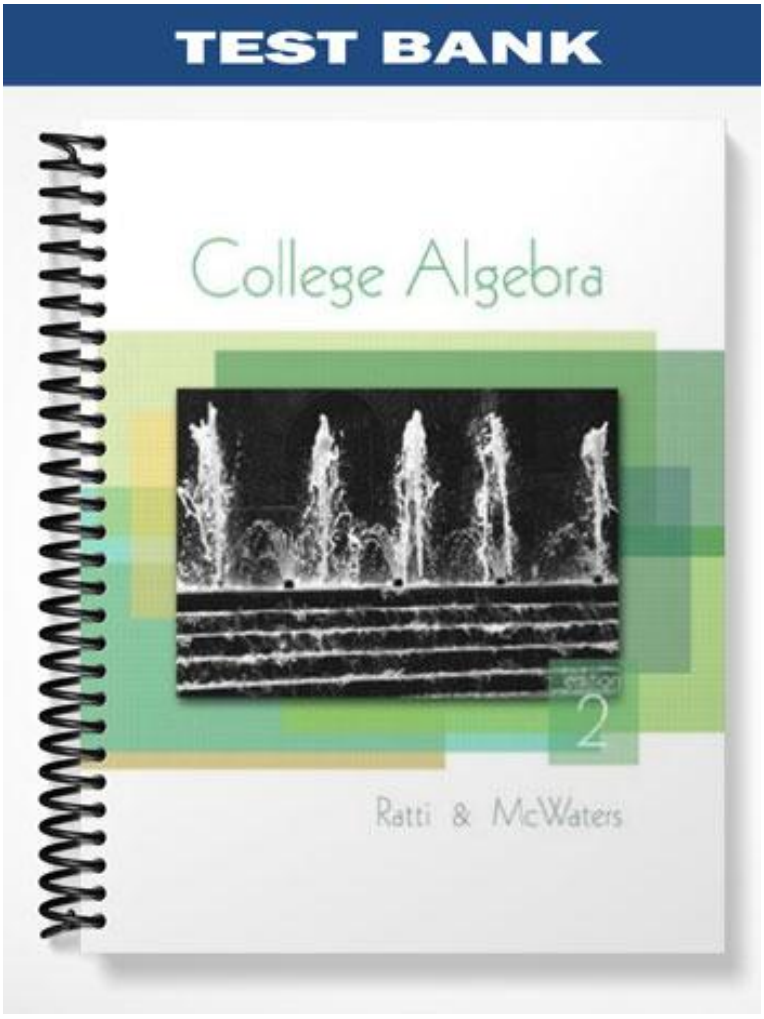
TEST BANK



MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
Decide whether the given number is a solution to the equation preceding it.

1) $p + 4 = 17$; 13 1) _____
A) Yes B) No
Answer: A

2) $p - 8 = 2$; 10 2) _____
A) Yes B) No
Answer: A

3) $2m + 7 = 23$; 7 3) _____
A) Yes B) No
Answer: B

4) $5y + 8(y - 6) = 56$; 8 4) _____
A) Yes B) No
Answer: A

5) $4p + 3p - 2 = 33$; 5 5) _____
A) Yes B) No
Answer: A

6) $(x - 8)^2 = 25$; -3 6) _____
A) Yes B) No
Answer: B

7) $\frac{2}{x} + \frac{1}{3} = 1$; 3 7) _____
A) Yes B) No
Answer: A

8) $\frac{3}{x} = \frac{1}{8} + \frac{1}{x - 4}$; 12 8) _____
A) Yes B) No
Answer: A

9) $8x - 2x = 6x$; 141 9) _____
A) Yes B) No
Answer: A

Find the domain of the variable in the equation. Write the answer in interval notation.

10) $(1 - y) + 4y = 14 - 8(y - 1)$ 10) _____
A) $(-\infty, \infty)$ B) $(-\infty, 0)$ C) $(-\infty, -4) \cup (8, \infty)$ D) $(0, \infty)$
Answer: A

11) $\frac{1}{y - 8} = \frac{1}{y + 4}$ 11) _____
A) $(-4, 8) \cup (8, \infty)$ B) $(-\infty, 4) \cup (4, 8) \cup (8, \infty)$
C) $(-\infty, -4) \cup (-4, 8) \cup (8, \infty)$ D) $(-\infty, -4) \cup (8, \infty)$
Answer: C

12) $\frac{3}{x} = 4 + \sqrt{x}$ 12) _____

A) (0, ∞) B) (-∞, 4) ∪ (4, ∞) C) (-∞, 0) ∪ (0, ∞) D) (3, ∞)

Answer: A

13) $\frac{4x}{(y - 3)(y - 6)} = x + 1\ 3$ 13) _____

A) (-∞, -3) ∪ (-3, 6) ∪ (6, ∞) B) (-3, 6) ∪ (6, ∞)

C) (-∞, 3) ∪ (3, 6) ∪ (6, ∞) D) (-∞, -3) ∪ (6, ∞)

Answer: C

14) $\frac{4}{\sqrt{x}} = x^2 + 1$ 14) _____

A) (-∞, 0) ∪ (0, ∞) B) (-∞, 4) ∪ (4, ∞) C) (-∞, 5) ∪ (5, ∞) D) (0, ∞)

Answer: D

Determine whether the given equation is an identity.

15) 9x + 6x = 14x 15) _____

A) Yes B) No

Answer: B

16) 5(2f - 31) = 10f - 155 16) _____

A) Yes B) No

Answer: A

17) 15k - 44 = 3(5k - 16) 17) _____

A) Yes B) No

Answer: B

18) 3x - (2 - x) + 5x + 2 = 9x + 3 18) _____

A) Yes B) No

Answer: B

19) -4(3x + 6) = -27 - 7x - 2x 19) _____

A) Yes B) No

Answer: B

20) $\frac{10x}{x} = 10$ 20) _____

A) Yes B) No

Answer: A

21) $\frac{x}{4} + 8 = \frac{9x}{20} - 2 - \frac{x}{5} + 10$ 21) _____

A) Yes B) No

Answer: A

22)

22) $\frac{6x}{x-9} = \frac{54}{x-9} + 5$ ___

A) Yes B) No

Answer: B

23) $\frac{-3x+8}{2} + 2 = -\frac{7x}{5}$ 23) _____

A) Yes B) No

Answer: B

Solve the equation.

24) $6x - 8 = 10$ 24) _____

A) { 3} B) { 9} C) { 16} D) { 12}

Answer: A

25) $6x + 14 = 0$ 25) _____

A) $\left\{-\frac{3}{7}\right\}$ B) $\left\{-\frac{7}{3}\right\}$ C) $\left\{\frac{7}{3}\right\}$ D) $\left\{\frac{3}{7}\right\}$

Answer: B

26) $8x - 9 = 0$ 26) _____

A) $\left\{\frac{9}{8}\right\}$ B) $\left\{-\frac{8}{9}\right\}$ C) $\left\{-\frac{9}{8}\right\}$ D) $\left\{\frac{8}{9}\right\}$

Answer: A

27) $-4x - 4 = -1 + 4x$ 27) _____

A) $\left\{\frac{8}{3}\right\}$ B) $\{0\}$ C) $\left\{-\frac{8}{3}\right\}$ D) $\left\{-\frac{3}{8}\right\}$

Answer: D

28) $4(2x - 1) = 16$ 28) _____

A) $\left\{\frac{15}{8}\right\}$ B) $\left\{\frac{5}{2}\right\}$ C) $\left\{\frac{17}{8}\right\}$ D) $\left\{\frac{3}{2}\right\}$

Answer: B

29) $7x - (6x - 1) = 2$ 29) _____

A) $\{1\}$ B) $\{-1\}$ C) $\left\{\frac{1}{13}\right\}$ D) $\left\{-\frac{1}{13}\right\}$

Answer: A

30) $4(y + 3) = 5(y - 3)$ 30) _____

A) { -27} B) { 3} C) { -3} D) { 27}

Answer: D

31) $(-5x - 3) + 8 = -4(x + 7)$ 31) _____

A) { - 17} B) { 2} C) { 33} D) { - 33}

Answer: C

32) $4x + 4 + 5(x + 1) = 6x - 7$ 32) _____

A) $\{-4\}$ B) $\left\{-\frac{16}{3}\right\}$ C) $\{-2\}$ D) $\left\{-\frac{8}{3}\right\}$

Answer: B

33) $-5[-2x + 2 - 2(x + 1)] = 3x - 4$ 33) _____

A) $\{2\}$ B) $\left\{-\frac{4}{17}\right\}$ C) $\left\{-\frac{24}{17}\right\}$ D) $\{12\}$

Answer: B

34) $\frac{x}{7} = \frac{x}{8} + 5$ 34) _____

A) { 56} B) $\{280\}$ C) { 35} D) { 40}

Answer: B

35) $\frac{x}{4} + 2 = \frac{x}{5} + 5$ 35) _____

A) $\{12\}$ B) $\left\{\frac{140}{9}\right\}$ C) $\{28\}$ D) $\{60\}$

Answer: D

36) $-\frac{3}{5}x + \frac{1}{5} = \frac{x}{-10} + \frac{1}{10}$ 36) _____

A) $\left\{\frac{3}{55}\right\}$ B) $\left\{\frac{1}{7}\right\}$ C) $\left\{-\frac{225}{4}\right\}$ D) $\left\{\frac{1}{5}\right\}$

Answer: D

37) $44 - \frac{x}{2} = \frac{x}{9}$ 37) _____

A) $\left\{\frac{242}{9}\right\}$ B) { 4} C) { 72} D) $\{242\}$

Answer: C

38) $\frac{2x}{5} = \frac{x}{3} + 4$ 38) _____

A) { -120} B) { 120} C) { 60} D) { -60}

Answer: C

39) $\frac{8x}{7} - x = \frac{x}{63} - \frac{5}{9}$ 39) _____

A) $\left\{-\frac{35}{8}\right\}$ B) $\left\{-\frac{7}{2}\right\}$ C) $\left\{\frac{7}{2}\right\}$ D) $\left\{\frac{35}{8}\right\}$

Answer: A

40) $\frac{x+9}{5} = \frac{3}{2} - \frac{x-3}{4}$ 40) _____

A) { 30} B) {1} C) {0} D) $\{12\}$

Answer: B

41) $\frac{x+12}{-6} + \frac{x+6}{6} = x + 2$ 41) _____

A) $\{-5\}$ B) $\{-3\}$ C) $\{-1\}$ D) $\{1\}$

Answer: B

42) $\frac{-3x+4}{2} + 1 = -\frac{7x}{5}$ 42) _____

A) $\{10\}$ B) $\left\{\frac{30}{29}\right\}$ C) $\{-10\}$ D) $\{30\}$

Answer: D

43) $\frac{2x-6}{4} + \frac{2x+9}{5} = \frac{5}{2}$ 43) _____

A) $\left\{\frac{22}{9}\right\}$ B) $\left\{-\frac{7}{36}\right\}$ C) $\left\{\frac{58}{9}\right\}$ D) $\left\{\frac{28}{9}\right\}$

Answer: A

Solve the rational equation.

