Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Simplify the expression.

1) –10(12z + 11m)   1) _____
   A) 120z – 11m   B) –120z + 110m   C) –120z – 110m   D) 120z – 110m

2) –(–6m) – (–4m)   2) _____
   A) –10m   B) 10m   C) –2m   D) 2m

3) 3(5m – 3) – 6(4m – 5)   3) _____
   A) –9m – 39   B) –9m – 8   C) –9m + 21   D) 9m + 21

4) 3p + 2(4p – 6) – 5(5p – 3) – 2(2p – 4)   4) _____
   A) –70p + 11   B) –70p – 13   C) –18p – 13   D) –18p + 11

Use the indicated property to write a new expression equal to the given one. Simplify the expression if possible .

5) 3(r + k); distributive   5) _____
   A) 3r + k   B) r(3 + k)   C) 3r + 3k   D) 3r – 3k

6) 5 · 1; identity   6) _____
   A) 1   B) –5   C) –1   D) 5

7) 6(6x); associative   7) _____
   A) 36x   B) 36 + 6x   C) 12x   D) (6x)6

Use the distributive property to calculate the value mentally.

8) 1.17(67) + 1.17(33)   8) _____
   A) 39.78   B) 234   C) 117   D) 111.39

9) $\frac{4}{3}(61) + \frac{4}{3}(-37)$ 9) _____

   A) 64   B) 16   C) $\frac{392}{3}$ D) 32

Provide an appropriate response.

10) Which property justifies the statement?   10) _____
    (4 · 6) · 7 = 4 · (6 · 7)
       A) Commutative property   B) Distributive property
       C) Identity property   D) Associative property

Decide if the statement is true or false.

11) 1 is a solution of 5x + 6 = 9.   11) _____
       A) True   B) False

Solve the equation.

12) $7s + 12 = -8s$

    A) $\left\{-\dfrac{4}{5}\right\}$
    B) $\left\{\dfrac{5}{4}\right\}$
    C) $\left\{\dfrac{4}{5}\right\}$
    D) $\{-12\}$

12) _____

13) $(y - 7) - (y + 4) = 6y$

    A) $\left\{-\dfrac{11}{6}\right\}$
    B) $\left\{-\dfrac{1}{3}\right\}$
    C) $\left\{-\dfrac{11}{5}\right\}$
    D) $\left\{-\dfrac{11}{7}\right\}$

13) _____

14) $5m + 6 + 2(2m - 5) = 5(m + 5)$

    A) $\left\{\dfrac{21}{4}\right\}$
    B) $\left\{\dfrac{29}{14}\right\}$
    C) $\left\{\dfrac{41}{4}\right\}$
    D) $\left\{\dfrac{29}{4}\right\}$

14) _____

15) $-[3x + (8x + 1)] = 6 - (2x + 4)$

    A) $\{-1\}$
    B) $\left\{\dfrac{3}{7}\right\}$
    C) $\left\{-\dfrac{1}{3}\right\}$
    D) $\left\{\dfrac{9}{7}\right\}$

15) _____

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

    A) $\{150\}$
    B) $\{75\}$
    C) $\{-150\}$
    D) $\{-75\}$

16) _____

17) $\dfrac{3x + 4}{5} + \dfrac{6}{5} = -\dfrac{5x}{6}$

    A) $\left\{\dfrac{12}{43}\right\}$
    B) $\left\{-\dfrac{12}{43}\right\}$
    C) $\left\{-\dfrac{60}{43}\right\}$
    D) $\left\{\dfrac{60}{7}\right\}$

17) _____

18) $0.06y + 0.1(10{,}000 - y) = 0.21y$

    A) $\{4000\}$
    B) $\{2500\}$
    C) $\{12{,}000\}$
    D) $\{250\}$

18) _____

Solve the formula for the specified variable.

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

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

19) _____

20) $A = \dfrac{1}{2}h(b_1 + b_2)$ for b_1

    A) $b_1 = \dfrac{hb_2 - 2A}{h}$
    B) $b_1 = \dfrac{A - hb_2}{2h}$
    C) $b_1 = \dfrac{2A - hb_2}{h}$
    D) $b_1 = \dfrac{2Ab_2 - h}{h}$

20) _____

Solve the problem.

