For the following questions only one answer is correct, circle the letter of the correct answer

1.   What does the algebraic expression **4d** say in words?

   A. The sum of **d** and **4**   **B.** **4** times **d**

   C. **4** increased by **d**   **D.** The quotient of **d** and **4**

2.   The expression $3x - (2x + 4x - 6)$ is equivalent to

   A $-3x - 6$ **C** $3x + 6$

   B $-3x + 6$ **D** $3x - 6$

3.   Let m represent the number of miles. Which algebraic expression represents the number of feet in m miles?

   A $5280m$ **B** $\frac{5280}{m}$

   C $m + 5280$ **D** $5280 - m$

4. $27 \div 3 + (12 - 4) =$

   A $\frac{-11}{5}$ **B** $\frac{27}{11}$

   C 17   **D** 25

5.   Write an **algebraic expression** to represent the perimeter of the rectangle shown below. Then evaluate it to find the perimeter when $w = 8$ cm.

   A 37 cm   **B** 232 cm

   **C** 74 cm   **D** 45 cm

w

4w − 3
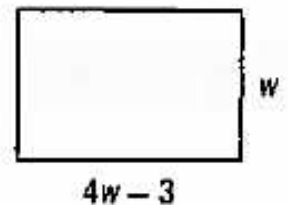
6. Rewrite the expression $(8 - 3p)(-2)$ using the distributive Property.

   A. $-16 + 6p$

   B. $-10p$

   C. $16 - 6p$

   D. $10p$

7. Find the value of the expression $a^2 + 2ab + b^2$ if $a = 6$ and $b = 4$.

   A. 68

   B. 92

   C. 100

   D. 121

8. The expression $-(3x - 4x + 6)$ is equivalent to:

   A. $-x - 6$

   B. $x - 6$

   C. $7x + 6$

   D. $-7x - 6$

9. Simplify the expression $5d(7 - 3) - 16d + 3 \cdot 2d.$

   A $10d$

   C $21d$

   B $14d$

   D $25d$

10. Choose the correct word sentence for this equation: $n - 10 = 15$

    A. The sum of 15 and a number is 10.

    B. Ten less than a number is 15.

    C. The difference of 15 and 10 is this number.

    D. Ten more than a number is 15.

11. The area of a rectangular garden is given as the length times the width of the garden. Which formula describes the relationship between x and y?
    Use A for area, x for length, and y for width.

    A. $A = \dfrac{x}{y}$

    B. $A = x \cdot y$

    C. $A = 2x + 2y$

    D. $A = x + y$

12. What is the solution of the Equation $6x = 48$?
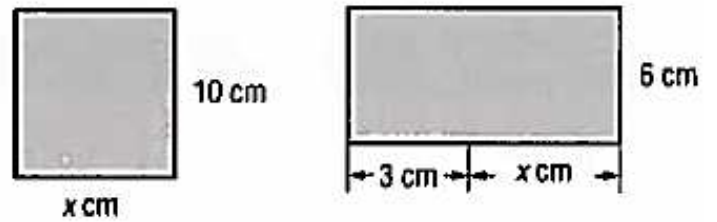
    A. -6 **B.** 6

    C. -8 **D.** 8

13. **4.** Find the value of x so that the figures have the same perimeter.

    A.   1.5   **B.**   2

    C.   3.2   **D.**   4
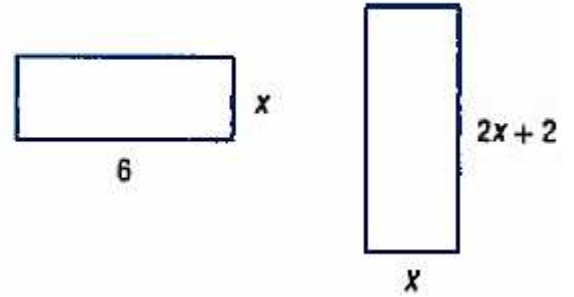
14. Find the value of x so that the figures have the same area.

    A 3   C 6.5

    B 4.5   D 7

15. Find the value of x so that the figures have the same perimeter.
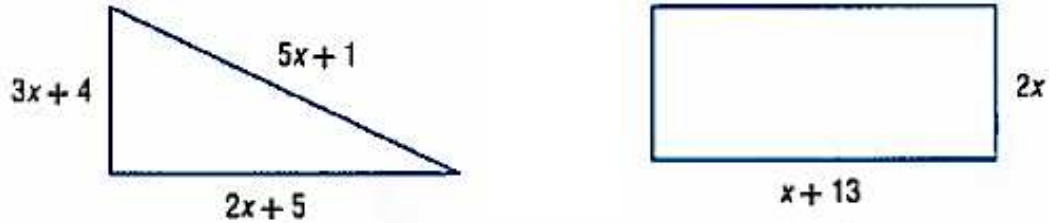
    A 4   B 5   C 6   D 7

16. Three palm trees have different heights. Their heights are consecutive integers. The total of the heights is 18. Which equation represents this situation?