44) $\frac{3}{x} - 3 = \frac{15}{x}$ 44) _____

A) { 12} B) { -3} C) { -4} D) { 4}

Answer: C

45) $\frac{1}{x} + \frac{1}{6} = 3$ 45) _____

A) $\left\{\frac{6}{17}\right\}$ B) ∅ C) { 17} D) $\left\{\frac{6}{19}\right\}$

Answer: A

46) $\frac{x-2}{x-7} - 1 = \frac{5}{x-7}$ 46) _____

A) $\{x \mid x \neq 7\}$ B) {0} C) $\{x \mid x \neq -7\}$ D) { 7}

Answer: A

47) $\frac{1}{6x} + \frac{3}{7} = \frac{5}{42} + \frac{3}{x}$ 47) _____

A) $\left\{\frac{133}{13}\right\}$ B) $\left\{\frac{119}{13}\right\}$ C) $\left\{\frac{119}{23}\right\}$ D) $\left\{-\frac{119}{13}\right\}$

Answer: B

48) $\frac{3}{x-2} = \frac{4}{x+3}$ 48) _____

A) { -17} B) { 17} C) { 5} D) { 1}

Answer: B

49) $\frac{-5}{x+4} = -\frac{1}{6}$ 49) _____

A) $\left\{-\frac{19}{6}\right\}$ B) $\{34\}$ C) ∅ D) $\{26\}$

Answer: D

50) $\frac{6}{x+3} + 3 = \frac{9}{x+3}$ 50) _____

A) { -8} B) { 2} C) { -2} D) ∅

Answer: C

51) $\frac{2x}{x-1} = \frac{2}{x-1} + 1$ 51) _____

A) {0} B) { 1} C) {x | x ≠ 1} D) ∅

Answer: D

52) $\frac{1}{3x+6} + \frac{1}{12} = \frac{7}{48} - \frac{1}{4x+8}$ 52) _____

A) $\left\{-\frac{22}{3}\right\}$ B) $\left\{\frac{22}{3}\right\}$ C) ∅ D) { 22}

Answer: B

Solve the formula for the specified variable.

53) $A = \frac{1}{2}bh$ for h 53) _____

A) $h = \frac{A}{2b}$ B) $h = \frac{b}{2A}$ C) $h = \frac{Ab}{2}$ D) $h = \frac{2A}{b}$

Answer: D

54) $S = 2\pi rh + 2\pi r^2$ for h 54) _____

A) $h = \frac{S - 2\pi r^2}{2\pi r}$ B) h = 2π(S - r) C) $h = \frac{S}{2\pi r} - 1$ D) h = S - r

Answer: A

55) $V = \frac{1}{3}Bh$ for B 55) _____

A) $B = \frac{h}{3V}$ B) $B = \frac{V}{3h}$ C) $B = \frac{3h}{V}$ D) $B = \frac{3V}{h}$

Answer: D

56) $P = s_1 + s_2 + s_3$ for s_3 56) _____

A) $s_3 = s_1 + P - s_2$ B) $s_3 = P - s_1 - s_2$ C) $s_3 = s_1 + s_2 - P$ D) $s_3 = P + s_1 + s_2$

Answer: B

57) $F = \frac{9}{5}C + 32$ for C 57) _____

A) $C = \frac{F - 32}{9}$ B) $C = \frac{5}{9}(F - 32)$ C) $C = \frac{9}{5}(F - 32)$ D) $C = \frac{5}{F - 32}$

Answer: B

58) A =

$\frac{1}{2}h(b_1 + b_2)$ for b_2 58) ___

A) $b_2 = \frac{2Ab_1 - h}{h}$ B) $b_2 = \frac{A - hb_1}{2h}$ C) $b_2 = \frac{2A - hb_1}{h}$ D) $b_2 = \frac{hb_1 - 2A}{h}$

Answer: C

59) $d = rt$ for t 59) _____

A) $t = \frac{d}{r}$ B) $t = \frac{r}{d}$ C) $t = d - r$ D) $t = d\,r$

Answer: A

60) $P = 2L + 2W$ for W 60) _____

A) $W = d - 2L$ B) $W = \frac{P - L}{2}$ C) $W = P - L$ D) $W = \frac{P - 2L}{2}$

Answer: D

61) $A = P(1 + nr)$ for r 61) _____

A) $r = \frac{P - A}{Pn}$ B) $r = \frac{A}{n}$ C) $r = \frac{A - P}{Pn}$ D) $r = \frac{Pn}{A - P}$

Answer: C

62) $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$ for c 62) _____

A) $c = \frac{a + b}{ab}$ B) $c = ab(a + b)$ C) $c = a + b$ D) $c = \frac{ab}{a + b}$

Answer: D

Solve the problem.

63) A rectangle has a perimeter of 80 ft and a length of 30 ft. Find the width of the rectangle. 63) _____

A) 8 ft B) 10 ft C) 70 ft D) 40 ft

Answer: B

64) A triangle has an area of 153 m^2 and a height of 17 m. Find the base of the triangle. 64) _____

A) 18 m B) 22 m C) 17.5 m D) 306 m

Answer: A

65) A circle has a circumference of 56π m. Find the radius of the circle. 65) _____

A) 14 m B) 56 m C) 9 m D) 28 m

Answer: D

66) The area of a trapezoid is 45 square feet. If the bases are 8 ft and 10 ft, find the height of the trapezoid. 66) _____

A) 1.5 ft B) 10 ft C) 5 ft D) 3 ft

Answer: C

67) A cylindrical container has a volume of 833π in^3 and a radius of 7 in. Find the height of the container. 67) _____

A) 4 in B) 7 in C) 17 in D) 22 in
Answer: C

68) A circular hole is filled with concrete to make a footing for a load-bearing pier. The hole measures 15 inches across and requires 2.3 bags of concrete in order to fill it to ground level. What is the depth of the hole? Round your answer to the nearest inch. (One bag of concrete, when mixed with the appropriate amount of water, makes 1800 $in.^3$ of material.) 68) _____
A) 23 in. B) 27 in. C) 29 in. D) 20 in.
Answer: A

69) If P dollars are invested at a simple interest rate r (in decimals), the amount A that will be available after t years is A = P + Prt. Find the total amount in an account if $ 1900 is invested at 17% simple interest for 5 years. 69) _____
A) $ 2458.82 B) $ 1615.00 C) $ 3515.00 D) $ 2223.00
Answer: C

70) If P dollars are invested at a simple interest rate r (in decimals), the amount A that will be available after t years is A = P + Prt. If $ 100 is invested at a rate of 16.4% simple interest, how long will it before the amount of money available is $ 149.20? 70) _____
A) 0.5 yr B) 5.5 yr C) 3 yr D) 1.2 yr
Answer: C

71) If P dollars are invested at a simple interest rate r (in decimals), the amount A that will be available after t years is A = P + Prt. Determine the amount of money that was invested if $ 1337.60 resulted from a 2-year investment at 10.8%. 71) _____
A) $ 1303.70 B) $ 1218.80 C) $ 237.60 D) $ 1100.00
Answer: D

72) There is a relationship between the expected number of tickets sold for a raffle and the dollar value of the prize for the raffle. The equation T - 6P = 200 describes this relationship, where T is the expected number of tickets sold, and P is the dollar value of the raffle prize. Suppose the expected ticket sales for a certain raffle are 5000. Determine the dollar value of the raffle prize. 72) _____
A) $800 B) $4800 C) $750 D) $30,200
Answer: A

73) The equation V = -2000t + 20,000 describes the value in dollars of a certain model of car after it is t years old. If a car is worth $ 12,000, find the age of the car. 73) _____
A) 3 yr B) 4 yr C) 5 yr D) 6 yr
Answer: B

74) Mark has $ 90 to spend on salmon at $5.00 per pound and/or chicken at $3.00 per pound. If he buys s pounds of salmon and c pounds of chicken, the equation 5s + 3c = 90 must be satisfied. How much salmon did Mark buy if he bought 15 pounds of chicken? 74) _____
A) 13 lb B) 16 lb C) 5 lb D) 9 lb
Answer: D

75) Yearly sales at a certain department store follow the model $y = 85 - 13.254x$ where y is the total sales in thousands of dollars and x is the number of years after 1992. In what year will the sales first be less than $35,000? 75) _____
A) 1989 B) 1995 C) 1990 D) 1996
Answer: B

76) A repair company's charge for repairing a certain type of copy machine fits the model $y = 47.38 + 0.617x$ where y is the number of dollars charged and x is the number of minutes the repair person is on the job. How many minutes would it take for the cost of repair to reach $ 60? (Round to the nearest minute.) 76) _____

A) 2 min B) 174 min C) 20 min D) 90 min

Answer: C

77) The temperature of water in a certain lake on a day in October can be determined by using the model $y = 15.2 - 0.537x$ where x is the number of feet down from the surface of the lake and y is the Celsius temperature of the water at that depth. Based on this model, at what depth is the water 12 degrees? (Round to the nearest foot.) 77) _____

A) 25 ft B) 51 ft C) 62 ft D) 6 ft

Answer: D

78) In the following formula, y is the minimum number of hours of studying required to attain a test score of x: $y = \frac{0.41x}{100.5 - x}$. How many hours of study are needed to score 90? Round to the nearest hundredth of an hour. 78) _____

A) 3.51 hr B) 35.10 hr C) 7.86 hr D) 101.04 hr

Answer: A

Write an algebraic expression for the specified quantity.