21) Find the area of a triangle with height 14 m and base 10 m.

    A) 12 m^2
    B) 140 m^2
    C) 280 m^2
    D) 70 m^2

21) _____

22) Janet drove 240 km, and the trip took 4 hr. At what average rate was Janet traveling?

    A) $\dfrac{1}{60}$ km/hr
    B) 960 km/hr
    C) 60 km/hr
    D) 61 km/hr

22) _____

23) A circle has a circumference of 24π m. Find the radius of the circle. 23) _____
    A) 4 m   B) 12 m   C) 6 m   D) 24 m

24) Find the simple interest if \$3800 is borrowed at 18.4% for 6 months (0.5 yr). 24) _____
    A) \$34,960.00   B) \$349.60   C) \$1398.40   D) \$103.26

25) Find the total amount in an account if \$2500 is invested at 6.1% simple interest for 3.5 years. 25) _____
    A) \$3033.75   B) \$533.75   C) \$2652.50   D) \$3934.43

26) A chemical solution contains 1% salt. How much salt is in 4 ml of solution? Round your answer to 26) _____
three decimal places, if necessary.
    A) 0.4 ml   B) 40 ml   C) 400 ml   D) 0.04 ml

27) A mixture of chlorine and water contains a total of 91 gallons of liquid. There are 80 gallons of pure 27) _____
chlorine in the mixture. (i) What percent of the mixture is water? (ii) What percent of the mixture is
chlorine? Round your answer to the nearest percent, if necessary.
    A) (i) 88% water; (ii) 12% chlorine   B) (i) 12% water; (ii) 88% chlorine
    C) (i) 80% water; (ii) 20% chlorine   D) (i) 23% water; (ii) 77% chlorine

Use the variable x for the unknown, and write an equation representing the verbal sentence. Then solve the problem.
28) When 3 times a number is subtracted from 7 times the number, the result is 40. 28) _____
    A) $3(x - 7) = 40x$; 4   B) $3x(7 - x) = 40$; -10
    C) $7x - 3x = 40$; 10   D) $3x + 10x = 40$; 4

29) When 50% of a number is subtracted from 70, the result is 2 less than the number. 29) _____
    A) $70 - 50 = x - 2$; 22   B) $0.5x - 70 = x - 2$; -136
    C) $70 - 0.5x = x - 2$; 48   D) $70 + 0.5x = x - 2$; 144

Decide whether the following is an expression or an equation.
30) $2(2z - 5) + 3(z + 4) = 12$ 30) _____
    A) Equation   B) Expression

31) $\dfrac{r + 6}{5} + \dfrac{r + 8}{6}$ 31) _____
    A) Equation   B) Expression

Solve the problem.
32) The two largest oil spills together released 322 million gallons of oil into the oceans. The smaller of 32) _____
the two released 54 million gallons less than the larger of the two. How many million gallons of oil
did the larger one release?
    A) 188 million gallons   B) 121 million gallons
    C) 268 million gallons   D) 134 million gallons

33) In a recent school board election, the two candidates for president received 2715 votes. The loser 33) _____
received 551 fewer votes than the winner. How many votes did the winner receive?
    A) 1092 votes   B) 2164 votes   C) 1633 votes   D) 1082 votes

Solve the percent problem.

34) Stevie bought a stereo for $230 and put it on sale at his store at a 60% markup rate. What was the retail price of the stereo?

    A) $330.00   B) $368.00   C) $460.00   D) $268.00

34) _____

35) At the end of the day, a storekeeper had $1144 in the cash register, counting both the sale of goods and the sales tax of 4%. Find the amount that is the tax.

    A) $44   B) $39   C) $49   D) $34

35) _____

Solve the investment problem.

36) Walt made an extra $7000 last year from a part–time job. He invested part of the money at 10% and the rest at 8%. He made a total of $640 in interest. How much was invested at 8%?