    A. $x + 3 = 18$ **B.** $3x + 3 = 18$

    C. $3x = 18$ **D.** $x - 3 = 18$

17. Which equation represents the second step of the solution process?

Step 1: $4(2x + 7) - 6 = 3x$

Step 2: _____

Step 3: $5x + 28 - 6 = 0$

Step 4: $5x = -22$

Step 5: $x = -4.4$

A $4(2x - 6) + 7 = 3x$

B $4(2x + 1) = 3x$

C $8x + 7 - 6 = 3x$

D $8x + 28 - 6 = 3x$

18. Solve the equation $\frac{3}{5} x = \frac{1}{4}$.

A -3

B $\frac{3}{20}$

C $\frac{5}{12}$

D 2

19. Evaluate the value of the expression if $x = -4, \ y = 7$

$$|3x - 2| + 2y$$

A.   28

B.   29

C.   30

D.   32

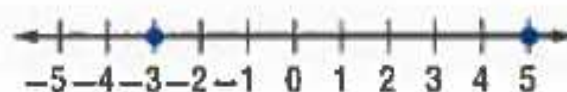**20.** Solve the Equation: $|6m - 3| = 9$

A. $\{2\}$

B. $\{-3,6\}$

C. $\{-1,2\}$

D. $\{-3,3\}$

21. Write an equation involving absolute value for the graph.

A. $|x - 1| = 4$

B. $|x + 1| = 4$

C. $|x - 1| = -4$

D. $|x - 4| = 1$
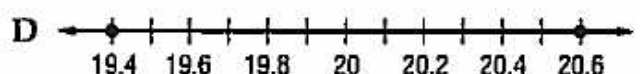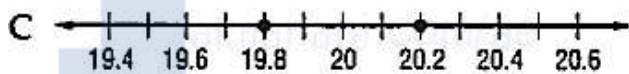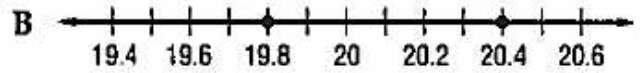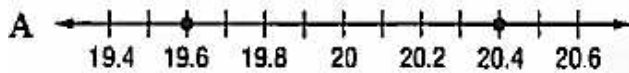
22. Solve the Equation: $|5t + 4| = -1$

A. $\{-1\}$ **B.** $\{-1, 1\}$

C. $\{0, 2\}$ **D.**   *no solution*

23. The amount of soda, in fluid ounces, dispensed from a machine must satisfy the equation $|a - 0.4| = 20$. Which of the following graphs shows the acceptable minimum and maximum amounts that can be dispensed from the machine?

A ⊢┼┼┼┼┼┼┼┼┼┼┼→
  19.4 19.6 19.8 20 20.2 20.4 20.6

B ⊢┼┼┼┼┼┼┼┼┼┼┼→
  19.4 19.6 19.8 20 20.2 20.4 20.6

C ⊢┼┼┼┼┼┼┼┼┼┼┼→
  19.4 19.6 19.8 20 20.2 20.4 20.6

D ⊢┼┼┼┼┼┼┼┼┼┼┼→
  19.4 19.6 19.8 20 20.2 20.4 20.6

24. Solve for x: $\dfrac{5}{18} = \dfrac{10}{x}$

A.   9   **B.**   18

C.   36   **D.**   54

25. Which pair of ratios are proportional?

A. $11 : 15$ and $5 : 20$ **B.** $5\ to\ 15$ and $9\ to\ 36$

C. $\dfrac{6}{33} = \dfrac{10}{55}$ **D.** $\dfrac{18}{2} = \dfrac{56}{7}$

26. A farm has 18 chickens for every 5 cattle. How many chickens does the farm have, if it has 90 cattle?

A.   90   **B.**   125

C.   280   **D.**   324

27. Identify which of these changes will have percent of increase?

A.   From 184 students to 169 students   **B.**   From 1512 m to 1557 m

C.   From 23 liters to 18 liters   **D.**   From $32°\ C$ to $29°\ C$

28. Layla had **18 kg** of powder. But now she has **11 kg**. Find the percent of change and determine if it is increase or decrease.

