

Mid Term Review 2018

Name _____ Period _____

1. Rewrite the explicit formula in function form. Then identify the y-intercept of the function.

$$A_n = 5 + 0.2(n - 1)$$

2. Rewrite the explicit formula in function form. Then identify the y-intercept of the function.

$$A_n = -3 + 5(n - 1)$$

3. Rewrite the explicit formula in function form. Then identify the y-intercept of the function.

$$A_n = 1.5 + 4.2(n - 1)$$

4. Rewrite the explicit formula in function form. Then identify the y-intercept of the function.

$$A_n = -7 - 3(n - 1)$$

5. Determine whether each table of values represents a linear function. For those that represent linear functions, write the function. For those that do not, explain why not.

a.

x	y
-2	-7
0	-6
2	-5
4	-4

b.

x	y
-2	10
-1	6
0	4
1	2

6. Determine whether each table of values represents a linear function. For those that represent linear functions, write the function. For those that do not, explain why not.

a.

x	y
-4	9
-3	2
-3	-3
-1	-6

b.

x	y
-4	16
-2	10
0	4
2	-2

7. Write the equation of the line that is parallel to $y = 5x + 1$ that passes through $(3, -1)$.

8. Write the equation of the line that is parallel to $Y = -3x - 1$ that passes through $(3, 4)$.

9. Write the equation of the line that is *perpendicular to* $Y = 2x - 7$ that passes through $(-4, 5)$.

10. Write the equation of the line that is *perpendicular to* $Y = -6x + 3$ that passes through $(-4, 6)$.

11. Which is a true comparison for the following functions? $F(x) = 4x + 7$

x	g(x)
-1	7
1	1
3	-5
5	-11

- a. the y-intercept of $f <$ the y-intercept of g
 b. the rate of change of $f(x) >$ the rate of change of $g(x)$
 c. $f(3) = g(3)$
 d. $f(-1) > g(-1)$

12. Which represents the explicit formula for the arithmetic sequence $a_n = 7 - 3(n - 1)$ in function form?

- a. $f(n) = 3n - 6$ b. $f(n) = -3n - 6$
 c. $f(n) = 3n - 10$ d. $f(n) = -3n + 10$

13. Consider the table below. What is the average rate of change?

x	f(x)
-2	-8
0	-4
2	0
4	4

- a. -4
 b. -2
 c. 0
 d. 2

14. Miguel has started running. He runs 1 mile the first week. His goal is to run 2 miles farther than his distance for the previous week. Which explicit formula represents this scenario?

- a. $a_n = 1 + 2n - 1$
 b. $a_n = 1 + 2(n + 2)$
 c. $a_n = 1 + 2(n - 1)$
 d. $a_n = 1 + 2(n + 1)$

15. What linear function models the table of values?

x	y
-1	5
0	3
1	1
2	-1

- a. $f(x) = x + 0.5$
 b. $f(x) = -x + 4$
 c. $f(x) = 2x - 3$
 d. $f(x) = -2x + 3$

16. Solve for x: $4(x - 2) - 3 = 9$

17. Solve for x: $3.5x + 5.4 = 19.4$

18. Solve for x: $\frac{2}{3}x - 7 = -3$

19. Solve for x: $\frac{3x}{4} - 1 = 2$

20. Solve for x: $2(3x - 3) + 2 = 26$

21. What is the value of n in the equation

$$0.6(n + 10) = 3.6?$$

- a. -0.4 b. 5 c. -4 d. 4

22. solve for x: $\frac{1}{16}x + \frac{1}{4} = \frac{1}{2}$

23. Which value of p is the solution of :

$$5p - 1 = 2p + 20$$

- a. $\frac{19}{7}$ c. 3
 b. $\frac{19}{3}$ d. 7

24. solve for x: $\frac{3}{5}(x + 2) = x - 4$

- a. 8 b. 13 c. 15 d. 23

25. What is the value of x in the equation

$$2(x - 4) = 4(2x + 1)$$

- a. -2 b. 2 c. $-\frac{1}{2}$ d. $\frac{1}{2}$

26. The value of y in the equation

$$0.06y + 200 = 0.03y + 350$$
 is:

- a. 500 b. 1,666.6
 c. 5,000 d. 18,333.3

27. Solve for x: $5x - 2(x + 1) = 10$.

28. What is the value of x in the equation

$$4(2x + 1) = 27 + 3(2x - 5)?$$

- a. 21 b. 9 c. $7\frac{1}{2}$ d. 4

29. solve for x: $3(x - 2) + 5 = 2(5x - 4)$

30. Solve for x: $15x - 3(3x + 4) = 6$

- A. 1 B. $-\frac{1}{2}$ C. 3 D. 1

31. What is the value of m in the equation

$$2m - (m + 1) = 0?$$

- A. 1 B. -1 C. 13 D. 0

32. Solve for a: $3a + 4b = c$

33. Solve for p: $rp + s = t$

34. Solve for D: $C = \pi D$

35. Solve for x: $bx + c = a$

36. If $V = lwh$, what is the value of V when $l = 2$, $w = 3$, and $h = 4x$?

- A. $9x$ B. $24x$ C. $5 + 4x$ D. $6 + 4x$

37. If $dx - 2 = h$, then x is equal to

- a. $h + \frac{2}{d}$ b. $h - \frac{2}{d}$ c. $h + \frac{2}{d}$ d. $\frac{h}{d} + 2$

38. Solve for r: $I = Prt$

39. If $3x + c = 4$, then x equals

- a. $4 - c$ b. $4 - \frac{c}{3}$ c. $c - \frac{4}{3}$ d. $c - 4$

40. If $4x + y = H$, then x is equal to

- a. $\frac{H}{4} - y$ b. $\frac{h}{4} + y$ c. $\frac{H+y}{4}$ d. $\frac{H-y}{4}$

41. Solve for x in the equation $2ax + 2y = c$

- a. $\frac{c-y}{a}$ b. $\frac{c-2y}{2a}$ c. $c - 2y - 2a$ d. $\frac{c+2y}{2a}$

42. The inequality $3x + 2 > x + 8$ is equivalent to:

- a. $x > -\frac{3}{2}$ b. $x > \frac{3}{2}$ c. $x > 3$ d. $x < 3$

43. Which inequality is the solution of $5x - 1 < 29$?

- A. $x > 7$ C. $x < 6$
 B. $x < 7\frac{1}{4}$ D. $x > 5$

44. The inequality $2x > x + 7$ is equivalent to

- A. $x > 7$ B. $x < 7$
 C. $x = 7$ D. $x > \frac{7}{3}$

45. The expression $5 \leq x - 2$ is equivalent to

- a. $x \leq 7$ b. $x \geq 7$ c. $x \geq 3$ d. $x \geq \frac{5}{2}$

46. Which inequality is equivalent to:

$$\frac{2}{3}x - 5 < 11$$

- A. $x < 6$ C. $x < 16$
 B. $x < 9$ D. $x < 24$

47. Which statement is equivalent to the inequality $9 - 4x \leq 3x - 5$

- a. $x > -2$ b. $x < 2$ c. $x \leq -2$ d. $x \geq 2$

48. Students in a 9th grade class measured their heights, h , in centimeters. The height of the shortest student was 155 cm, and the height of the tallest student was 190 cm. Which inequality represents the range of heights?

- A. $155 < h < 190$ B. $155 \leq h \leq 190$
 C. $h \geq 155$ or $h \leq 190$ D. $h > 155$ or $h < 190$

49. The statement " $x \geq 4$ and $2x - 4 < 6$ " is true when x is equal to

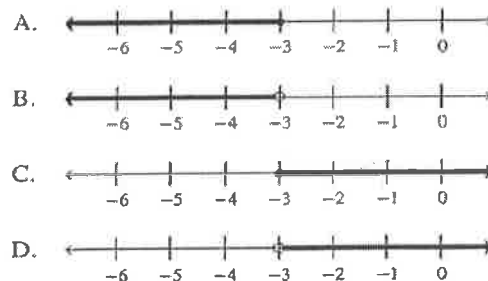
- A. 1 B. 10 C. 5 D. 4

50. Roger is having a picnic for 78 guests. He plans to serve each guest at least one hot dog. If each package, p , contains eight hot dogs, which inequality could be used to determine how many packages of hot dogs Roger will need to buy?

- A. $p \geq 78$ C. $8 + p \geq 78$
 B. $8p \geq 78$ D. $78 - p \geq 8$

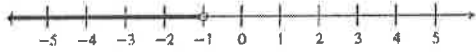
51.

If the replacement set for x is the set of real numbers, which graph represents the inequality $x + 6 \geq 3$?



52.