79) Stevie bought a stereo for $ 260 and put it on sale at his store at a 50% markup rate. Let x = the price of the stereo before it was marked up. Write an algebraic expression in x for "the amount of markup on the stereo." 79) _____

A) 0. 50x B) 1. 50x C) x - 0. 50x D) x + 0. 50x

Answer: A

80) A manufacturing company produces 27,000 pairs of shoes a day when it operates in two shifts. The first shift produces $\frac{1}{4}$ as many lamps as the second shift. Let x = the number of pairs of shoes per day produced by the second shift. Write an algebraic expression in x for the number of pairs of shoes per day produced by the first shift. 80) _____

A) $\frac{1}{4} + x = 27;\ 27$

B) $20 + \frac{1}{4}x = 27;\ 28$

C) $27 + \frac{1}{4}x = 20;\ 28$

D) $\frac{1}{4}x - 20 = 27;\ 188$

Answer: B

81) A manufacturing company produces 60,000 pairs of shoes a day when it operates in two shifts. The first shift produces $\frac{5}{8}$ as many pairs of shoes as the second shift. Let x = the number of pairs of shoes per day produced by the second shift. Write an algebraic expression in x for the number of pairs of shoes per day produced by the first shift. 81) _____

A) $\frac{5}{8}x$ B) $\frac{8}{5}x$ C) $\frac{5}{8} + x$ D) $\frac{60{,}000}{8}x$

Answer: A

82) Mardi received an inheritance of $ 60,000. She invested part in stocks and the rest in bonds. Let x = the amount

invested in stocks. Write an algebraic expression in x for "the amount invested in bonds."

82) ___ ___

A) 60,000x B) 60,000 - x C) 60,000 + x D) $\frac{60,000}{x}$

Answer: B

83) An auto repair shop charged a customer $ 319.25 to repair a car. The bill listed $ 74.75 for parts and the remainder for labor. Let x = the number of hours of labor it took to repair the automobile. Write an algebraic expression in x for the labor charge per hour. 83) _____

A) $\frac{319.25 - 74.75}{x}$ B) $\frac{319.25x}{74.75}$ C) $\frac{319.25 + 74.75}{x}$ D) $\frac{74.75x}{319.25}$

Answer: A

84) Allison can clean the house in 5 hours working alone. Joel can do the job in 2 hours working alone. Let t = the amount of time it takes Allison and Joel to clean the house working together. Write an algebraic expression in t for (i) the portion of the job completed by Allison in t hours; (ii) the portion of the job completed by Joel in t hours. 84) _____

A) (i) Allison: $\frac{7}{5}$t (ii) Joel: $\frac{7}{5}$t

B) (i) Allison: $\frac{1}{5}$t (ii) Joel: $\frac{1}{2}$t

C) (i) Allison: $\frac{1}{5}$ + t (ii) Joel: $\frac{1}{2}$ + t

D) (i) Allison: $\frac{1}{7}$t (ii) Joel: $\frac{1}{7}$t

Answer: B

85) A merchant has light roast coffee worth $ 3.50 a pound that she wishes to mix with dark roast coffee worth $8.99 a pound. Let x = the number of pounds of dark roast coffee in a 30-pound mixture of light roast coffee and dark roast coffee. Write an algebraic expression in x for (i) the number of pounds of light roast coffee in the 30-pound mixture; (ii) the value of the dark roast coffee in the 30-pound mixture; (iii) the value of the light roast coffee in the 30-pound mixture. 85) _____

A) (i) 30 + x
(ii) $8.99(30 + x)
(iii) $ 3.50x

B) (i) 30 - x
(ii) $8.99(30 - x)
(iii) $ 3.50x

C) (i) 30 - x
(ii) $8.99x
(iii) $ 3.50(30 - x)

D) (i) 30 + x
(ii) $8.99x
(iii) $ 3.50(30 + x)

Answer: C

86) A car radiator has 20 liters of a mixture that is 40% antifreeze. To strengthen the mixture, pure (100%) antifreeze must be added. Let x = the number of liters of pure antifreeze added to the 20-l mixture iter . Write

an algebraic expression for (i) the number of liters of mixture there will be once the pure antifreeze is added; (ii) the number of liters of antifreeze in the mixture obtained by adding the pure antifreeze to the original 20-liter mixture.

86) ___
___

A) (i) 20 - x
(ii) 8 - x

B) (i) 20 - x
(ii) 6.7 + x

C) (i) 20 + x
(ii) 10 + x

D) (i) 20 + x
(ii) 8 + x

Answer: D

Solve the problem.

87) The sum of two numbers is 32 and one number is three times the other. Find the numbers. 87) _____

A) 16, 48
B) 8, 11
C) 3, 24
D) 8, 24

Answer: D

88) The sum of three consecutive odd integers is 99. Find the integers. 88) _____

A) 16, 18, 20
B) 31, 33, 35
C) 29, 31, 33
D) 33, 35, 37

Answer: B

89) The length of a rectangular room is 8 feet longer than twice the width. If the room's perimeter is 208 feet, what are the room's dimensions? 89) _____

A) width = 32 ft; length = 72 ft
B) width = 64 ft; length = 144 ft
C) width = 37 ft; length = 82 ft
D) width = 48 ft; length = 56 ft

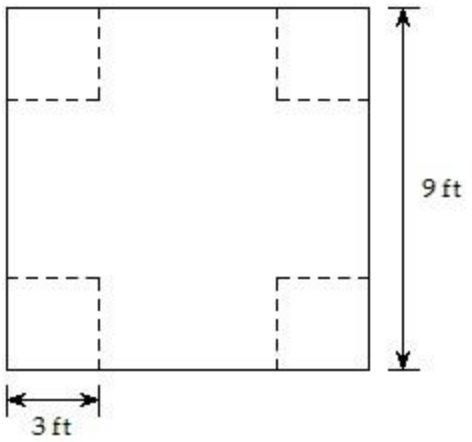
Answer: A

90) The perimeter of a rectangle is 104 inches. Find its dimensions if the width is 4 inches more tha n

one-half its length. 90) ___ ___

A) length: 32 in.; width: 20 in. B) length: 32 in.; width: 36 in.
C) length: 16 in.; width: 20 in. D) length: 32 in.; width: 64 in.
Answer: A

91) An open box is to be constructed from a rectangular sheet of cardboard 9 feet wide by cutting out a 3-foot square from each corner and folding up the sides. The volume of the box is to be 36 cubic feet. What is the length of the rectangle? 91) _____



A) 3 ft B) 20 ft C) 4 ft D) 10 ft
Answer: D

92) Mardi received an inheritance of $ 40,000. She invested part at 11% and deposited the remainder in tax-free bonds at 12%. Her total annual income from the investments was $4500. Find the amount invested at 11%. 92) _____

A) $ 15,000 B) $ 35,500 C) $ 30,000 D) $ 29,000
Answer: C

93) Walt made an extra $ 10,000 last year from a part-time job. He invested part of the money at 7% and the rest at 10%. He made a total of $790 in interest. How much was invested at 10%? 93) _____

A) $ 8000 B) $ 7000 C) $ 5000 D) $ 3000
Answer: D

94) Roberto invested some money at 6%, and then invested $4000 more than twice this amount at 11%. His total annual income from the two investments was $3240. How much was invested at 11%? 94) _____

A) $ 20,000 B) $ 2400 C) $ 12,000 D) $ 24,000
Answer: D

95) Helen Weller invested $ 14,000 in an account that pays 10% simple interest. How much additional money must be invested in an account that pays 13% simple interest so that the average return on the two investments amounts to 11%? 95) _____

A) $ 7000 B) $ 11,000 C) $ 14,000 D) $ 10,000
Answer: A

96) On Monday, an investor bought 100 shares of stock. On Tuesday, the value of the shares went up 6%. How much did the investor pay for the 100 shares if he sold them Wednesday morning for 1325.00 $?

