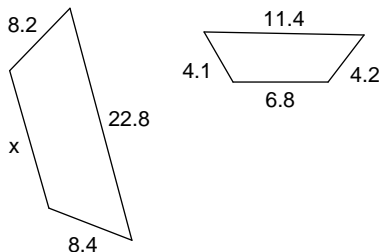
58) A painting is 31.2 in wide and 40.8 in tall. If it is reduced to a height of 5.1 in then how wide will it be?

Each pair of figures is similar. Find the missing side.

59)

8.3   5.3   8.3   42.4   66.4   x

60)

8.2   22.8   x   8.4   11.4   4.1   4.2   6.8
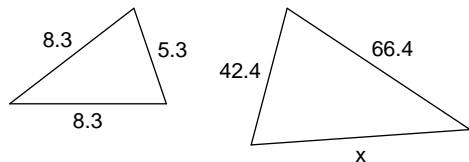
Answer each question and round your answer to the nearest tenth.

61) A model plane is 5 cm long. If it was built with a scale of 1 cm : 2.6 m then how long is the real plane?

62) A particular train is 20 ft tall. A model of it was built with a scale of 0.6 in : 3 ft. How tall is the model?

Write each as a fraction.

63) 350%

64) 964%

Solve each problem.

65) 6% of 349 is what?

66) 14% of 276 is what?

Find each percent change. Round to the nearest tenth of a percent. State if it is an increase or decrease.

67) From 378 to 139

68) From 382 to 3

Find the selling price of each item.

69) Cost of a sled: $149.50
   Markup: 81%
   Discount: 29%
   Tax: 5%

70) Cost of a purse: $129.99
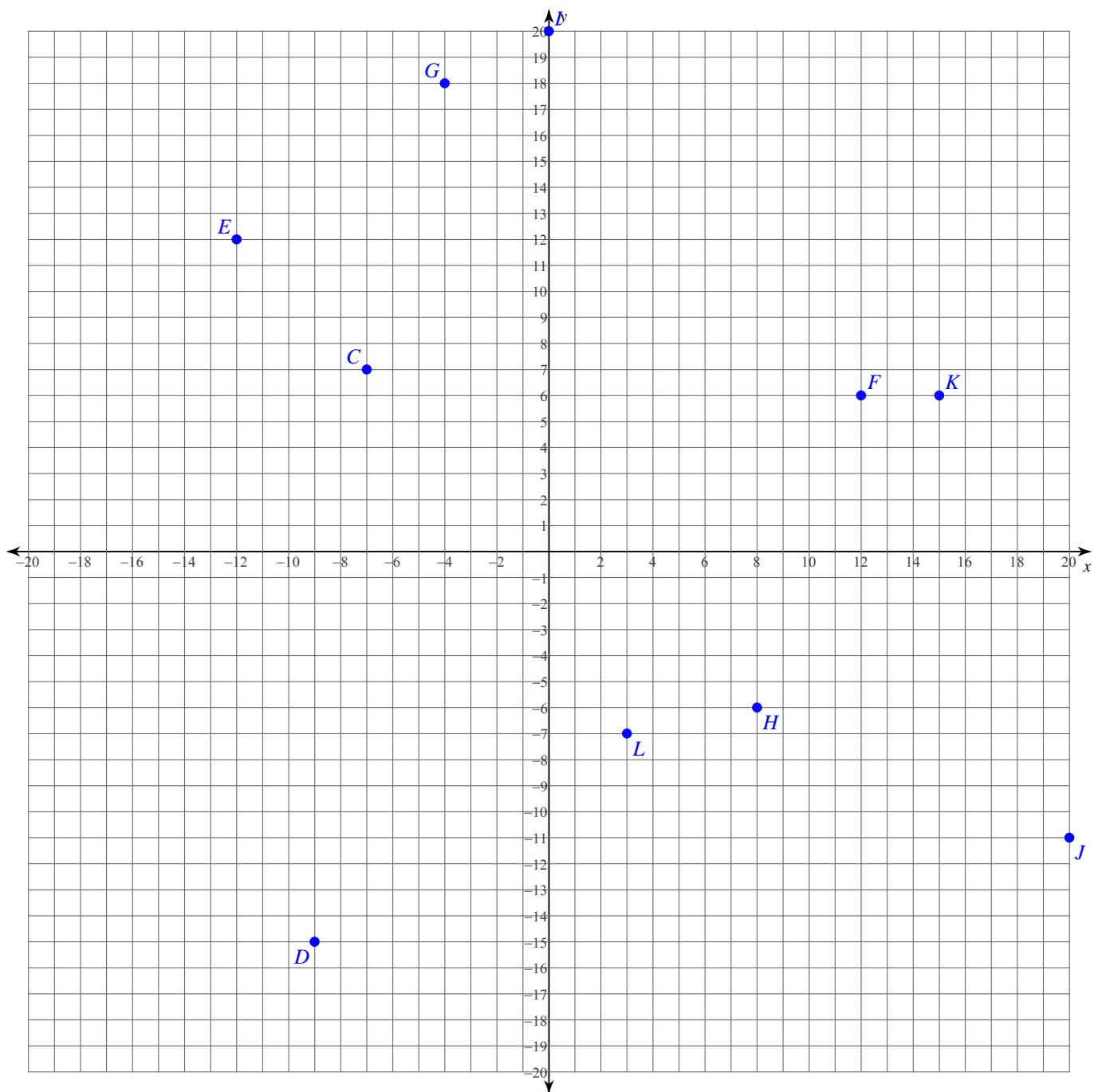   Markup: 30%
   Discount: 10%
   Tax: 2%