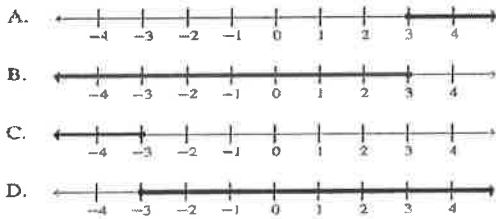
Which inequality is represented by the graph?



- A. $x > -1$ B. $x \leq -1$
 C. $x < -1$ D. $x \geq -1$

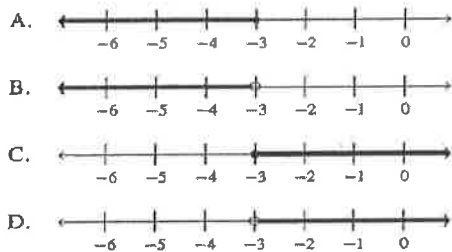
53.

Which graph represents the solution of the inequality $-3x + 1 \leq 10$?



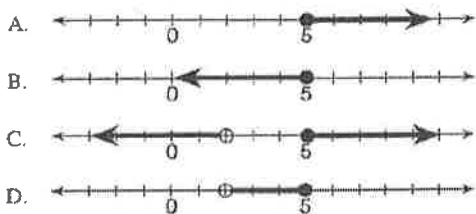
54.

If the replacement set for x is the set of real numbers, which graph represents the inequality $x + 6 \geq 3$?



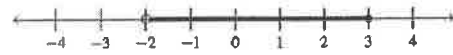
55.

Which graph represents the solution set of $\frac{x+16}{x-2} \leq 7$?



56.

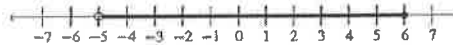
Which inequality is represented by the accompanying graph?



- A. $-2 < x \leq 3$ B. $-2 \leq x \leq 3$
 C. $-2 \leq x < 3$ D. $-2 < x < 3$

57.

Which inequality is represented by the graph?



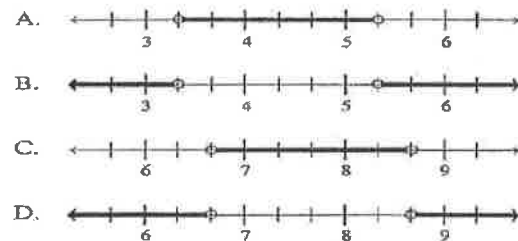
- A. $-5 < x < 6$ B. $-5 \leq x \leq 6$
 C. $-5 \leq x < 6$ D. $-5 < x \leq 6$

58. If $f(x) = (2x)^2$, find $f(-4)$.

59. If $f(x) = -2x^2 + 6$, find the value of $f(-3)$.

60.

What is the graph of the solution set of $15 < 3x + 5 < 21$?



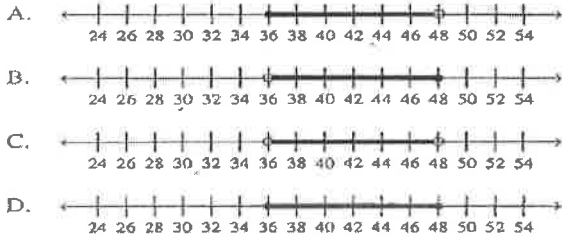
61.

The manufacturer of Ron's car recommends that the tire pressure be at least 26 pounds per square inch and less than 35 pounds per square inch. On the accompanying number line, graph the inequality that represents the recommended tire pressure.

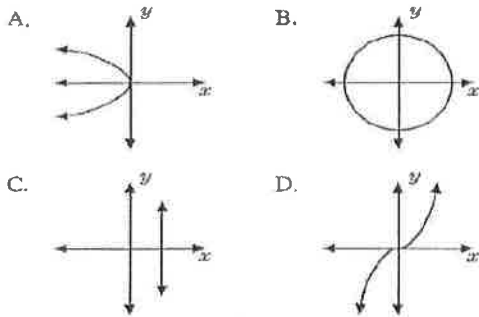


62.

In order to be admitted for a certain ride at an amusement park, a child must be greater than or equal to 36 inches tall and less than 48 inches tall. Which graph represents these conditions?