    A) $4000   B) $5000   C) $3500   D) $3000

36) _____

37) Mardi received an inheritance of $70,000. She invested part at 9% and deposited the remainder in tax–free bonds at 12%. Her total annual income from the investments was $7200. Find the amount invested at 9%.

    A) $62,800   B) $40,000   C) $20,000   D) $39,000

37) _____

Solve the mixture problem.

38) How many liters of a 10% alcohol solution must be mixed with 70 liters of a 70% solution to get a 30% solution?

    A) 140 liters   B) 210 liters   C) 14 liters   D) 21 liters

38) _____

39) In a chemistry class, 9 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?

    A) 3.5 liters   B) 9 liters   C) 5.5 liters   D) 4.5 liters

39) _____

Solve the problem.

40) Find the measures of the supplementary angles.

40) _____

$(11n + 45)°$ $(3n + 23)°$
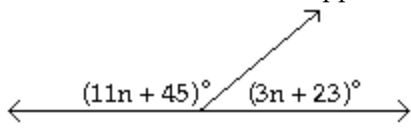
    A) 137°, 43°   B) 47°, 43°   C) 133°, 47°   D) 43°, 47°

41) Find the measure of each angle in the triangle.

41) _____

$(5n + 60)°$

$(4n - 18)°$ $(n + 8)°$
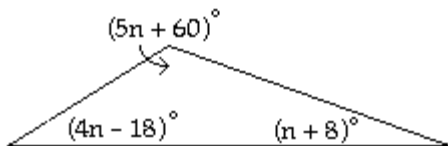
    A) 47°, 22°, 21°   B) 34°, 125°, 21°   C) 28°, 128°, 24°   D) 38°, 123°, 19°

Solve the problem involving consecutive integers.

42) The sum of two consecutive integers is –289. Find the larger integer.

    A) –145   B) –144   C) –146   D) –143

42) _____

Solve the problem.

43) Bert is 20 kilometers away from Brenda. Both begin to walk toward each other at the same time.   43) _____
Bert walks at 2 kilometers per hour. They meet in 4 hours. How fast is Brenda walking?
    A) 5 kilometers per hour   B) 3 kilometers per hour
    C) 4 kilometers per hour   D) 2 kilometers per hour

44) The speed of a stream is 5 mph. If a boat travels 44 miles downstream in the same time that it takes   44) _____
to travel 22 miles upstream, what is the speed of the boat in still water?
    A) 18 mph   B) 17 mph   C) 10 mph   D) 15 mph

Solve the inequality. Give the solution set in both interval and graph forms.

45) $12z + 5 > 11z + 8$ 45) _____
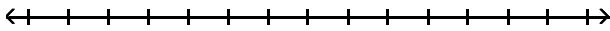
A) $(13, \infty)$
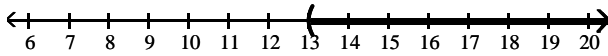
B) $(-\infty, 3)$
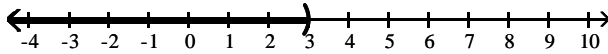
C) $(-\infty, 13)$
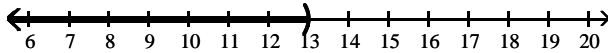
D) $(3, \infty)$
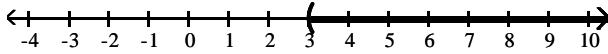
46) $-6(4a - 3) < -30a - 6$ 46) _____
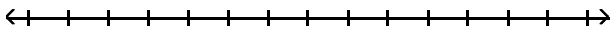
A) $(-\infty, -30)$

B) $(-30, \infty)$

C) $(-\infty, -4)$

D) $(-4, \infty)$
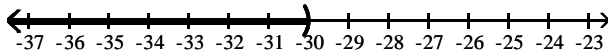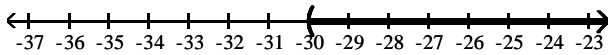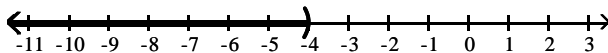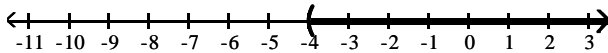
47) –1 < x – 1 ≤ 2
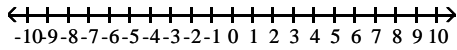
    A) [–2, 1)