Find the total value of the investment after the time given.

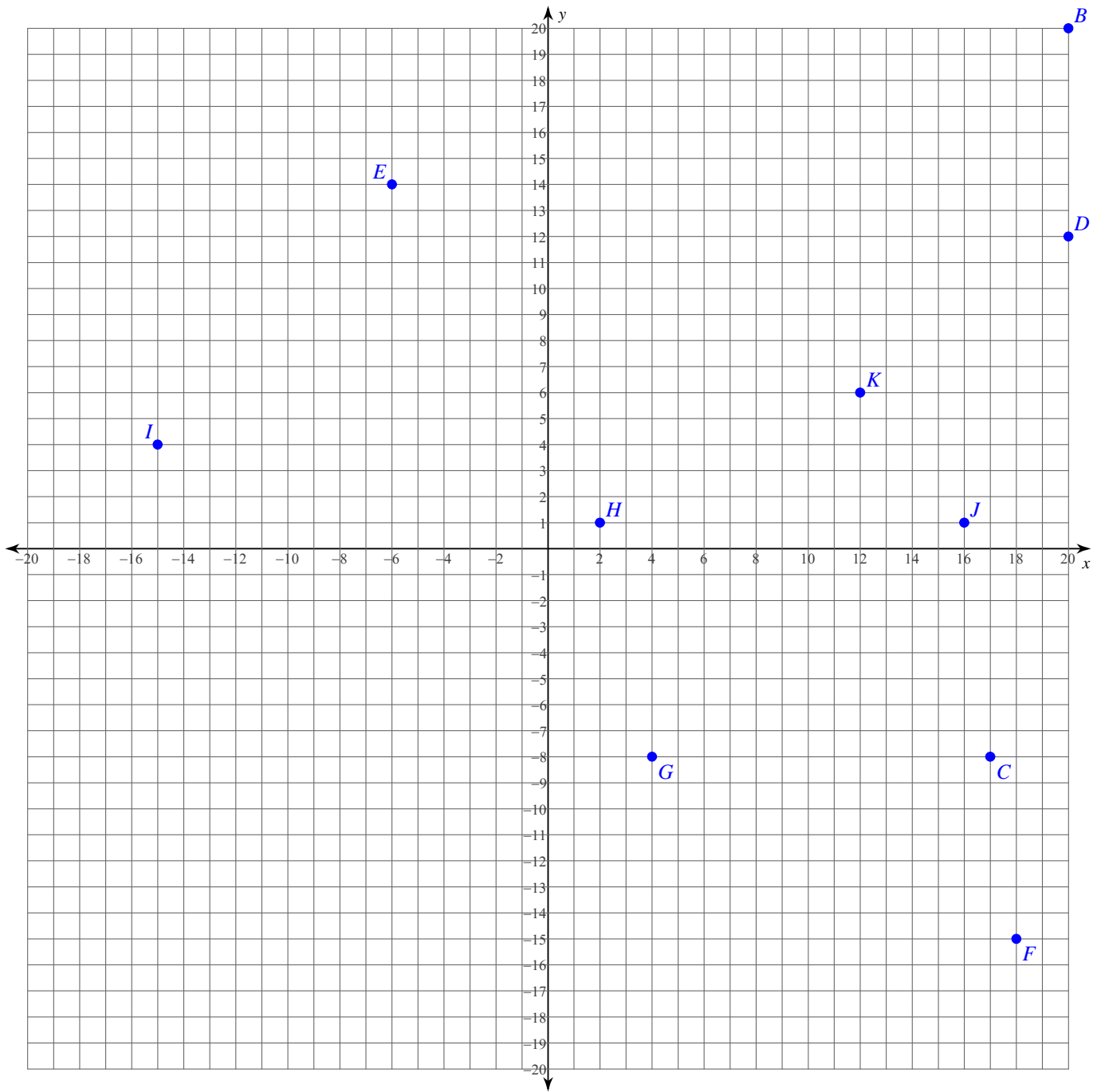71) $680 at 15.7% compounded semiannually for $4\frac{1}{2}$ years