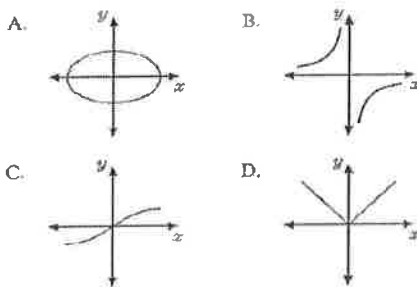


63. Which diagram is not the graph of a function?

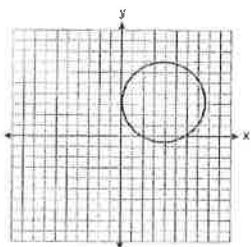


64.

Which diagram is not the graph of a function?

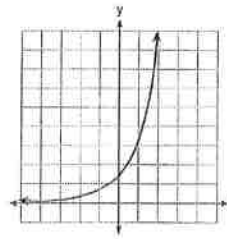


65. Which statement is true about the relation shown on the graph below?



- A. It is a function because there exists one x -coordinate for each y -coordinate.
- B. It is a function because there exists one y -coordinate for each x -coordinate.
- C. It is not a function because there are multiple y -values for a given x -value.
- D. It is not a function because there are multiple x -values for a given y -value.

66. Which type of function is graphed below?



- A. linear
- B. quadratic
- C. exponential
- D. absolute value

67. Which set of ordered pairs is not a function?

- A. $\{(3, 1), (2, 1), (1, 2), (3, 2)\}$
- B. $\{(4, 1), (5, 1), (6, 1), (7, 1)\}$
- C. $\{(1, 2), (3, 4), (4, 5), (5, 6)\}$
- D. $\{(0, 0), (1, 1), (2, 2), (3, 3)\}$

68. If $f(x) = 3 - x^2$, find $f(-2)$.

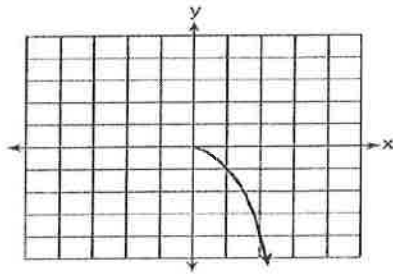
69. Which set of ordered pairs does not represent a function?

- A. $\{(3, -2), (-2, 3), (4, -1), (-1, 4)\}$
- B. $\{(3, -2), (3, -4), (4, -1), (4, -3)\}$
- C. $\{(3, -2), (4, -3), (5, -4), (6, -5)\}$
- D. $\{(3, -2), (5, -2), (4, -2), (-1, -2)\}$

70. Which relation represents a function?

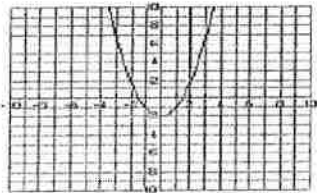
- a. $\{(0, 3), (2, 4), (0, 6)\}$
- b. $\{(-7, 5), (-7, 1), (-10, 3), (-4, 3)\}$
- c. $\{(2, 0), (6, 2), (6, -2)\}$
- d. $\{(-6, 5), (-3, 2), (1, 2), (6, 5)\}$

78. What is the range of the function shown below?



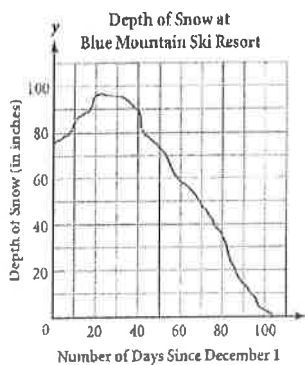
- a. $x \leq 0$ b. $x \geq 0$ c. $y \leq 0$ d. $y \geq 0$

79. Look at the graph below and state if the graph is linear, quadratic, exponential, or absolute value.



80. The graph below shows the depth of snow at Blue Mountain Ski Resort last winter.
Part A: explain what the y-intercept of the graph represents:

Part B: explain what the x-intercept of the graph represents:



81. Marisa drank one cup of milk and ate x small vanilla cookies for a snack. The linear equation below represents y , the total number of calories in Marisa's snack.

$$Y = 12x + 120$$

- a) What is the y-intercept of the line represented by this equation?
- b) Explain what the y-intercept tells us about Marisa's snack.
- c) What is the slope of the line represented by this equation?
- d) Explain what the slope tells us about Marisa's snack.
- e) If Marisa eats 9 small vanilla cookies, what is the total number of calories in her snack? Show or explain how you got your answer.