 A. 7% , increase   **B.** 61.1% , decrease

 C. 38.9% , decrease   **D.** 61.1% , decrease

29. Solve the equation: $3a - b = 12$ for a.

 A. $4 + \dfrac{b}{3}$ **B.** $4 + b$

 C. $3(12 + b)$ **D.** $12 + \dfrac{b}{3}$

30. The formula $A = P(1 + rt)$ represents the amount of money A; including interest, accumulated after t years; P represents the initial amount of the investment and r represents the annual rate of interest as a decimal. Solve for r.

 A. $r = \dfrac{A}{P} - 1$ **B.** $r = \dfrac{A+P}{Pt}$

 C. $r = \dfrac{A-P}{t}$ **D.** $r = \dfrac{A}{P} - t$

31. At Mama Mia Pizza, the price of a large pizza is determined bv $P = 9 + 1.5x$, where x represents the number of toppings added to a cheese pizza. Daniel spent $13.50 on a large pizza. How many toppings did he get?

 A 0   **B** 1

 C 3   **D** 5

32. Find the x- and y-intercepts of the lin graphed at the right.

A x-intercept is 0; y-intercept is 30.

B x-intercept is 20; y-intercept is 30.

C x-intercept is 20; y-intercept is 0.

D x-intercept is 30; y-intercept is 20.
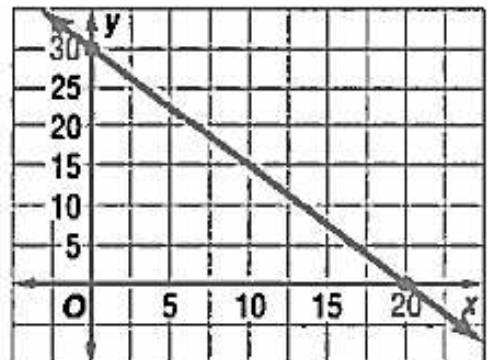
33. Find the *x*- and *y*-intercepts of the graph.

A *x*-intercept is 0; *y*-intercept is 150.

B *x*-intercept is 150; *y*-intercept is 0.

C *x*-intercept is 150; no *y*-intercept.

D No *x*-intercept; *y*-intercept is 150.
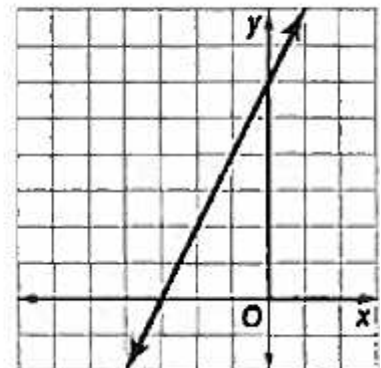
Gym Membership
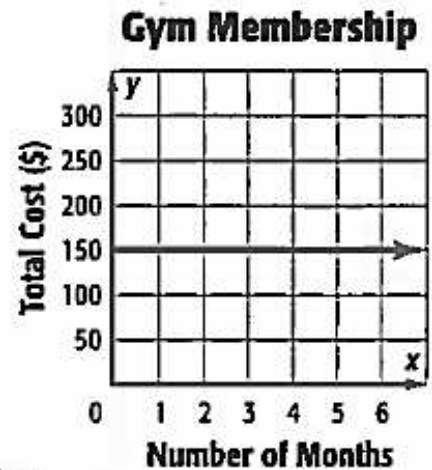
34. Find the *x*- and *y*-intercepts of the graph of each linear function.

A *x*-intercept is 0; *y*-intercept is 0.

B *x*-intercept is 12 ; *y*-intercept is -24.

C *x*-intercept is -12 ; *y*-intercept is -24.

D No *x*-intercept; *y*-intercept is -24.

Position of Scuba Diver	
Time (s)	Depth (m)
x	*y*
0	−24
3	−18
6	−12
9	−6
12	0

35. What are the *x*- and *y*-intercepts of the graph of the function?

A   −3, 6

B   6, −3

C   3, −6

D   −6, 3

36. Hassn received an overall project grade of **85. 6**. the teacher counted lab work **20%** , graphs **20%**, class participation **30%** to determine the overall project grade. Hassan's lab grade was **81** , graphs **92** and tests **80**. What was Hassan's class participation grade?