    B) [0, 3)

    C) (0, 3]

    D) (–2, 1]
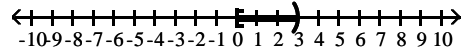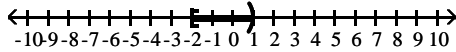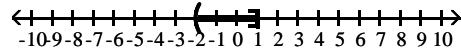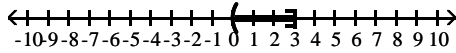
48) 2 < –3x + 5 ≤ 14
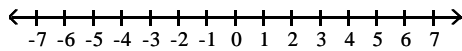
    A) [–3, 1)

    B) (–3, 1]
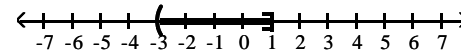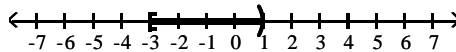
    C) (–1, 3]

    D) [–1, 3)
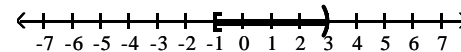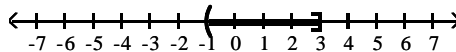
Use the graph to answer the question.

49)
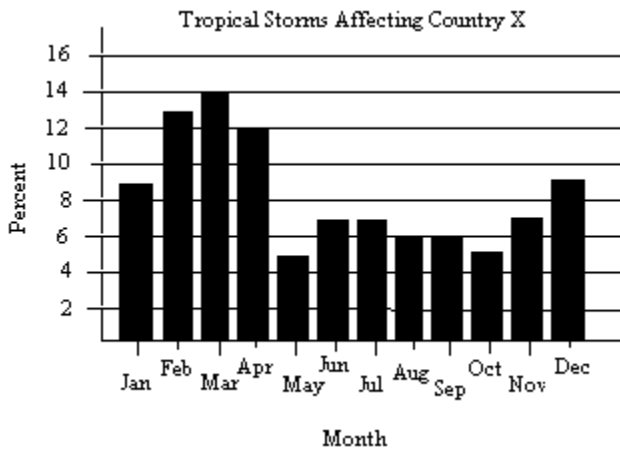
In which months was the percent of tropical storms at most 5%?
    A) May, June, July   B) May, October
    C) February, March, April   D) May

Let A = {q, s, u, v, w, x, y, z}, B = {q, s, y, z}, C = {v, w, x, y, z}, and D = {s}. Specify the following set.

50) A ∩ B
    A) {s, u, v, w, x, z}   B) {q, s, y, z} or B   C) {v, x}   D) {q, s, u, v, w, y}

51) A ∪ B
    A) {s, u, v, w, x, z}
    C) {v, x}
                            B) {s, u, w}
                            D) {q, s, u, v, w, x, y, z} or A

47) _____

48) _____

49) _____

50) _____

51) _____

52) C ∩ D   52) _____

    A) ∅   B) {q, s, u, w, y, z}   C) {q, y, z}   D) {q, w, y}

53) A ∩ ∅   53) _____

    A) {q, s, u, v, x, z}   B) {q, s, u, v, w, x, y, z} or A
    C) ∅   D) {w, y}

Graph the union or intersection of the two sets, as requested.

54) Intersection   54) _____
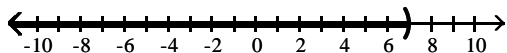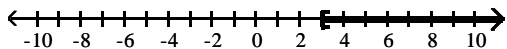
  A)
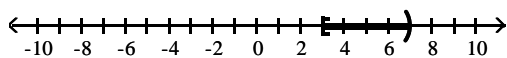
  B)
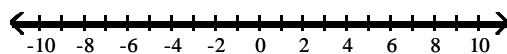
  C)
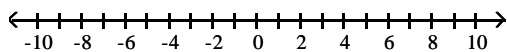
55) Union   55) _____
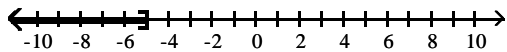
  A)
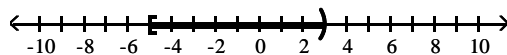
  B)
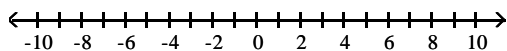
  C)
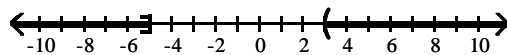
For the compound inequality, give the solution set in both interval and graph forms.