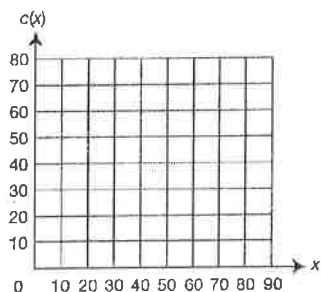
82. Albert sells baseball programs at a stadium. The function $m(x)=2.50x$ represents the total amount of money collected, in dollars, for selling x baseball programs.

a) Fill in the table with the amounts of money collected for selling baseball programs.

Albert's Revenue

Baseball Programs Sold	Money Collected (\$)
150	
175	
197	

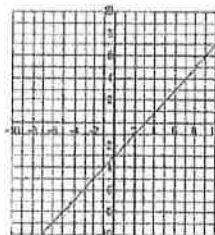
b) The cost, in dollars, to print up x programs for each game is represented by the function $c(x) = 0.50x + 40$. On the grid below, draw a line that contains the coordinate points of the cost to print up x programs for each game.



c) In addition to his hourly wage, Albert earns a bonus when the amount of money collected is greater than the cost to print the total number of programs he sold. His bonus is equal to $\frac{1}{2}$ of the difference between the amount of money collected, $m(x) = 2.50x$, and the cost, $c(x) = 0.5x + 40$.

d) How much money does Albert earn as a bonus when he sells 309 baseball programs? Show all of your work. Explain why you did each step.

83. Look at the graph below and state if the graph is linear, quadratic, or exponential?



84. How does the graph of $f(x) = 2x + 10$ change if the function is changed to

$$f(x) = -2x + 10?$$

- A. The graph does not change at all.
- B. The y-intercept would be different, but the slope would remain the same.
- C. The slope would be different, but the y-intercept would remain the same.
- D. Both the y-intercept and the slope of the graph would change.

85. Given $y = x^2$, how would the graph of $y = x^2 - 2$ differ?

- A. It shifts 2 units up.
- B. It shifts 2 units down.
- C. It shifts 2 units left.
- D. It shifts 2 units right.

86. Beth and Jacob are graphing two equations on a coordinate grid. Beth has graphed the equation $y = x^2 + 1$. If Jacob graphs $y = x^2 + 3$, where will his graph be in relation to the graph Beth made?

- A. 2 units up
- B. 3 units up
- C. 2 units to the left
- D. 3 units to the right

87. Sue ate 100 pizzas in 5 days, each day eating 6 more than on the previous day. How many pizzas did she eat on the fourth day?

- A. 26 B. 30 C. 32 D. none of these

88. Find the twentieth term of 10, 7, 4, ...

- A. -47 B. -60 C. -44 D. none of these

89. A person has \$650 in a bank account and is closing out the account by writing one check a week against it. The first check is \$20, the second is \$25, and so on, with each check exceeding the previous one by \$5. In how many weeks will the account be closed if there is no service charge?

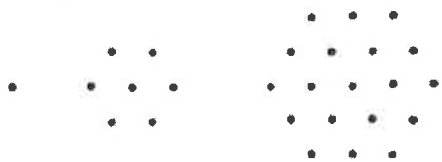
- A. 11 B. 13 C. 15 D. none of these

90. Which of the following represents the 58th term of the arithmetic series:

10, 4, -2, ... ?

- A. -332 B. -422 C. -443 D. none of these

91. The first three hexagonal numbers are 1, 7, 19. What is the fifth hexagonal number?



- a. 43 b. 61 c. 71 d. 55

92. Bricks are stacked in 25 layers. Except for the top layer, which has three bricks, each layer has two more bricks than the layer above it. How many bricks are there altogether?

- a. 624 b. 675 c. 700 d. none of these

93. The seventh term of the geometric sequence 9, -18, 36, ... is:

- a. 72 b. -54 c. 576 d. none of these

94. If the third term of an arithmetic series is -7 and the twenty-third term is 43, what is the eleventh term?

- a. 27.5 b. 15.5 c. 13 d. none of these

Due Friday: #1-6, 58-59, 63-79, 83

Due Monday: #7-15, 80-82, 84-94

Due Tuesday: #16-57, 60-62

★ Monday HW → will add
- exponent problems
- explicit & recursive formulas

★ Tuesday HW → will add
- systems (graph & algebraic)
- absolute value equations & inequalities

★ Wednesday HW
will be on linear regression, correlation & causation