A.   48.6

B.   58.6

C.   88.6

D.   90

37. Find the slope of the line that passes through the two points:

$$(1,6), \quad (5,14)$$

A. -2 **B.** -1

C. 0 **D.** 2

38. Find the value of r so the line that passes through the Pair of points has the given slope.

$$(-4,8), \quad (r,12) \quad , \quad m = \frac{4}{3}$$

**A.** -4 **B.** -1

C. 0 **D.** 3

39. The function $y = -15 + 3x$ represnts the outside tempreture, in degrees fahrenheit, in a small alaskan town where x represents the number of hours after midnight. The function is accurate for x values representing midnight through 4:00 PM. Find the zero of this function.

A. 0 **B.** 3

C. 5 **D.** -15

40. The line graphed on the coordinate plane shows the rise and run between $(-6,-2)$ and $(6,4)$. What is the rate of change?

A. 2 **B.** 4

C. $\dfrac{1}{2}$ **D.** $\dfrac{1}{4}$
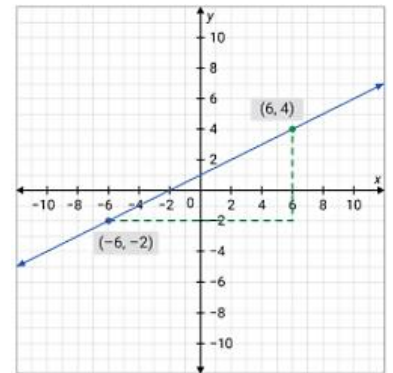
41. Solve for n. $|2n - 3| = 5$

A $\{-4, -1\}$ **B** $\{-1, 4\}$

C $\{1, 1\}$ **D** $\{4, 4\}$

42. Which table of values represent linear function?

A

x	−1	0	1	2
y	3	5	7	9

B

x	−2	0	2	4
y	−5	0	10	20

C

x	−1	0	1	2
y	2	−2	2	−2

D

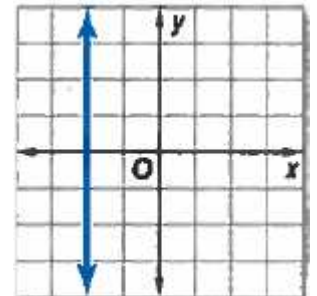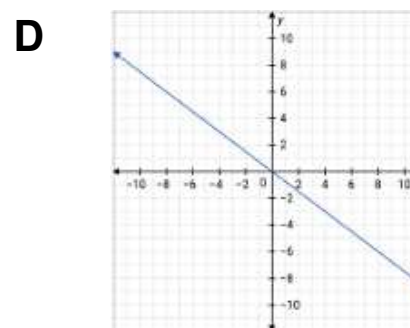| x	−1	0	1	2
y	1	0	1	4

43. The opposite graph represents

A. Positive slope **B.** Zero slope

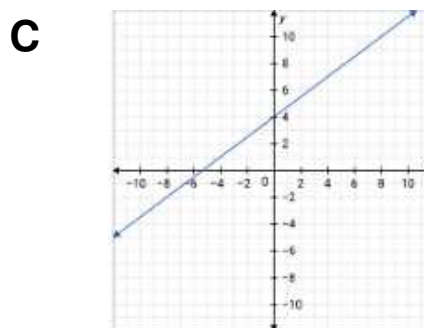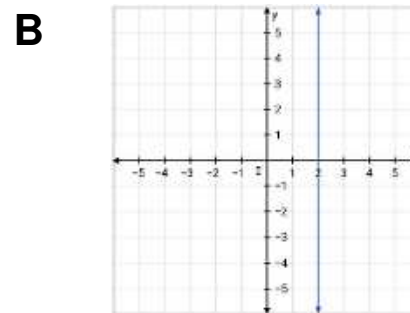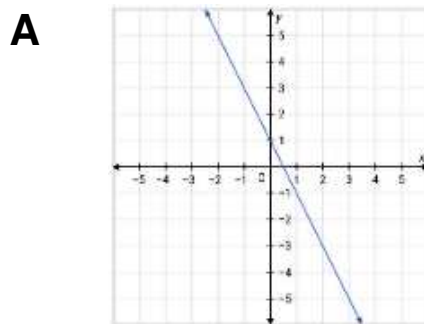**C.** Negative slope **D.** Undefined slope
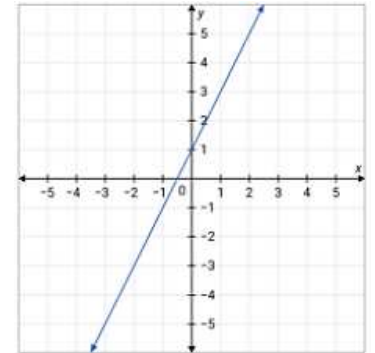
44. The opposite graph represents