96) _____
A) $ 1275.00 B) $ 1404.50 C) $ 1250.00 D) $ 1300.00
Answer: C

97) You inherit $10,000 with the stipulation that for the first year the money must be invested in two stocks paying 6% and 11% annual interest, respectively. How much should be invested at each rate if the total interest earned for the year is to be $900? 97) _____
A) $6000 invested at 6%; $4000 invested at 11%
B) $4000 invested at 6%; $6000 invested at 11%
C) $5000 invested at 6%; $5000 invested at 11%
D) $3000 invested at 6%; $7000 invested at 11%
Answer: B

98) You inherit $42,000 from a very wealthy grandparent, with the stipulation that for the first year, the money must be invested in two stocks paying 4% and 10% annual interest, respectively. How much should be invested at each rate if the total interest earned for the year is to be $2400? 98) _____
A) $12,000 invested at 4%; $30,000 invested at 10%
B) $30,000 invested at 4%; $12,000 invested at 10%
C) $22,000 invested at 4%; $20,000 invested at 10%
D) $20,000 invested at 4%; $22,000 invested at 10%
Answer: B

99) Jill is 22 kilometers away from Joe. Both begin to walk toward each other at the same time. Jill walks at 3 kilometers per hour. They meet in 4 hours. How fast is Joe walking? 99) _____
A) 4.5 km/hr B) 2.5 km/hr C) 3.5 km/hr D) 3 km/hr
Answer: B

100) Bert is 9 kilometers away from Brenda. Both begin to walk toward each other at the same time. Bert walks at 2.5 kilometers per hour. They meet in 2 hours. How fast is Brenda walking? 100) _____
A) 4 km/hr B) 2.5 km/hr C) 3 km/hr D) 2 km/hr
Answer: D

101) Candy and Delvis are riding bicycles in the same direction. Candy is traveling at a speed of 8 miles per hour, and Delvis is traveling at a speed of 13 miles per hour. In 2 hours what is the distance between them (assuming that they began at the same point and time)? 101) _____
A) 19 mi B) 10 mi C) 7 mi D) 11 mi
Answer: B

102) From a point on a river, two boats are driven in opposite directions, one at 8 miles per hour and the other at 11 miles per hour. In how many hours will they be 57 miles apart? 102) _____
A) 3 hr B) 5 hr C) 1 hr D) 4 hr
Answer: A

103) Tom Quig traveled 220 miles east of St. Louis. For most of the trip he averaged 70 mph, but for one period of time he was slowed to 20 mph due to a major accident. If the total time of travel was 6 hours, how many miles did he drive at the reduced speed? 103) _____
A) 75 mi B) 90 mi C) 80 mi D) 100 mi
Answer: C

104) From a point on a straight road, two cars are driven in opposite directions, one at 54 miles per hour and the other at 51 miles per hour. In how many hours will they be 315 miles apart? 104) _____

A) 3 hr B) 2 hr
C) 4 hr D) Not enough information
Answer: A

105) From a point on a straight road, John and Fred ride bicycles in opposite directions. John rides 5 miles per hour and Fred rides 14 miles per hour. In how many hours will they be 57 miles apart? 105) _____
A) 2 hr B) 4 hr
C) 3 hr D) Not enough information
Answer: C

106) Sarah and Shakina are running in a 4-lap, 1 mile race. Shakina is exactly one lap behind at the moment when Sarah completes her second lap. If Sarah averages 0.16 miles per minute for her last two laps, what must Shakina's average speed be in order for her to just pull even with Sarah at the finish line? 106) _____
A) 0.11 mi/min B) 0.24 mi/min C) 0.21 mi/min D) 0.32 mi/min
Answer: B

107) Martha can rake the leaves in her yard in 3 hours. Her brother can do the job in 7 hours. How long will it take them to do the job working together? 107) _____
A) $\frac{1}{21}$ hr B) $\frac{21}{4}$ hr C) $\frac{21}{10}$ hr D) $\frac{1}{10}$ hr
Answer: C

108) One maid can clean the house in 5 hours. Another maid can do the job in 3 hours. How long will it take them to do the job working together? 108) _____
A) $\frac{1}{15}$ hr B) $\frac{15}{2}$ hr C) $\frac{15}{8}$ hr D) $\frac{1}{8}$ hr
Answer: C

109) Frank can type a report in 7 hours. James takes 5 hours to type it. How long will it take the two of them typing together? 109) _____
A) $\frac{35}{12}$ hr B) $\frac{1}{35}$ hr C) $\frac{1}{12}$ hr D) $\frac{35}{2}$ hr
Answer: A

110) An experienced accountant can prepare a tax return in 12 hours. A novice accountant can do the job in 19 hours. How long will it take them to do the job working together? 110) _____
A) $\frac{228}{31}$ hr B) $\frac{228}{7}$ hr C) $\frac{1}{31}$ hr D) $\frac{1}{228}$ hr
Answer: A

111) A water tank can be filled in 5 minutes and emptied in 7 minutes. If the drain is accidentally left open when the tank is being filled, how long does it take to fill the tank? 111) _____
A) $\frac{35}{2}$ min B) $\frac{1}{35}$ min C) $\frac{35}{12}$ min D) $\frac{1}{12}$ min
Answer: A

112) Two machines are turned on at 8:00 A.M. If one can produce 41 items each hour and the other can produce 63 items each hour, at what time will they produce a total of 728 items? 112) _____
A) 4:30 P.M. B) 2:00 P.M. C) 3:00 P.M. D) 4:00 P.M.

Answer: C

113) Two machines are turned on at 8:00 A.M. If one can produce 44 items each hour and the other can produce 50 items each hour, at what time will they produce a total of 188 items? 113) _____

A) 11:00 A.M. B) 10:00 A.M. C) 11:30 A.M. D) 9:00 A.M.

Answer: B

Solve the mixture problem.

114) It is necessary to have a 40% antifreeze solution in the radiator of a certain car. The radiator now has 70 liters of 20% solution. How many liters of this should be drained and replaced with 100% antifreeze to get the desired strength? 114) _____

A) 23.3 L B) 17.5 L C) 35 L D) 28 L

Answer: B

115) How many liters of a 20% alcohol solution must be mixed with 30 liters of a 90% solution to get a 40% solution? 115) _____

A) 75 L B) 105 L C) 10.5 L D) 7.5 L

Answer: A

116) In a chemistry class, 3 liters of a 4% silver iodide solution must be mixed with a 10% solution to get a 6% solution. How many liters of the 10% solution are needed? 116) _____

A) 1.5 L B) 0.5 L C) 3 L D) 2.5 L

Answer: A

117) A merchant has coffee worth $ 5 a pound that she wishes to mix with 40 pounds of coffee worth $8 a pound to get a mixture worth $6 a pound. How many pounds of the $5 coffee should be used? 117) _____

A) 60 lb B) 120 lb C) 80 lb D) 40 lb

Answer: C

Solve the problem.

118) A bank teller has some five-dollar bills and some twenty-dollar bills. The teller has 5 more of the twenties. The total value of the money is $ 750. Find the number of five-dollar bills that the teller has. 118) _____

A) 31 B) 26 C) 21 D) 36

Answer: B

119) A cashier has a total of 126 bills, made up of fives and tens. The total value of the money is $870. How many ten-dollar bills does the cashier have? 119) _____

A) 78 B) 48 C) 24 D) 72

Answer: B

120) If Gloria received a 10% raise and is now making $ 23,100 a year, what was her salary before the raise? 120) _____

A) $ 21,000 B) $ 22,100 C) $ 22,000 D) $ 21,100

Answer: A

121) Stevie bought a stereo for $ 270 and put it on sale at his store at a 60% markup rate. What was the retail price of the stereo? 121) _____

A) $ 540.00 B) $ 432.00 C) $ 332.00 D) $ 370.00

Answer: B

122) There were 620 people at a play. The admission price was $3.00 for adults and $1.00 for children. The admission receipts were $1260. How many adults and children attended? 122) _____

A) 150 adults and 470 children
B) 315 adults and 305 children
C) 300 adults and 320 children
D) 320 adults and 300 children

Answer: D

123) There were 33,000 people at a ball game in Los Angeles. The day's receipts were $256,000. How many people paid $12.00 for reserved seats and how many paid $5.00 for general admission? 123) _____

A) 20,000 paid $ 12 and 13,000 paid $ 5
B) 22,750 paid $ 12 and 10,250 paid $ 5
C) 10,250 paid $ 12 and 22,750 paid $ 5
D) 13,000 paid $ 12 and 20,000 paid $ 5

Answer: D

124) After a 9% price reduction, a boat sold for $ 22,750. What was the boat's price before the reduction? (Round to the nearest cent, if necessary.) 124) _____

A) $ 25,000 B) $ 24,797.50 C) $ 252,777.78 D) $ 2047.50

Answer: A

125) Inclusive of a 6.6% sales tax, a diamond ring sold for $ 2771.60. Find the price of the ring before the tax was added. (Round to the nearest cent, if necessary.) 125) _____

A) $ 2588.67 B) $ 2600 C) $ 2954.53 D) $ 182.93

Answer: B

126) The president of a certain university makes three times as much money as one of the department heads. If the total of their salaries is $190,000, find each worker's salary. 126) _____

A) president's salary = $142,500; department head's salary = $47,500
B) president's salary = $14,250; department head's salary = $4750
C) president's salary = $47,500; department head's salary = $142,500
D) president's salary = $95,000; department head's salary = $47,500

Answer: A

127) An auto repair shop charged a customer $ 348 to repair a car. The bill listed $ 98 for parts and the remainder for labor. If the cost of labor is $ 50 per hour, how many hours of labor did it take to repair the car? 127) _____

A) 5 hr B) 6 hr C) 5.5 hr D) 4 hr

Answer: A

Use the definition of equality of complex numbers to find the real numbers x and y such that the equation is true.

128) $6 + xi = y + 8i$ 128) _____

A) x = 6, y = 8 B) x = 8, y = 6 C) x = 6, y = -2 D) x = -2, y = 6

Answer: B

129) $x - 8i = 2 + yi$ 129) _____

A) x = 2, y = -8 B) x = -2, y = 10 C) x = -2, y = 6 D) x = 2, y = 8

Answer: A

130) $6 + yi = x + \sqrt{-196}$ 130) _____

A) x = -6, y = -14 B) x = 6, y = -14 C) x = -6, y = 14 D) x = 6, y = 14

Answer: D

131) $x - \sqrt{-169} = 5 + yi$ 131) _____

A) x = -5, y = -13 B) x = 5, y = -13 C) x = -5, y = 13 D) x = 5, y = 13

Answer: B

Perform the operation and write the result in the standard form.