72) $1,840 at 8% compounded quarterly for $2\frac{3}{4}$ years

State the coordinates of each point.

73)

74)

Find the midpoint of the line segment with the given endpoints.

75) $\left(8, -\dfrac{9}{5}\right),\ \left(2\dfrac{4}{7}, -2\right)$

76) $\left(1\dfrac{1}{2}, \dfrac{1}{6}\right),\ \left(3\dfrac{7}{8}, -3\right)$
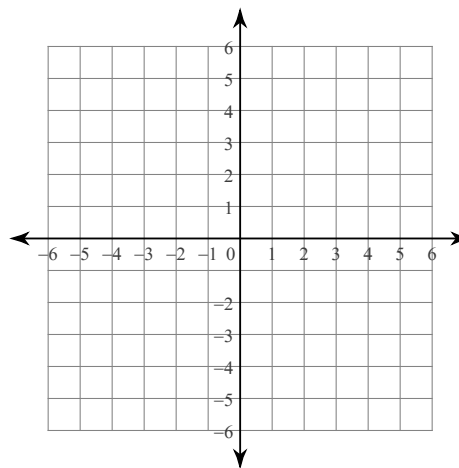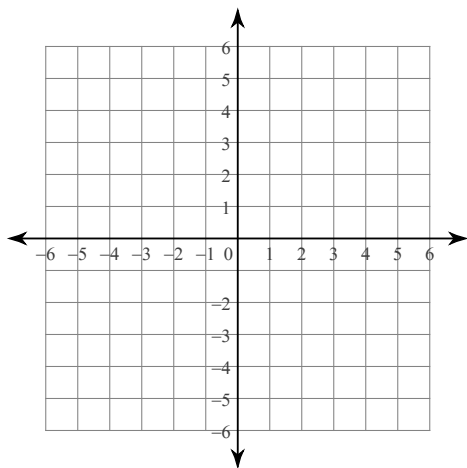
Find the slope of each line.

77) $4x + 5 - y = 0$

78) $1 - \dfrac{1}{4}y = -\dfrac{7}{20}x$

Sketch the graph of each line.
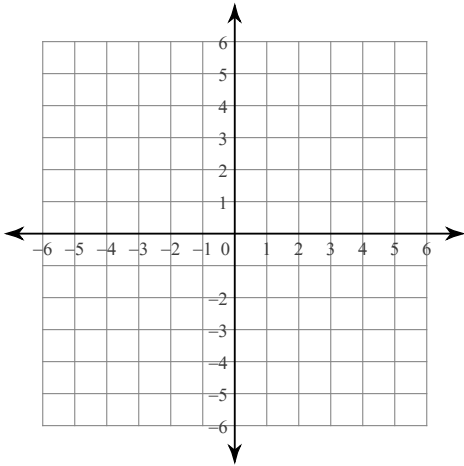
79) $\dfrac{12}{5}x = 2 - \dfrac{2}{5}y$

80) $-\dfrac{3}{16}x = -3 - \dfrac{3}{4}y$

Write the slope-intercept form of the equation of the line through the given points.
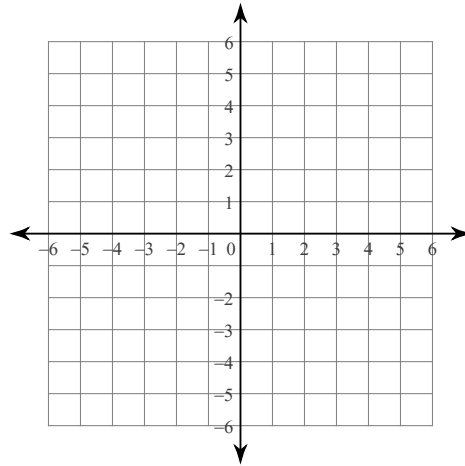
81) through: $(4, -3)$ and $(0, -3)$

82) through: $(0, -3)$ and $(1, 0)$

Sketch the graph of each linear inequality.