A. Positive slope **B.** Zero slope

C. Negative slope **D.** Undefined slope

45. Which graph shows a direct variation?

A

B

C

D

46. Suppose y varies directly as x, and $y = 33$ when $x = -10$.
What is the value of y when $x = -5$?

A.	-22	**B.**	33
C.	-44	**D.**	55

47. Which of the following is an equation of direct variation?

A.	$y = kx - 1$	**B.**	$y = \dfrac{k}{x}$
C.	$y = kx$	**D.**	$y = kx + 2$

48. What is the common difference of the following arithmetic sequence?

$$-8 , -1 , 6 , 13 , ...$$

A.	-8	**B.**	-7
C.	6	**D.**	7

49. The nth term of an arithmetic sequence with first term a_1 and common difference d is given by:

A.	$a_n = a_1 + (n-1)d$	**B.**	$a_n = a_1 + nd$
C.	$a_n = a_1 - (n+1)d$	**D.**	$a_n = a_1 n + d$

50. Which of the following represents an arithmetic sequence?

A.	$19 , 17 , 13 , 11 , 7 , ...$	**B.**	$1 , 4 , 9 , 16 , 25 , ...$
C.	$45 , 35 , 25 , 15 , ...$	**D.**	$-6 , -1 , 3 , 8 , 12 , ...$

51. Find the formula for the nth term of the arithmetic sequence.

$$-7 , -4 , -1 , 2 , ...$$

A.	$a_n = 3n - 4$	**B.**	$a_n = a_1 + nd$
C.	$a_n = 3n - 10$	**D.**	$a_n = -7n + 4$

52. Find the **15**th term of the arithmetic sequence.

$$-9, -4, 1, 6, \ldots$$

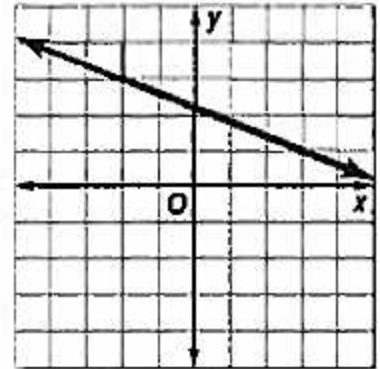|			
A.	58	**B.**	61
C.	63	**D.**	64

53. Which is the slope of the linear function shown in the graph?

A $-\dfrac{5}{2}$ 　　　　B $-\dfrac{2}{5}$

C $\dfrac{2}{5}$ almanahj.com/ae 　D $\dfrac{5}{2}$
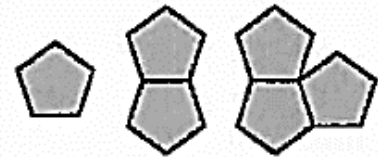
منصة المناهج الإماراتية

54. In each figure, only one side of each regular pentagon is shared with another pentagon. The length of each side is **1** centimeter. If the pattern continues, what is the perimeter of a figure that has 6 pentagons?

A	30 cm	B	25 cm
C	20 cm	D	15 cm

55. The table shows the labor charges of an electrician for jobs of different lengths. Which function represents the situation?

A   C(n) = 25n + 35 　　　C   C(n) = 35n + 25

B   C(n) = 25n + 30 　　　D   C(n) = 35n + 40

Number of Hours (n)	Labor Charges (c)
1	$60
2	$85
3	$110
4	$135

56. Find the slope of the line that passes through the two points:

$$(-2, 3) \, , \, (-5, -12)$$

A.	−5	**B.**	5
C.	9	**D.**	0

57. Find the rate of change for the linear function represented in the table.

Hours Worked	1	2	3	4
Money Earned ($)	5.50	11.00	16.50	22.00

A   increase $6.50/h

B   increase $5.50/h

C   decrease $5.50/h

D   decrease $6.50/h

58. Suppose that y varies directly as x, and $y = 14$ when $x = 4$. What is the value of y when $x = 9$?

A 25.5

C 29.5

B 27.5

D 31.5

59. If the graph of a line has a positive slope and a negative y-intercept, what happens to the x-intercept if the slope and the y-intercept are doubled?

A   The x-intercept becomes four times as great.

B   The x-intercept becomes twice as great.