132) (-8 + 3i) + (14 + 2i) 132) _____
A) 6 + 7i B) 14 + 5i C) -6 + 5i D) 6 + 5i
Answer: D

133) (-5 - 8i) + (12 + 5i) 133) _____
A) 7 + 3i B) 12 + 3i C) 7 - 3i D) 12 - 3i
Answer: C

134) (7 - 8i) + (4 - 4i) 134) _____
A) 11 - 4i B) 11 + 12i C) 11 - 12i D) -11 - 12i
Answer: C

135) (8 - 4i) + (2 + 6i) 135) _____
A) -10 + 2i B) 10 - 2i C) 10 + 2i D) -10 - 2i
Answer: C

136) (13 + 7i) - (1 + 4i) 136) _____
A) 14 - 3i B) 12 + 3i C) -14 - 11i D) 14 + 11i
Answer: B

137) (-6 - 5i) - (5 - i) 137) _____
A) 11 + 4i B) -11 + 4i C) -11 - 4i D) -11 - 5i
Answer: C

138) (18 + 6i) - (7 + 3i) 138) _____
A) -11 - 3i B) 11 - 3i C) 11 + 3i D) -11 + 3i
Answer: C

139) (-11 + 16i) - (6 - 2i) 139) _____
A) -17 + 18i B) -5 - 18i C) -17 - 18i D) 5 - 18i
Answer: A

140) 8i(6 - 9i) 140) _____
A) $48i + 72i^2$ B) 48i - 72 C) 72 + 48i D) $- 48i - 72i^2$
Answer: C

141) (4 - 6i)(5 + 9i) 141) _____
A) -34 - 66i B) 74 - 6i C) $-54i^2 + 6i - 20$ D) 74 + 6i
Answer: D

142) (7 + 2i)(8 + 9i) 142) _____
A) 38 - 79i B) 38 + 79i C) $18i^2 + 79i + 56$ D) 74 - 47i
Answer: B

143) (4 + 2i)(5 - 3i) 143) _____
A) 14 + 22i B) 26 - 2i C) 26 + 2i D) $-6i^2 - 2i + 20$
Answer: B

144) $(8 - 3i)(7 - 4i)$ 144) _____

A) $12i^2 - 53i + 56$ B) $68 + 11i$ C) $44 + 53i$ D) $44 - 53i$

Answer: D

145) $(5 + \sqrt{-9})(3 + \sqrt{-49})$ 145) _____

A) $-6 + 44i$ B) 80 C) $456 + 272i$ D) $80\,i$

Answer: A

146) $(7 - \sqrt{-36})(2 + \sqrt{-121})$ 146) _____

A) $80 - 65i$ B) $-80 + 65i$ C) $4370 + 919i$ D) $80 + 65i$

Answer: D

147) $(8 - 5i)^2$ 147) _____

A) $39 - 80i$ B) $39 + 80i$ C) $89 + 80i$ D) $89 - 80i$

Answer: A

148) $(8 + 3i)^2$ 148) _____

A) $73 - 48i$ B) $73 + 48i$ C) $55 + 48i$ D) $55 - 48i$

Answer: C

149) $(1 + 4i)(1 - 4i)$ 149) _____

A) $1 - 16i^2$ B) $1 - 16i$ C) 17 D) -15

Answer: C

Write the conjugate $\bar{z}$ of the complex number z. Then find $z\bar{z}$.

150) $z = -3 - i$ 150) _____

A) $\bar{z} = -3 + i$, $z\bar{z} = 9$ B) $\bar{z} = -3 + i$, $z\bar{z} = 10$

C) $\bar{z} = -3 + i$, $z\bar{z} = -8$ D) $\bar{z} = -3 + i$, $z\bar{z} = -3$

Answer: B

151) $z = 2 + 8i$ 151) _____

A) $\bar{z} = 2 - 8i$, $z\bar{z} = 68$ B) $\bar{z} = 2 - 8i$, $z\bar{z} = 4 - 64i^2$

C) $\bar{z} = 2 - 8i$, $z\bar{z} = 4 - 64i$ D) $\bar{z} = 2 - 8i$, $z\bar{z} = -60$

Answer: A

152) $z = 6 - 4i$ 152) _____

A) $\bar{z} = 6 + 4i$, $z\bar{z} = 36 - 16i$ B) $\bar{z} = 6 + 4i$, $z\bar{z} = 36 - 16i^2$

C) $\bar{z} = 6 + 4i$, $z\bar{z} = 20$ D) $\bar{z} = 6 + 4i$, $z\bar{z} = 52$

Answer: D

153) $z = 8 + 4i$ 153) _____

A) $\bar{z} = 8 - 4i$, $z\bar{z} = 64 - 16i^2$ B) $\bar{z} = 8 - 4i$, $z\bar{z} = 48$

C) $\bar{z} = 8 - 4i$, $z\bar{z} = 80$ D) $\bar{z} = 8 - 4i$, $z\bar{z} = 64 - 16i$

Answer: C

154) $z =$

$\frac{2}{3} - \frac{1}{2}i$ 154) ____

A) $\bar{z} = \frac{2}{3} + \frac{1}{2}i$, $z\bar{z} = \frac{7}{18}$

B) $\bar{z} = \frac{2}{3} + \frac{1}{2}i$, $z\bar{z} = \frac{17}{9}$

C) $\bar{z} = \frac{2}{3} + \frac{1}{2}i$, $z\bar{z} = \frac{17}{36}$

D) $\bar{z} = \frac{2}{3} + \frac{1}{2}i$, $z\bar{z} = \frac{25}{36}$

Answer: D

155) $z = \sqrt{7} + 2i$ 155) ____

A) $\bar{z} = \sqrt{7} - 2i$, $z\bar{z} = 11$

B) $\bar{z} = \sqrt{7} - 2i$, $z\bar{z} = 3$

C) $\bar{z} = \sqrt{7} - 2i$, $z\bar{z} = -3$

D) $\bar{z} = \sqrt{7} - 2i$, $z\bar{z} = 18$

Answer: A

Write the quotient in the standard form.

156) $\frac{3}{-4i}$ 156) ____

A) $1 + \frac{3}{4}i$

B) $1 + \frac{4}{3}i$

C) $\frac{4}{3}i$

D) $\frac{3}{4}i$

Answer: D

157) $\frac{2}{3 - i}$ 157) ____

A) $\frac{3}{5} - \frac{1}{5}i$

B) $\frac{3}{4} + \frac{1}{4}i$

C) $\frac{3}{4} - \frac{1}{4}i$

D) $\frac{3}{5} + \frac{1}{5}i$

Answer: D

158) $\frac{6}{4 + i}$ 158) ____

A) $\frac{24}{17} + \frac{6}{17}i$

B) $\frac{24}{17} - \frac{6}{17}i$

C) $\frac{8}{5} + \frac{2}{5}i$

D) $\frac{8}{5} - \frac{2}{5}i$

Answer: B

159) $\frac{3i}{4 + i}$ 159) ____

A) $\frac{3}{17} - \frac{12}{17}i$

B) $\frac{3}{17} + \frac{12}{17}i$

C) $\frac{1}{5} + \frac{4}{5}i$

D) $-\frac{3}{17} + \frac{12}{17}i$

Answer: B

160) $\frac{4i}{1 + 4i}$ 160) ____

A) $-\frac{16}{15} + \frac{4}{15}i$

B) $\frac{4}{17} + \frac{16}{17}i$

C) $\frac{16}{17} + \frac{4}{17}i$

D) $-\frac{4}{15} - \frac{16}{15}i$

Answer: C

161) $\frac{5 + 6i}{6 - 5i}$ 161) ____

A) i

B) 1

C) -1

D) -i

Answer: A

162) $\frac{8 - 4i}{6 + 5i}$ 162) _____

A) $\frac{28}{11} - \frac{64}{11}i$ B) $\frac{68}{11} - \frac{64}{11}i$ C) $\frac{28}{61} - \frac{64}{61}i$ D) $\frac{68}{61} - \frac{16}{61}i$

Answer: C

163) $\frac{3 + 2i}{9 + 3i}$ 163) _____

A) $\frac{11}{30} + \frac{1}{10}i$ B) $\frac{7}{10} - \frac{9}{10}i$ C) $\frac{7}{24} + \frac{1}{24}i$ D) $\frac{11}{72} + \frac{1}{24}i$

Answer: A

164) $\frac{2 - 4i}{5 - 3i}$ 164) _____

A) $\frac{11}{17} - \frac{7}{17}i$ B) $-\frac{2}{17} + \frac{26}{17}i$ C) $\frac{11}{16} - \frac{7}{16}i$ D) $-\frac{1}{8} - \frac{7}{16}i$

Answer: A

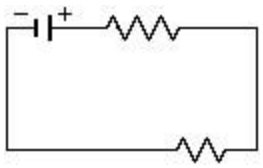
165) $\frac{-5 + \sqrt{-81}}{5 - 10i}$ 165) _____

A) $-\frac{23}{25} - \frac{1}{25}i$ B) $\frac{23}{15} + \frac{1}{15}i$ C) $\frac{13}{25} + \frac{19}{25}i$ D) $\frac{23}{25} + \frac{19}{25}i$

Answer: A

Solve the problem.

166) If the impedance of a resistor in a current is $Z_1 = (2 + 2i)$ ohms and the impedance of a second resistor is $Z_2 = (7 - 8i)$ ohms, find the total impedance of the two resistors when they are placed in a series (the sum of the two impedances). 166) _____



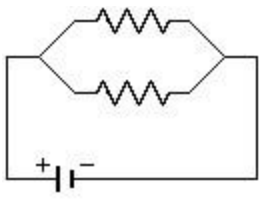
Series Circuit

A) (9 - 6i) ohms B) (9 + 6i) ohms C) (-9 + 6i) ohms D) (5 + 10i) ohms

Answer: A

167) 167)

If two resistors are connected in parallel, the total impedance is given by $Z_T = \frac{Z_1 Z_2}{(Z_1 + Z_2)}$. Find the total impedance, Z_T, when the impedances $Z_1 = (-9 - 3i)$ ohms and $Z_2 = (9 + 7i)$ ohms are in parallel.