83) $5x + 2y \geq 6$

84) $3x - 4y < -4$

Solve each system by graphing.

85) $6y - 3x = -30$
   $-x = 2y + 14$

86) $-5x - 4y = 16$
   $-\dfrac{1}{32}x - \dfrac{1}{8}y = 1$

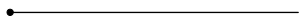**Solve each system by substitution.**

87) $y = -7x - 11$
   $y = 3$

88) $y = 2x + 2$
   $y = -4$

89) At Ashley's Printing Company LLC there are two kinds of printing presses: Model A which can print 70 books per day and Model B which can print 60 books per day. The company owns 15 total printing presses and this allows them to print 960 books per day. How many of each type of press do they have?
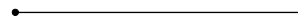
90) Chelsea's Custom Kitchen Supplies sells handmade forks and spoons. It costs the store $1.60 to buy the supplies to make a fork and $1.40 to buy the supplies to make a spoon. The store sells forks for $4.90 and spoons for $4.20. Last April Chelsea's Custom Kitchen Supplies spent $33.20 on materials for forks and spoons. They sold the finished products for a total of $100.10. How many forks and how many spoons did they make last April?
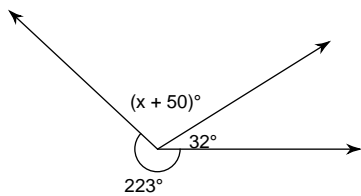
Draw an angle with the given measurement.
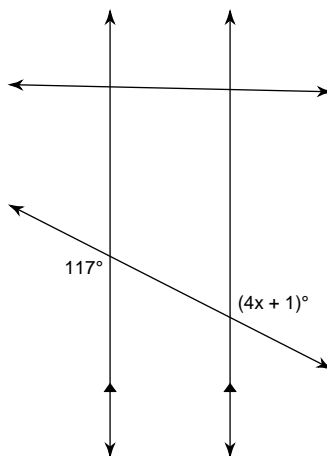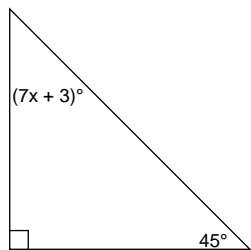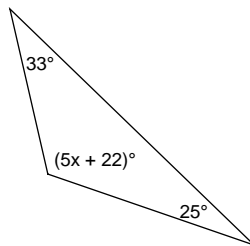
91) 171°

92) 174°

Find the value of x.

93)

$(x + 50)°$
32°
223°

94)

117°
$(4x + 1)°$

95)

$(7x + 3)°$
45°

96)

33°
$(5x + 22)°$
25°

97)

$(5x + 3)°$
55°
$(4x + 12)°$
92°

98)

$(3x + 7)°$
145°
111°
$(2x + 17)°$

Find the area of each.

99)

396 in
289.2 in
42 ft

100)

30.9 ft
27.3 ft
584.4 in
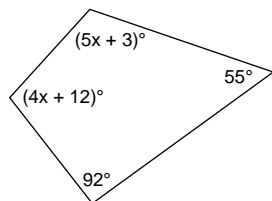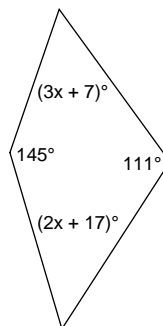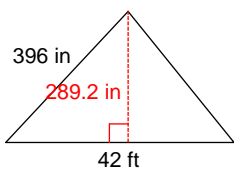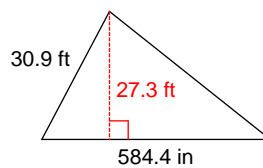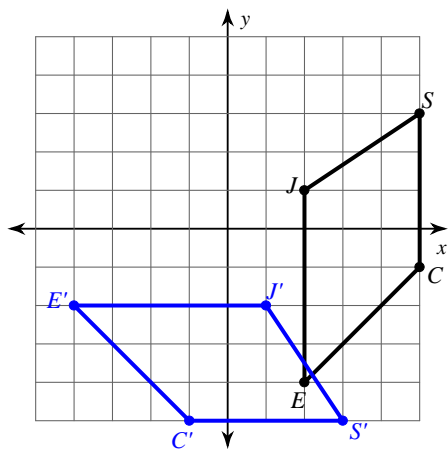
Find the circumference of each circle.