C   The x-intercept becomes one-fourth as great.

D   The x-intercept remains the same.

60. Which absolute value equation has the graph below as its solution?

6 7 8 9 10 11 12 13 14 15 16 17 18
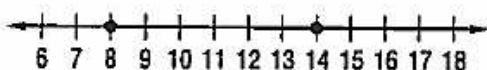
A $|x - 3| = 11$

B $|x - 4| = 12$

C $|x - 11| = 3$

D $|x - 12| = 4$

61. The table below shows the relationship between certain temperatures in degrees Fahrenheit and degrees Celsius. Which of the following linear equations correctly models this relationship?

A $F = \frac{8}{5}C + 35$

B $F = \frac{4}{5}C + 42$

C $F = \frac{9}{5}C + 32$

D $F = \frac{12}{5}C + 26$

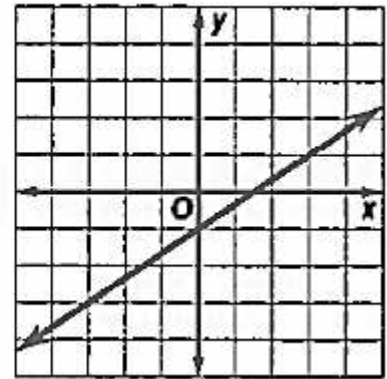| Celsius (C)	Fahrenheit (F)
10°	50°
15°	59°
20°	68°
25°	77°
30°	86°

12

62. What is the slope of the linear function graphed below?

A $-\frac{1}{3}$ B $\frac{1}{2}$

C $\frac{2}{3}$ D $\frac{3}{2}$
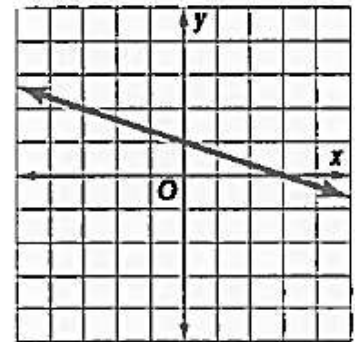
63. Use the graph to determine the solution to the equation $-\frac{1}{3}x + 1 = 0$?

A. 1   B. -1
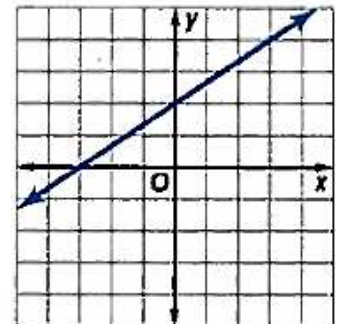
C. $-\frac{1}{3}$ D. 3

64. eache an equation in slope-intercept form for the graph shown.

A. $y = \frac{2}{3}x + 2$ B. $y = -\frac{2}{3}x + 2$

C. $y = 3x + 2$ D. $y = \frac{2}{3}x - 3$

65. A music store has x CDs in stock. If 350 are sold and $3y$ are added to stock, which expression represents the number of CDs in stock?

A $350 + 3y - x$ C $x + 350 + 3y$

B $x - 350 + 3y$ D $3y - 350 - x$

66. A recipe for fruit punch calls for 2 ounces of orange juice for every 8 ounces of lemonade. If Jennifer uses 64 ounces of lemonade, which proportion can she use to find x, the number of ounces of orange juice needed?

A $\frac{2}{x} = \frac{64}{6}$ C $\frac{2}{8} = \frac{x}{64}$

B $\frac{8}{x} = \frac{64}{2}$ D $\frac{6}{2} = \frac{x}{64}$
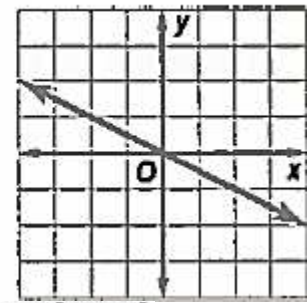
67. Which equation *best* represents the graph?