Parallel Circuit

_____

A) $-\frac{1}{4}$ ohms

B) $\frac{1}{4}$ ohms

C) $\left(-9-\frac{51}{2}i\right)$ ohms

D) $\left(-\frac{45}{2}+15i\right)$ ohms

Answer: D

168) Ohm's law relates the current in a circuit, I, in amperes, the voltage of the circuit, V, in volts, and the impedance of the circuit, Z, in ohms, by the formula $Z=\frac{V}{I}$. Find V, the voltage of a circuit, if $I=(4+3i)$ amperes and Z = (3 + 2i) ohms. 168) _____

A) (6 + 17i) volts B) (6 - 17i) volts C) (17 - 6i) volts D) (17 + 6i) volts

Answer: A

169) Ohm's law relates the current in a circuit, I, in amperes, the voltage of the circuit, V, in volts, and the impedance of the circuit, Z, in ohms, by the formula $Z=\frac{V}{I}$. Find V, the voltage of a circuit, if $I=(18+i)$ amperes and Z = (3 + 2i) ohms. 169) _____

A) (52 + 39i) volts B) (18 + 39i) volts C) (52 - 39i) volts D) (18 - 39i) volts

Answer: A

170) Ohm's law relates the current in a circuit, I, in amperes, the voltage of the circuit, V, in volts, and the impedance of the circuit, Z, in ohms, by the formula $Z=\frac{V}{I}$. Find the impedance, Z, when the voltage is $V=(-8+3i)$ volts and current is I = -7i amperes. 170) _____

A) $\left(\frac{8}{7}+\frac{3}{7}i\right)$ ohms

B) $\left(-\frac{3}{7}-\frac{8}{7}i\right)$ ohms

C) $\left(-\frac{3}{7}+\frac{8}{7}i\right)$ ohms

D) $\left(\frac{3}{7}+\frac{8}{7}i\right)$ ohms

Answer: B

171) Ohm's law relates the current in a circuit, I, in amperes, the voltage of the circuit, V, in volts, and the impedance of the circuit, Z, in ohms, by the formula $Z=\frac{V}{I}$. Find the current I when the impedance is $Z=(-2-3i)$ ohms and voltage is V = 4i volts. 171) _____

A) $\left(\frac{12}{5}+\frac{8}{5}i\right)$ amperes

B) (12 - 8i) amperes

C) $\left(-\frac{12}{13}-\frac{8}{13}i\right)$ amperes

D) $\left(-\frac{3}{4}+\frac{1}{2}i\right)$ amperes

Answer: C

Show by substitution whether the number r is a solution of the corresponding quadratic equation.

172) x^2 - 4x + 3 = 0; r = -1 172) _____

A) Yes B) No

Answer: B

173) x^2 - 7x - 8 = 0; r = -1 173) _____

A) Yes B) No
Answer: A

174) $x^2 + 2x - 24 = 0$; $r = 4$ 174) _____
A) Yes B) No
Answer: A

175) $5x^2 + 5x - 10 = 0$; $r = -1$ 175) _____
A) Yes B) No
Answer: B

176) $9x^2 + 27x + 20 = 0$; $r = -\frac{4}{3}$ 176) _____
A) Yes B) No
Answer: A

177) $x^2 + 8x + 16 = 17$; $r = -4 - \sqrt{17}$ 177) _____
A) Yes B) No
Answer: A

178) $x^2 + 4x + 20 = 0$; $r = 2 + 4i$ 178) _____
A) Yes B) No
Answer: B

179) $x^2 - 10x + 34 = 0$; $r = 5 + 3i$ 179) _____
A) Yes B) No
Answer: A

Solve the problem.

180) Find k if x = 1 is a solution of the equation $kx^2 + x - 5 = 0$. 180) _____
A) k = -4 B) k = 6 C) k = -6 D) k = 4
Answer: D

181) Find k if x = 1 is a solution of the equation $kx^2 + x + 5 = 0$. 181) _____
A) k = 6 B) k = -6 C) k = 4 D) k = -4
Answer: D

182) Find k if $x = \sqrt{5}$ is a solution of the equation $kx^2 + x - 8 = 0$. 182) _____
A) $k = \frac{8 - \sqrt{5}}{5}$ B) $k = \frac{8 + \sqrt{5}}{\sqrt{5}}$ C) $k = \frac{8 + \sqrt{5}}{5}$ D) $k = \frac{8 - \sqrt{5}}{\sqrt{5}}$
Answer: A

183) Find k if $x = \sqrt{3}$ is a solution of the equation $kx^2 + x + 6 = 0$. 183) _____
A) $k = \frac{6 + \sqrt{3}}{3}$ B) $k = \frac{-6 - \sqrt{3}}{3}$ C) $k = \frac{-6 - \sqrt{3}}{\sqrt{3}}$ D) $k = \frac{-6 + \sqrt{3}}{3}$
Answer: B

Solve the equation by factoring.

184) $x^2 - 5x + 4 = 0$ 184) _____

A) { 1, -4} B) {-1, 4} C) { 1, 4} D) {-1, -4}

Answer: C

185) $x^2 + 3x - 88 = 0$ 185) _____

A) {-11, 8} B) { 11, -8} C) {-11, 1} D) { 11, 8}

Answer: A

186) $x^2 - 5x - 24 = 0$ 186) _____

A) { 3, 8} B) { 3, -8} C) {-3, 8} D) {-3, -8}

Answer: C

187) $x^2 = x + 42$ 187) _____

A) {-6, 7} B) {-6, -7} C) { 6, 7} D) {1, 42}

Answer: A

188) $10x^2 - 13x = 0$ 188) _____

A) $\left\{-\frac{13}{10}, 0\right\}$ B) $\left\{\frac{13}{10}, -\frac{13}{10}\right\}$ C) {0} D) $\left\{0, \frac{13}{10}\right\}$

Answer: D

189) $70x^2 + 21x = 0$ 189) _____

A) $\left\{\frac{3}{10}, -\frac{3}{10}\right\}$ B) $\left\{\frac{3}{10}, 0\right\}$ C) {0} D) $\left\{-\frac{3}{10}, 0\right\}$

Answer: D

190) $3x^2 - 20x = 7$ 190) _____

A) $\left\{-\frac{1}{3}, 7\right\}$ B) $\left\{\frac{1}{20}, -\frac{1}{3}\right\}$ C) {-3, 7} D) $\left\{-\frac{1}{3}, 3\right\}$

Answer: A

191) $15x^2 + 22x + 8 = 0$ 191) _____

A) $\left\{\frac{2}{3}, -\frac{4}{5}\right\}$ B) $\left\{\frac{2}{3}, \frac{4}{5}\right\}$ C) $\left\{-\frac{2}{15}, -\frac{1}{2}\right\}$ D) $\left\{-\frac{2}{3}, -\frac{4}{5}\right\}$

Answer: D

192) $12x^2 - 5x - 25 = 0$ 192) _____

A) $\left\{-\frac{5}{4}, -\frac{5}{3}\right\}$ B) $\left\{\frac{5}{4}, \frac{5}{3}\right\}$ C) $\left\{-\frac{5}{4}, \frac{5}{3}\right\}$ D) $\left\{\frac{5}{4}, -\frac{5}{3}\right\}$

Answer: C

193) $49x^2 - 70x + 25 = 0$ 193) _____

A) $\left\{\frac{7}{5}\right\}$ B) $\left\{-\frac{7}{5}\right\}$ C) $\left\{\frac{5}{7}\right\}$ D) $\left\{-\frac{5}{7}\right\}$

Answer: C

Solve the equation by the square root property.

194) $6x^2 = 96$ 194) _____

A) {-4, 4} B) $\{-4\sqrt{6}, 4\sqrt{6}\}$ C) {0} D) {-6, 6}

Answer: A

195) $5x^2 = 55$ 195) _____

A) $\{-\sqrt{11}, \sqrt{11}\}$ B) { 12} C) { 27.5} D) {-11, 11}

Answer: A

196) $7x^2 + 2 = 30$ 196) _____

A) {-2, 2} B) {-3, 3} C) { 15} D) { 2}

Answer: A

197) $(x - 3)^2 = 16$ 197) _____

A) { -4, 4} B) { -1, 7} C) { -7, -1} D) { 19}

Answer: B

198) $(2x - 3)^2 = 9$ 198) _____

A) { 0, 3} B) { -6, 0} C) { -3, 0} D) { 0, 6}

Answer: A

199) $(2x + 2)^2 = 16$ 199) _____

A) { -3, 1} B) { -9, 9} C) {1, 3} D) {0, 1}

Answer: A

200) $(3x - 2)^2 = 20$ 200) _____

A) $\left\{-6, \frac{22}{3}\right\}$ B) $\{-2\sqrt{3}, 2\sqrt{3}\}$

C) $\left\{\frac{2 - 2\sqrt{5}}{3}, \frac{2 + 2\sqrt{5}}{3}\right\}$ D) $\left\{\frac{-2 - 2\sqrt{5}}{3}, \frac{-2 + 2\sqrt{5}}{3}\right\}$

Answer: C

201) $(4x + 5)^2 - 7 = 0$ 201) _____

A) $\left\{-3, \frac{1}{2}\right\}$ B) $\left\{\frac{5 - \sqrt{7}}{4}, \frac{5 + \sqrt{7}}{4}\right\}$

C) $\left\{\frac{-5 - \sqrt{7}}{4}, \frac{-5 + \sqrt{7}}{4}\right\}$ D) $\left\{\frac{\sqrt{7} - 5}{4}, \frac{\sqrt{7} + 5}{4}\right\}$

Answer: C

202) $(x - 3)^2 = -100$ 202) _____

A) {-3 - 10i, -3 + 10i} B) {3 - 10i, 3 + 10i}

C) {3i - 10, 3i + 10} D) $\left\{-\frac{10i}{3}, \frac{10i}{3}\right\}$

Answer: B

203) $(x - 4)^2 = -6$ 203) _____

A) $\{4 - i\sqrt{6}, 4 + i\sqrt{6}\}$ B) { -4 - 6i, -4 + 6i}

C) { -2, 10} D) $\{4 - \sqrt{6}, 4 + \sqrt{6}\}$

Answer: A

Determine the constant term that must be added to the expression to make it a perfect square.