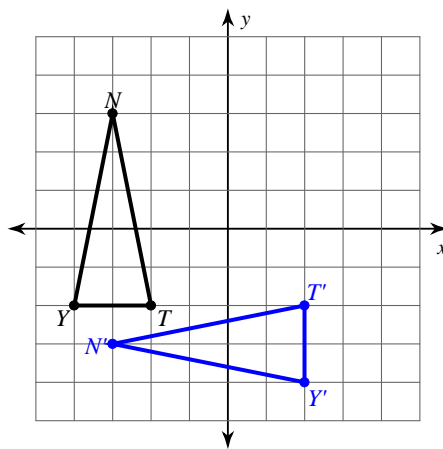101) area = 196π mi²

102) area = 25π km²
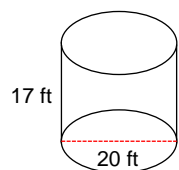
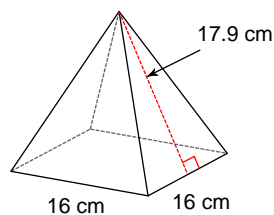**Write a rule to describe each transformation.**

103)

104)

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

105)

17 ft
20 ft

106)

17.9 cm
16 cm   16 cm

Find each square root.

107) $-\sqrt{\dfrac{121}{169}}$

108) $-\sqrt{\dfrac{49}{256}}$

Find each missing length to the nearest tenth.

109) $a = 22.1,\ b = 25,\ c = ?$

110) $a = 16.8,\ b = 43.9,\ c = ?$

Find the distance between each pair of points.

111) $\left(\dfrac{1}{6}, 2\right)$, $\left(-\dfrac{7}{6}, -\dfrac{3}{5}\right)$

112) $\left(5\dfrac{1}{2}, \dfrac{1}{2}\right)$, $\left(\dfrac{7}{5}, -2\dfrac{2}{3}\right)$

Simplify each expression.

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

114) $\left(10y + 14y^4\right) - \left(2y^4 + 2x^3y^3 + 2xy\right) - \left(-9y^4 + 13xy\right)$

Find each product.

115) $\left(5v + 3\right)\left(-v - 4\right)$

116) $\left(b - 3\right)\left(5b - 4\right)$

Answers to Level: 3

1) 2.29

2) 160,000,000

3) nine hundred twenty-one million, fifty-seven thousand, eighty-four and sixty-two thousandths

4) eight million and eight hundred sixty-one thousandths

5) 86

6) −38

7) 144

8) −144

9) 13

10) −14

11) $3 \cdot 17 \cdot p^2$

12) $89x^2$

13) 2

14) 8

15) $120m^4n$

16) $108y^2x^3$

17) $1\frac{5}{8}$

18) $1\frac{3}{7}$

19) $\frac{79}{100}$

20) $\frac{53}{100}$

21) $n^7 \le 25$

22) $\frac{t}{2} = 18$

23) 9

24) 30

25) $-24r - 32$

26) $8 + 10b - 6b^2$
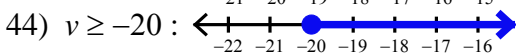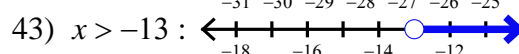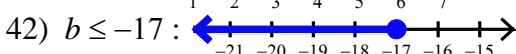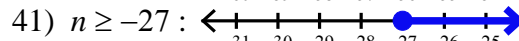
27) $\{-79\}$

28) $\{65\}$

29) 6

30) 93.3

31) $\{38\}$

32) $\{38\}$

33) 98

34) 37

35) $\{-6\}$

36) $\{0\}$

37)

38)

39) $x > -57$:

40) $r \ge 4$:

41) $n \ge -27$:

42) $b \le -17$:

43) $x > -13$:

44) $v \ge -20$:
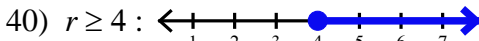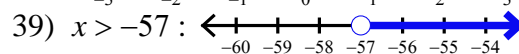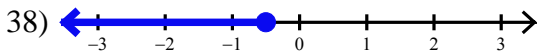
45) 5

46) 2

47) $\frac{81}{7v^5u^5}$

48) $24y^9$

49) 4×10^2

50) 6.64×10^5

51) 2.042×10^3

52) 1.02×10^{-15}

53) Yes

54) Yes

55) $\{-9.5\}$

56) $\{34.28\}$

57) 5.2 in

58) 3.9 in

59) 66.4

60) 13.6

61) 13 m

62) 4 in

63) $3\frac{1}{2}$

64) $9\frac{16}{25}$

65) 20.9

66) 38.6

67) 63.2% decrease

68) 99.2% decrease

69) \$201.73

70) \$155.13

71) \$1,342.43

72) \$2,287.81

73) $C(-7, 7)$ $D(-9, -15)$ $E(-12, 12)$
    $F(12, 6)$ $G(-4, 18)$ $H(8, -6)$
    $I(0, 20)$ $J(20, -11)$ $K(15, 6)$
    $L(3, -7)$

74) $K(12, 6)$ $J(16, 1)$ $I(-15, 4)$
    $H(2, 1)$ $G(4, -8)$ $F(18, -15)$
    $E(-6, 14)$ $D(20, 12)$ $C(17, -8)$
    $B(20, 20)$

75) $\left(5\frac{2}{7}, -1\frac{9}{10}\right)$

76) $\left(2\frac{11}{16}, -1\frac{5}{12}\right)$

77) 4

78) $\frac{7}{5}$

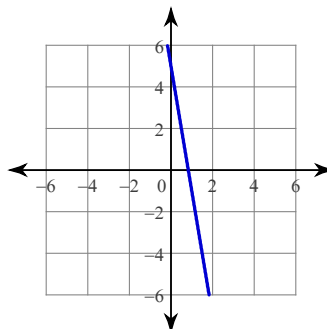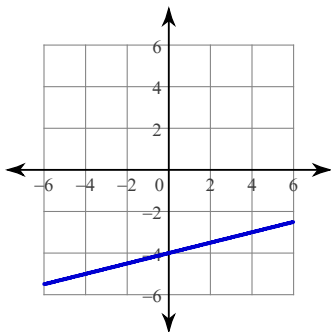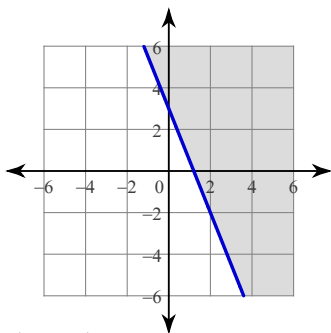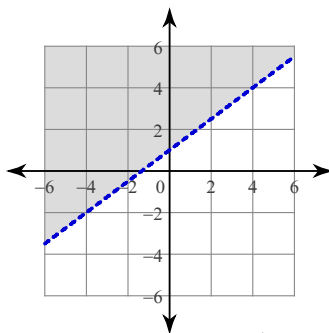79)

-12-

80)

81) $y = -3$

82) $y = 3x - 3$

83)

84)

85) $(-2, -6)$

86) $(4, -9)$

87) $(-2, 3)$

88) $(-3, -4)$

89) 6 of Model A and 9 of Model B

90) 5 forks and 18 spoons

91) _____

92) _____

93) 55

94) 29

95) 6

96) 20

97) 22

98) 16

99) 506.1 ft²

100) 664.755 ft²

101) 28π mi

102) 10π km

103) rotation 90° clockwise about the origin

104) rotation 90° counterclockwise about the origin

105) 1696.5 ft²

106) 828.8 cm²

107) $-\dfrac{11}{13}$

108) $-\dfrac{7}{16}$

109) 33.4

110) 47

111) $\dfrac{\sqrt{1921}}{15}$

112) $\dfrac{\sqrt{24154}}{30}$

113) $-7x^3y^2 + 8x^2$

114) $-2x^3y^3 + 21y^4 - 15xy + 10y$

115) $-5v^2 - 23v - 12$

116) $5b^2 - 19b + 12$