56) $7x - 4 \geq -4$ and $7x - 4 \leq 24$
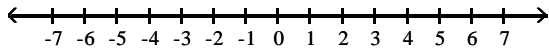
A) (0, 4]
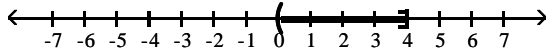
B) [0, 4)
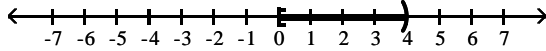
C) [0, 4]

D) (0, 4)
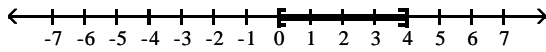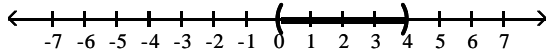
57) $5x - 1 < 4$ and $x - 2 > -1$
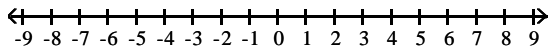
A) (0, 1)
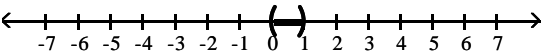
B) ∅
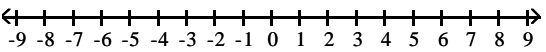
C) {1}
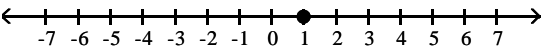
D) [0, 1]
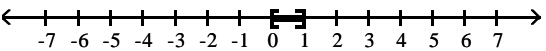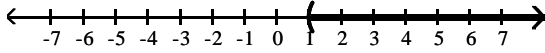
58) x − 2 > 1 or x + 1 < 2   58) _____
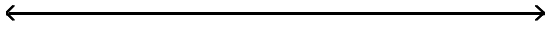
A) (−∞, 3)
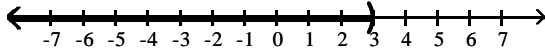
B) (−∞, 1) ∪ (3, ∞)
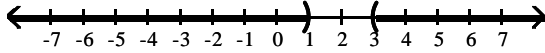
C) (1, ∞)

D) (−∞, −1) ∪ (3, ∞)
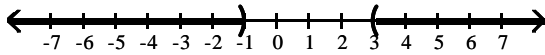
Express the set in the simplest interval form.

59) (−8, 5] ∩ (−6, ∞)   59) _____
   A) [−6, 5]   B) (−8, 5]   C) (−8, ∞)   D) (−6, 5]

60) (−∞, 7] ∪ (−∞, −5)   60) _____
   A) (−5, 7]   B) (−∞, −5]   C) (−∞, 7]   D) (−∞, 7)

Solve the equation.

61) $|x| = 2$ 61) _____
   A) {−2}   B) {2}   C) {4}   D) {2, −2}

62) $|4m + 5| = 6$ 62) _____
   A) $\left\{-\dfrac{1}{4}, \dfrac{11}{4}\right\}$ B) $\left\{\dfrac{1}{4}, -\dfrac{11}{4}\right\}$ C) ∅   D) $\left\{\dfrac{1}{5}, -\dfrac{11}{5}\right\}$

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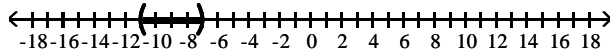**Solve the inequality and graph the solution set.**

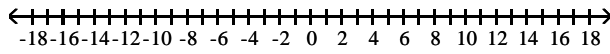63) $|r + 9| > 2$ 63) _____
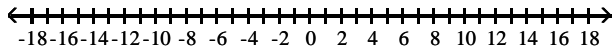
A) $(-7, \infty)$
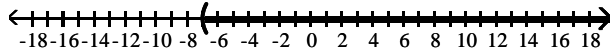
B) $(-11, -7)$