204) $x^2 + 16x$

204) _____

A) 64 B) 256 C) 8 D) 16

Answer: A

205) $x^2 - 14x$ 205) _____

A) 49 B) 7 C) -49 D) 196

Answer: A

206) $x^2 + \frac{1}{6}x$ 206) _____

A) 144 B) $\frac{1}{36}$ C) $\frac{1}{144}$ D) $\frac{1}{12}$

Answer: C

207) $x^2 - \frac{2}{5}x$ 207) _____

A) $\frac{4}{25}$ B) $\frac{1}{25}$ C) $\frac{1}{5}$ D) $\frac{2}{25}$

Answer: B

208) $x^2 + \frac{2}{5}x$ 208) _____

A) $\frac{2}{25}$ B) $\frac{4}{25}$ C) $\frac{1}{5}$ D) $\frac{1}{25}$

Answer: D

209) $x^2 + 11x$ 209) _____

A) $\frac{121}{2}$ B) $\frac{121}{4}$ C) $\frac{11}{4}$ D) $\frac{11}{2}$

Answer: B

210) $x^2 - ax$ 210) _____

A) $\frac{a^2}{4}$ B) $\frac{a^2}{2}$ C) $-\frac{a^2}{2}$ D) $-\frac{a^2}{4}$

Answer: A

211) $x^2 - \frac{2a}{5}x$ 211) _____

A) $-\frac{a^2}{5}$ B) $-\frac{a^2}{25}$ C) $\frac{a^2}{25}$ D) $\frac{a^2}{5}$

Answer: C

Solve the equation by completing the square.

212) $x^2 - 4x - 21 = 0$ 212) _____

A) { -3, 7} B) { -7, 3} C) { -3, -18} D) $\{-\sqrt{21}, \sqrt{21}\}$

Answer: A

213) $x^2 + 12x + 19 = 0$ 213) _____

A) $\{6 - \sqrt{19}, 6 + \sqrt{19}\}$
B) $\{6 + \sqrt{17}\}$
C) $\{-12 + \sqrt{19}\}$
D) $\{-6 - \sqrt{17}, -6 + \sqrt{17}\}$

Answer: D

214) $x^2 + 8x - 3 = 0$ 214) _____

A) $\{-4 - \sqrt{19}, -4 + \sqrt{19}\}$
B) $\{-1 - \sqrt{19}, -1 + \sqrt{19}\}$
C) $\{4 + \sqrt{19}\}$
D) $\{-4 - 1\sqrt{19}, -4 + 1\sqrt{19}\}$

Answer: A

215) $x^2 - 12x - 7 = 0$ 215) _____

A) $\{6 - \sqrt{43}, 6 + \sqrt{43}\}$
B) $\{-6 - \sqrt{43}, -6 + \sqrt{43}\}$
C) $\{6 - \sqrt{7}, 6 + \sqrt{7}\}$
D) $\{12 - \sqrt{151}, 12 + \sqrt{151}\}$

Answer: A

216) $x^2 + 3x - 9 = 0$ 216) _____

A) $\left\{\frac{-3 - 3\sqrt{5}}{2}, \frac{-3 + 3\sqrt{5}}{2}\right\}$
B) $\left\{\frac{-3 - 3\sqrt{5}}{2}\right\}$
C) $\{-3 - 3\sqrt{5}, -3 + 3\sqrt{5}\}$
D) $\left\{\frac{3 + 3\sqrt{5}}{2}\right\}$

Answer: A

217) $x^2 - 4x + 29 = 0$ 217) _____

A) $\{2 - 25i, 2 + 25i\}$
B) $\{2 - 5i\}$
C) $\{2 - 5i, 2 + 5i\}$
D) $\{7, -3\}$

Answer: C

218) $x^2 + 4x + 13 = 0$ 218) _____

A) $\{1, -5\}$
B) $\{-2 - i\sqrt{13}, -2 + i\sqrt{13}\}$
C) $\{2 - 3i, 2 + 3i\}$
D) $\{-2 - 3i, -2 + 3i\}$

Answer: D

219) $5x^2 - 2x - 6 = 0$ 219) _____

A) $\left\{\frac{-1 - \sqrt{31}}{5}, \frac{-1 + \sqrt{31}}{5}\right\}$
B) $\left\{-6, \frac{32}{5}\right\}$
C) $\left\{\frac{1 - \sqrt{31}}{5}, \frac{1 + \sqrt{31}}{5}\right\}$
D) $\left\{\frac{5 - \sqrt{31}}{25}, \frac{5 + \sqrt{31}}{25}\right\}$

Answer: C

220) $16x^2 - 5x + 1 = 0$ 220) _____

A) $\left\{\frac{-5 - i\sqrt{39}}{32}, \frac{-5 + i\sqrt{39}}{32}\right\}$
B) $\left\{\frac{5 - i\sqrt{39}}{32}, \frac{-5 + i\sqrt{39}}{32}\right\}$
C) $\left\{\frac{5 - \sqrt{39}}{32}, \frac{5 + \sqrt{39}}{32}\right\}$
D) $\left\{\frac{5 - i\sqrt{39}}{32}, \frac{5 + i\sqrt{39}}{32}\right\}$

Answer: D

221) $x^2 + x + 5 = 0$ 221) _____

A)

$\left\{\frac{1-i\sqrt{19}}{2}, \frac{1+i\sqrt{19}}{2}\right\}$ B) $\left\{\frac{1-\sqrt{19}}{2}, \frac{1+\sqrt{19}}{2}\right\}$

C) $\left\{\frac{-1-\sqrt{19}}{2}, \frac{-1+\sqrt{19}}{2}\right\}$ D) $\left\{\frac{-1-i\sqrt{19}}{2}, \frac{-1+i\sqrt{19}}{2}\right\}$

Answer: D

Solve the equation using the quadratic formula.

222) $x^2 + 3x - 108 = 0$ 222) _____

A) { 12, 9} B) {-12, 9} C) {-12, 1} D) { -9, 12}

Answer: B

223) $x^2 + 4 = 0$ 223) _____

A) {-2i, 2i} B) { 2} C) {-2, 2} D) { 2i}

Answer: A

224) $16x^2 - 48x = -36$ 224) _____

A) $\left\{\frac{3}{2}, -24\right\}$ B) $\left\{-\frac{3}{2}\right\}$ C) $\left\{-\frac{3}{2}, -24\right\}$ D) $\left\{\frac{3}{2}\right\}$

Answer: D

225) $x^2 + 6x + 13 = 0$ 225) _____

A) { -3 + 2i} B) { -3 - 4i, -3 + 4i} C) { -1, -5} D) { -3 + 2i, -3 - 2i}

Answer: D

226) $x^2 = 7 - 8x$ 226) _____

A) $\{-1 + \sqrt{23}, -1 - \sqrt{23}\}$ B) $\{4 + \sqrt{23}\}$

C) $\{-4 + 2\sqrt{23}, -4 - 2\sqrt{23}\}$ D) $\{-4 + \sqrt{23}, -4 - \sqrt{23}\}$

Answer: D

227) $x^2 + 7x + 3 = 0$ 227) _____

A) $\left\{\frac{7-\sqrt{37}}{2}, \frac{7+\sqrt{37}}{2}\right\}$ B) $\left\{\frac{-7-\sqrt{37}}{14}, \frac{-7+\sqrt{37}}{14}\right\}$

C) $\left\{\frac{-7-\sqrt{37}}{2}, \frac{-7+\sqrt{37}}{2}\right\}$ D) $\left\{\frac{-7-\sqrt{61}}{2}, \frac{-7+\sqrt{61}}{2}\right\}$

Answer: C

228) $6x^2 = -12x - 1$ 228) _____

A) $\left\{\frac{-6-\sqrt{42}}{6}, \frac{-6+\sqrt{42}}{6}\right\}$ B) $\left\{\frac{-12-\sqrt{30}}{6}, \frac{-12+\sqrt{30}}{6}\right\}$

C) $\left\{\frac{-6-\sqrt{30}}{6}, \frac{-6+\sqrt{30}}{6}\right\}$ D) $\left\{\frac{-6-\sqrt{30}}{12}, \frac{-6+\sqrt{30}}{12}\right\}$

Answer: C

229) $3x(x + 5) = -1$ 229) _____

A) $\left\{-\frac{5}{4}\right\}$ B) $\left\{\frac{15+\sqrt{213}}{6}, \frac{15-\sqrt{213}}{6}\right\}$

C) $\left\{-\frac{6}{5}\right\}$

D) $\left\{\frac{-15+\sqrt{213}}{6}, \frac{-15-\sqrt{213}}{6}\right\}$

Answer: D

230) $(2x - 1)(x + 1) = 1$ 230) _____

A) $\left\{\frac{1+\sqrt{17}}{2}, \frac{1-\sqrt{17}}{2}\right\}$

B) $\left\{\frac{-1+\sqrt{17}}{4}, \frac{-1-\sqrt{17}}{4}\right\}$

C) $\left\{\frac{-1+\sqrt{37}}{2}, \frac{-1-\sqrt{37}}{2}\right\}$

D) $\left\{\frac{1+\sqrt{17}}{4}, \frac{1-\sqrt{17}}{4}\right\}$

Answer: B

231) $8x^2 + 7x = -2$ 231) _____

A) $\left\{\frac{-7+i\sqrt{15}}{16}, \frac{-7-i\sqrt{15}}{16}\right\}$

B) $\left\{\frac{7+i\sqrt{15}}{16}, \frac{7-i\sqrt{15}}{16}\right\}$

C) $\left\{\frac{-7+\sqrt{15}}{16}, \frac{-7-\sqrt{15}}{16}\right\}$

D) $\left\{\frac{7+\sqrt{15}}{16}, \frac{7-\sqrt{15}}{16}\right\}$

Answer: A

Find the discriminant and determine the number and type of roots of the equation.