A $y = 2x$

B $y = -2x$

C $y = \frac{1}{2}x$

D $y = -\frac{1}{2}x$

68. Which of the following is an algebraic translation of the following phrase?

5 less than the quotient of a number and 8

A $5 - \frac{n}{8}$

C $5 - \frac{8}{n}$

B $\frac{n}{8} - 5$

D $\frac{8}{n} - 5$

69. A line through which two points would be parallel to a line with a slope of $\frac{3}{4}$?

A (0, 5) and (−4, 2)

B (0, 0) and (0, −2)

C (0, 2) and (−4, 1)

D (0, −2) and (−4, −2)

70. Write an equation of the line that passes through the point (0, 0) and has slope −4.

A $y = x - 4$

C $y = -4x$

B $y = x + 4$

D $y = 4 - x$

71. Determine whether the graphs of the pair of equations are *parallel, perpendicular*, or *neither*.

$$y = -6x + 8$$
$$3x + \frac{1}{2}y = -3$$

A parallel

B perpendicular

C neither

D not enough information

72. Write an equation in slope-point of the line that passes through the two points $(0,3)$, $(4,-9)$?
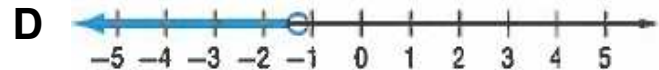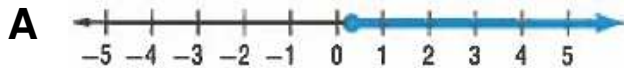
A. $y + 3 = 3x$

B. $y - 3 = 3x$

C. $y - 3 = -3x$

D. $y - 3 = -3x + 4$

14

73. Find the equation in **standard form**, of the line that passes through the point (**2** , **1**), and parallel to the line: $y = -2x + 7$

   A. $y = -2x + 4$ **B.** $2x + y = 5$

   C. $-2x + y = 5$ **D.** $2x - y = 5$

74. Find the equation in **slope-y intercept form**, for the line that passes through the point (**3** , **−1**), and parallel to the line: $y = 3x - 8$

   A. $y = 3x + 1$ **B.** $y = -3x - 1$

   C. $y = -\frac{1}{3}x + 1$ **D.** $y = -\frac{1}{3}x$

75. To illustrate that the two lines, $y = 4x + 3$ and $\frac{1}{4}x + y = 10$ are **perpendicular.**

   A. $4 \times \frac{1}{4} = 1$ **B.** $-4 \times -\frac{1}{4} = 1$

   C. $4 \times -\frac{1}{4} = -1$ **D.** $-4 \times \frac{1}{4} = -1$

76. Write the equation of a line that parallel to $y = 4x + 3$ and has a y-intercept of **5**.

   A. $y = 4x + 5$ **B.** $y = -4x + 5$

   C. $y = -4x - 5$ **D.** $y = -\frac{1}{4}x + 5$

77. What is the solution set of the inequality $7 + x < 5$?

   A $\{x\,|\,x < 2\}$ **B** $\{x\,|\,x < -2\}$

   C $\{x\,|\,x > 2\}$ **D** $\{x\,|\,x > -2\}$

78. What is the solution set of the inequality $4t + 2 < 8t - (6t - 10)$?

   A $\{t\,|\,t < -6.5\}$ **B** $\{t\,|\,t < 4\}$

   C $\{t\,|\,t > -6.5\}$ **D** $\{t\,|\,t > 4\}$

79. Which of the following graphs is the solution of the inequality?

$$-\frac{2}{3}x \le 9$$

A

$$\begin{array}{ccccccccccc} -5 & -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 & 5 \end{array}$$

B

$$\begin{array}{ccccccccccc} -18 & -17 & -16 & -15 & -14 & -13 & -12 & -11 & -10 & -9 & -8 \end{array}$$

C

$$\begin{array}{ccccccccccc} -5 & -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 & 5 \end{array}$$

D

$$\begin{array}{ccccccccccc} -5 & -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 & 5 \end{array}$$

80. Obaid's international calling card costs 9 fils for each minute. Which inequality can be used to find how long he can talk to a friend if he does not want to spend more than AED 2.50 on the call?

A $0.09 \ge 2.50m$

B $0.09 \le 2.50m$

C $0.09m \ge 2.50$

D $0.09m \le 2.50$

81. Shoe rental costs AED 2, and each game bowled costs AED 3.

How many games can Sultan bowl without spending more than AED 15?

A   2

B   4

C   3

D   5

82. What is the solution set of the inequality $-7 < x + 2 < 4$?

A $\{x \mid -5 < x < 6\}$

C $\{x \mid -9 < x < 2\}$

B $\{x \mid -5 < x < 2\}$

D $\{x \mid -9 < x < 6\}$

83. The formula for acceleration in a circle is $a = \frac{v^2}{r}$.
Which of the following shows the equation solved for r?