C) $\varnothing$
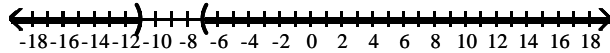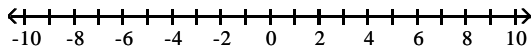

D) $(-\infty, -11) \cup (-7, \infty)$
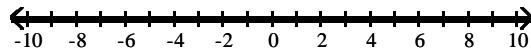

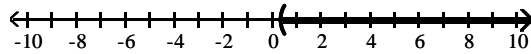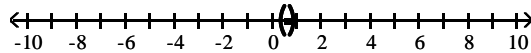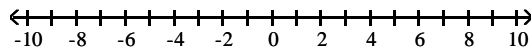64) $|8y - 5| > -2$ 64) _____

A) $(-\infty, \infty)$

B) $\left(\dfrac{3}{8}, \infty\right)$
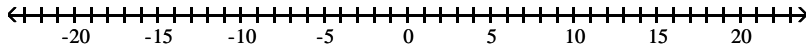

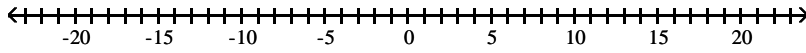C) $\left(\dfrac{3}{8}, \dfrac{7}{8}\right)$

D) $\varnothing$

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65) $\lvert g + 2 \rvert < 5$ 65) _____

A) ∅

B) (−7, −3)
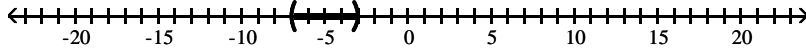
C) (7, 3)
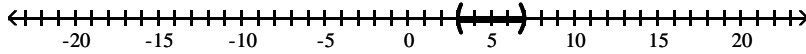
D) (−7, 3)
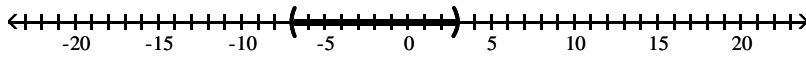
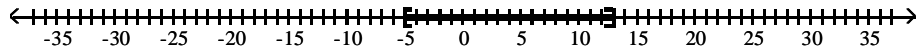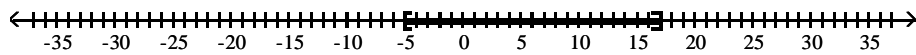66) $\lvert h - 4 \rvert \le 9$ 66) _____
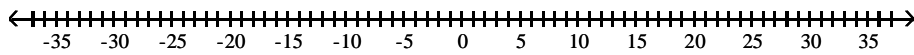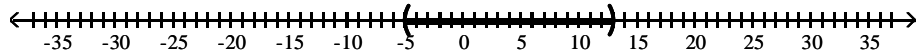
A) ∅
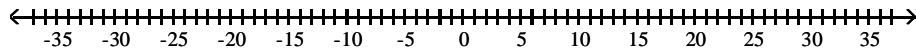
B) [−5, 13]

C) [−5, 17]

D) (−5, 13)

Solve the given equation or inequality. If an equation is given, then write the solution set in set notation. If an inequality is given, then write the solution set in interval notation.

67) $\lvert y + 4 \rvert - 5 = 9$ 67) _____

   A) {14, −14}   B) {10, −18}   C) {10}   D) {12, 17}

68) $\lvert 3k - 7 \rvert - 2 < 1$ 68) _____

   A) $\left(-\infty, \dfrac{4}{3} \right)$ B) ∅

   C) $\left(\dfrac{4}{3}, \dfrac{10}{3} \right)$ D) $\left(-\infty, \dfrac{4}{3} \right) \cup \left(\dfrac{10}{3}, \infty \right)$

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Decide whether the equation is conditional, an identity, or a contradiction. Give the solution set.

69) $2(2g + 28) - 4g - 56 = 0$ 69) _____

    A) Contradiction; $\varnothing$ B) Conditional; $\{0\}$

    C) Identity; {all real numbers}   D) Conditional; $\{2\}$

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

51) D
52) A
53) C
54) A
55) C
56) C
57) B
58) B
59) D
60) C
61) D
62) B
63) D
64) A
65) D
66) B
67) B
68) C
69) C