232) $x^2 - 5x - 6 = 0$ 232) _____

A) D = 49, two real unequal roots

B) D = 0, one real root

C) D = 49, two unequal complex roots

D) D = -1, two unequal complex roots

Answer: A

233) $x^2 - 12x + 36 = 0$ 233) _____

A) D = 144, two unequal complex roots

B) D = 144, two real unequal roots

C) D = -144, two unequal complex roots

D) D = 0, one real root

Answer: D

234) $s^2 + 5s - 1 = 0$ 234) _____

A) D = 0, two real unequal roots

B) D = 0, one real root

C) D = -29, two unequal complex roots

D) D = 29, two real unequal roots

Answer: D

235) $t^2 - 6t + 9 = 0$ 235) _____

A) D = -72, two real unequal roots

B) D = 72, two real unequal roots

C) D = 0, one real root

D) D = -72, two unequal complex roots

Answer: C

236) $s^2 + 2s + 6 = 0$ 236) _____

A) D = 0, two unequal complex roots

B) D = 0, one real root

C) D = -20, two unequal complex roots

D) D = 20, two real unequal roots

Answer: C

237) $s^2 = -5s + 7$ 237) _____

A) D = -53, two unequal complex roots

B) D = 0, one real root

C) D = 53, two real unequal roots

D) D = 53, two unequal complex roots

Answer: C

238) $2x^2 - 128 = 0$ 238) _____

A) D = -1024, two real unequal roots
B) D = 0, one real root
C) D = 1024, two real unequal roots
D) D = -1024, two unequal complex roots

Answer: C

239) $9x^2 - 6x + 1 = 0$ 239) _____

A) D = 18, two real unequal roots
B) D = 0, one real root
C) D = -18, two unequal complex roots
D) D = 18, one real root

Answer: B

240) $3y^2 = -3y - 8$ 240) _____

A) D = 87, two real unequal roots
B) D = 0, one real root
C) D = -87, two unequal complex roots
D) D = -87, two real unequal roots

Answer: C

Solve the problem. Write your answer rounded to two decimal places.

241) Find the length of the golden rectangle whose width is 13.66 cm. 241) _____

A) 4420.47 cm B) 2893.23 cm C) 4259.23 cm D) 2210.23 cm

Answer: D

242) Find the width of the golden rectangle whose length is 5.81 in. 242) _____

A) 359.08 in. B) 141.09 in. C) 1077.23 in. D) 179.54 in.

Answer: A

Solve the problem.

243) Find two integers whose sum is -2 and whose product is -8. 243) _____

A) -4, -2 B) 4, 2 C) 4, -2 D) -4, 2

Answer: D

244) The length of a rectangular storage room is 3 feet longer than its width. If the area of the room is 70 square feet, find its dimensions. 244) _____

A) 7 ft by 10 ft B) 6 ft by 9 ft C) 8 ft by 11 ft D) 6 ft by 11 ft

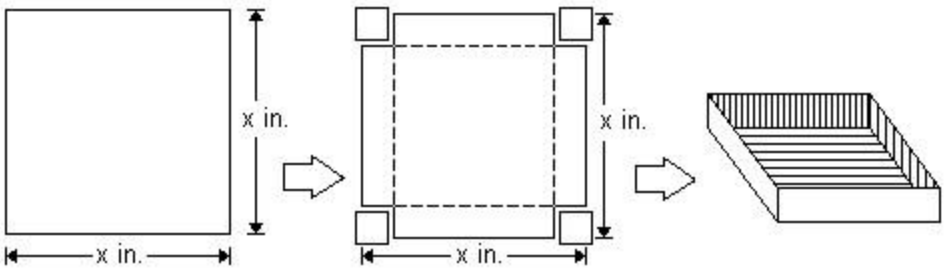
Answer: A

245) A machine produces open boxes using square sheets of plastic. The machine cuts equal-sized squares measuring 4 inches on a side from each corner of the sheet, and then shapes the plastic into an open box by turning up the sides. If each box must have a volume of 1600 cubic inches, find the length of one side of the open box. 245) _____

A) 28 in. B) 24 in. C) 20 in. D) 19 in.

Answer: C

246) Suppose that an open box is to be made from a square sheet of cardboard by cutting out 6-inch squares from each corner as shown and then folding along the dotted lines. If the box is to have a volume of 486 cubic inches, find the original dimensions of the sheet of cardboard. 246) _____



A) 3 in. by $3\sqrt{6}$ in.
B) 21 in. by 21 in.
C) $9\sqrt{6}$ in. by $9\sqrt{6}$ in.
D) 9 in. by 9 in.
Answer: B

247) A rectangular garden has dimensions of 17 feet by 14 feet. A gravel path of consistent width is to be built around the garden. How wide can the path be if there is enough gravel for 516 square feet? 247) _____
A) 8.5 ft
B) 6 ft
C) 8 ft
D) 7 ft
Answer: B

248) The surface area A of a right circular cylinder is $A = 2\pi r^2 + 2\pi rh$, where r is the radius and h is the height. Find the radius of a right circular cylinder whose surface area is 95.36π square inches and whose height is 11.7 inches. 248) _____
A) 2.8 in.
B) 2.5 in.
C) 3.6 in.
D) 3.2 in.
Answer: D

249) A square has an area of 49 square inches. If the same amount is added to the length and removed from the width, the resulting rectangle has an area of 45 square inches. Find the dimensions of the rectangle. 249) _____
A) 3 in. by 4 in.
B) 5 in. by 10 in.
C) 5 in. by 9 in.
D) 4 in. by 9 in.
Answer: C

250) Two cars leave an intersection. One car travels north; the other east. When the car traveling north had gone 6 mi, the distance between the cars was 2 mi more than the distance traveled by the car heading east. How far had the eastbound car traveled? 250) _____
A) 10 mi
B) 6 mi
C) 12 mi
D) 8 mi
Answer: D

251) A toy rocket is shot vertically upward from the ground. Its distance in feet from the ground in t seconds is given by $s(t) = -16t^2 + 169t$. At what time or times will the ball be 162 ft from the ground? Round your answer to the nearest tenth, if necessary. 251) _____
A) 164 and 174 sec
B) 5.3 sec
C) 10.6 sec
D) 1.1 and 9.5 sec
Answer: D

252) A rock falls from a tower that is 288 feet high. As it is falling, its height is given by the formula $h = 288 - 16t^2$. How many seconds will it take for the rock to hit the ground $(h=0)$? Round your answer to the nearest tenth, if necessary. 252) _____
A) 16.5 sec
B) 17 sec
C) 4.2 sec
D) 5184 sec
Answer: C

1) A
2) A
3) B
4) A
5) A
6) B
7) A
8) A
9) A
10) A
11) C
12) A
13) C
14) D
15) B
16) A
17) B
18) B
19) B
20) A
21) A
22) B
23) B
24) A
25) B
26) A
27) D
28) B
29) A
30) D
31) C
32) B
33) B
34) B
35) D
36) D
37) C
38) C
39) A
40) B
41) B
42) D
43) A
44) C
45) A
46) A
47) B
48) B
49) D
50) C
51) D

52) B
53) D
54) A
55) D
56) B
57) B
58) C
59) A
60) D
61) C
62) D
63) B
64) A
65) D
66) C
67) C
68) A
69) C
70) C
71) D
72) A
73) B
74) D
75) B
76) C
77) D
78) A
79) A
80) B
81) A
82) B
83) A
84) B
85) C
86) D
87) D
88) B
89) A
90) A
91) D
92) C
93) D
94) D
95) A
96) C
97) B
98) B
99) B
100) D
101) B
102) A
103) C

104) A
105) C
106) B
107) C
108) C
109) A
110) A
111) A
112) C
113) B
114) B
115) A
116) A
117) C
118) B
119) B
120) A
121) B
122) D
123) D
124) A
125) B
126) A
127) A
128) B
129) A
130) D
131) B
132) D
133) C
134) C
135) C
136) B
137) C
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142) B
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144) D
145) A
146) D
147) A
148) C
149) C
150) B
151) A
152) D
153) C
154) D
155) A

156) D
157) D
158) B
159) B
160) C
161) A
162) C
163) A
164) A
165) A
166) A
167) D
168) A
169) A
170) B
171) C
172) B
173) A
174) A
175) B
176) A
177) A
178) B
179) A
180) D
181) D
182) A
183) B
184) C
185) A
186) C
187) A
188) D
189) D
190) A
191) D
192) C
193) C
194) A
195) A
196) A
197) B
198) A
199) A
200) C
201) C
202) B
203) A
204) A
205) A
206) C
207) B

208) D
209) B
210) A
211) C
212) A
213) D
214) A
215) A
216) A
217) C
218) D
219) C
220) D
221) D
222) B
223) A
224) D
225) D
226) D
227) C
228) C
229) D
230) B
231) A
232) A
233) D
234) D
235) C
236) C
237) C
238) C
239) B
240) C
241) D
242) A
243) D
244) A
245) C
246) B
247) B
248) D
249) C
250) D
251) D
252) C