A $r = v$

C $r = av^2$

B $r = \frac{v^2}{a}$

D $r = \frac{\sqrt{a}}{v}$

16

84. Which inequality best represents the statement below?

A jar contains 832 gumballs. Rashid's guess was within 46 pieces.
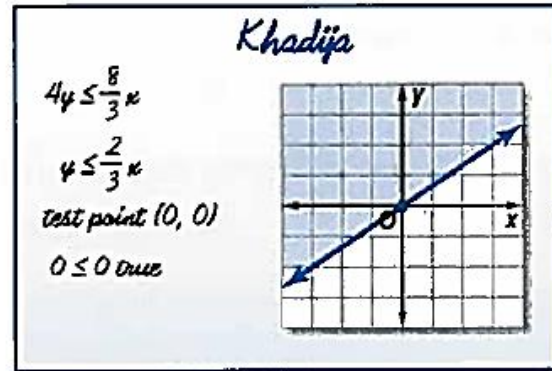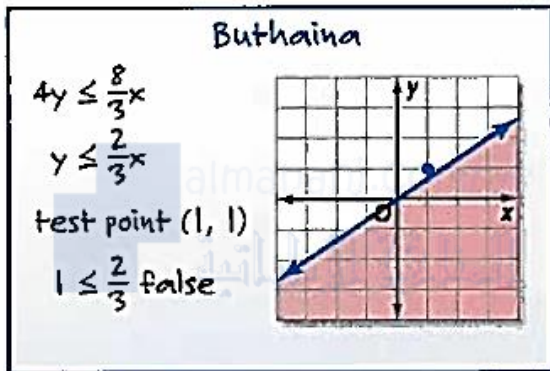
A $|g - 832| \leq 46$

B $|g + 832| \leq 46$

C $|g - 832| \geq 46$

D $|g + 832| \geq 46$

85. **ERROR ANALYSIS** Buthaina and Khadija are solving $4y \leq \frac{8}{3}x$ by graphing. Is either of them correct? Explain your reasoning.

Buthaina

$4y \leq \frac{8}{3}x$

$y \leq \frac{2}{3}x$

test point (1, 1)

$1 \leq \frac{2}{3}$ false

Khadija

$4y \leq \frac{8}{3}x$

$y \leq \frac{2}{3}x$

test point (0, 0)

$0 \leq 0$ true

A. *Buthaina* her shaded area is correct

B. Khadija her test point is correct

C. Khadija her shaded area is correct

D. *no one of them is correct*

86. Write a compound inequality for the graph shown below.

-5 -4 -3 -2 -1 0 1 2 3 4 5
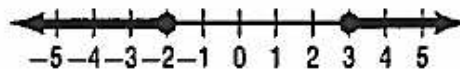
A $-2 \leq x < 3$

B $x < -2$ or $x \geq 3$

C $x \leq -2$ or $x \geq 3$

D $-2 < x \leq 3$

87. Jassim received a AED 100 gift certificate for a graduation gift. He wants to buy a CD player that costs AED 38 and CDs that cost AED 12 each. Which of the following inequalities represents how many CDs Jassim can buy?

A $n \leq 6$

B $n \geq 5$

C $n < 5$

D $n \leq 5$

17

88. Which equation has a slope of $-\frac{2}{3}$ and a y-intercept of 6?

A $y = 6x + \frac{2}{3}$ C $y = -\frac{2}{3}x + 6$

B $y = -\frac{2}{3}x - 6$ D $y = 6x - \frac{2}{3}$

89. What type of line does not have a defined slope?

A horizontal   C perpendicular

B parallel   D vertical

90. The highest score that is on record on a video game is 10,219 points. The lowest score on record is 257 points. Which of the following inequalities best shows the range of scores recorded on the game?

A $x \leq 10,219$ B $x \geq 257$

C $257 < x < 10,219$ D $257 \leq x \leq 10,219$

91. The current temperature is 42°. If the temperature rises more than 4 degrees, there will be a new record high for the date. Which number line represents the temperatures that would set a new record high?

A
```
←+—+—+—+—+—+—+—⊕—+—+—+—+—+→
   39 40 41 42 43 44 45 46 47 48 49 50 51
```

B
```
←+—+—+—+—+—+—⊕—+—+—+—+—+→
   39 40 41 42 43 44 45 46 47 48 49 50 51
```

C
```
←+—+—+—+—+—⊕—+—+—+—+—+—+→
   39 40 41 42 43 44 45 46 47 48 49 50 51
```

D
```
←+—+—+—+—+—+—⊕—+—+—+—+—+→
   39 40 41 42 43 44 45 46 47 48 49 50 51
```