Name_____ Date_____ Per_____

LAM 1 Midterm 2018 Study Guide

Read each question carefully. Show your work on the back of the pages. You may use a calculator.

For problems 1-3, match the definition to the term.

1. Expression
2. Equation
3. Inequality

a. Like an expression, but has an equal sign and can be solved.

b. Like an equation, but instead of an equal sign, has a greater than, less than, greater than or equal to, or less than or equal to sign.

c. Uses math to represent words. Does *not* have an equal sign and cannot be solved.

Problems 4-7 solve the equation.

4. $9p + 7 = 43$

a. $p = 10$
b. $p = 5.5$
c. $p = 45$
d. $p = 4$

5. $-3c - 4 = 32$

a. $c = -3$
b. $c = -12$
c. $c = 11$
d. $c = -33$

6. $10 = 3x - 15 + 2x$

a. $x = 5$
b. $x = -1$

c. $x = 8$
d. $x = 11$

7. $2(d + 5) = -2$

a. $d = -3.5$
b. $d = 6$
c. $d = 7$
d. $d = -6$

Problems 8 & 9 choose the correct inequality for the situation.

8. The theatre (t) can hold no more than 155 people.

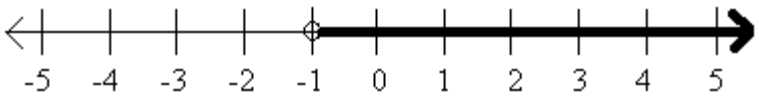
a. $t < 155$
b. $t \geq 155$
c. $t \leq 155$
d. $t > 155$

9. The number p is between -5 and 3.

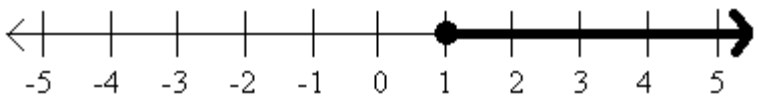
a. $-5 < p < 3$
b. $p < -5 \text{ or } p > 3$
c. $-5 \geq p \leq 3$
d. $3 < p < -5$

10. Solve and graph the following inequality. $f + 12 > 15$

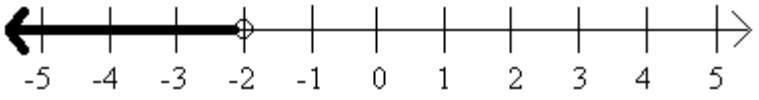
a. $f > -1$



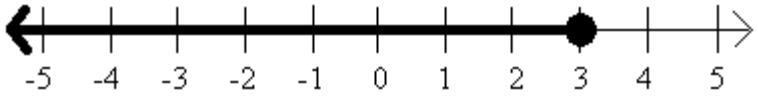
b. $f \geq 1$



c. $f < -2$



d. $f \leq 3$



11. A school choir must practice singing for 126 minutes each week. So far this week they have practiced for 42 minutes. Choose the expression they could use to find out how many more minutes they need to practice during the remainder of the week.

a. $84 + 42$
b. $126 - 42$
c. $126 + 42$
d. $126 - 84$

12. Kaye wants to make trail mix made up of almonds, walnuts, and raisins. She wants to mix one part almonds, three parts walnuts, and four parts raisins. Almonds cost $10 per pounds, walnuts cost $12 per pound, and raisins cost $6 per pound. Kaye has $35 to spend on the trail mix. Write and use an equation to determine how many pounds of trail mix she can make.
a. $35 = 10x + 12x + 6x$; She can make 5 lbs of trail mix.
b. $35 = 10x + 12(3x) + 6(4x)$; She can make 10 lbs of trail mix.
c. $35 = 10x + 12x + 6x$; She can make 20 lbs of trail mix.
d. $35 = 10x + 12(3x) + 6(4x)$; She can make 4 lbs of trail mix.

13. Find the domain and range of the following set of points.
$\{(-3, 12), (4, -2), (8, 3), (-6, 1), (0, -5), (7, -2)\}$
a. Domain: $x = -5, -2, 1, 3, 12$ Range: $y = -6, -3, 0, 4, 7, 8$
b. Domain: $x = -3, 4, 8, -6, 0, 7$ Range: $y = 12, -2, 3, 1, -5, -2$
c. Domain: $x = -6, -3, 0, 4, 7, 8$ Range: $y = -5, -2, 1, 3, 12$
d. Domain: $x = 12, -2, 3, 1, -5, -2$ Range: $y = -3, 4, 8, -6, 0, 7$

14. $f(x) = 4x + 9$. Find $f(3)$.
a. 16
b. 21
c. 12

d. 7

Problems 15 & 16 determine whether each equation or set of points is a function or not.

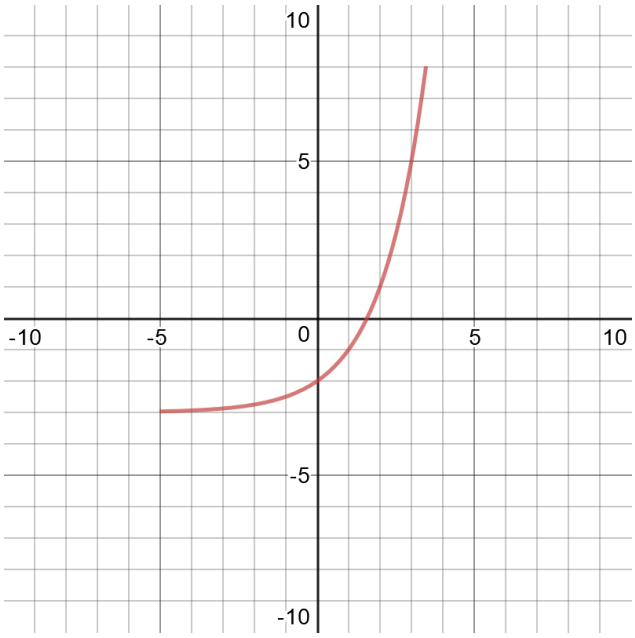
15. $y = \frac{1}{2}x + 4$
    a. Function
    b. Not a function

16.

x	y
-2	-4
-0	0
2	4
4	8
6	12

    a. Function
    b. Not a function

For problems 17-26, use the following graph.



17. Is the graph increasing or decreasing?
    a. Increasing

b. Decreasing

18. Where is the graph positive?

a. $x = \ -5 \ to \ x = 0$
b. $x = \ -5 \ to \ x = 1.5$
c. $x = 0 \ to \ x = 3.5$
d. $x = 1.5 \ to \ x = 3.5$

19. Where is the graph negative?

a. $x = -5 \ to \ x = 0$
b. $x = -5 \ to \ x = 1.5$
c. $x = 0 \ to \ x = 3.5$
d. $x = 1.3 \ to \ x = 3.5$

20. What is the x-intercept?

a. -2
b. 0
c. 1.5
d. 3.5

21. What is the y-intercept?

a. -10
b. -2
c. 0
d. 1

22. What is the maximum of the graph?

a. $(-5, \ -3)$
b. $(0, \ -2)$
c. $(1.5, \ 0)$
d. $(3.5, \ 8)$

23. What is the minimum of the graph?

a. $(-5, \ -3)$
b. $(0, \ -2)$
c. $(1.5, \ 0)$
d. $(3.5, \ 8)$

24. What is the domain of the graph?

a. $-10 \leq x \leq 10$
b. $-5 \leq x \leq 3.5$
c. $0 \leq x \leq 3.5$
d. $-10 \leq x \leq 1.5$

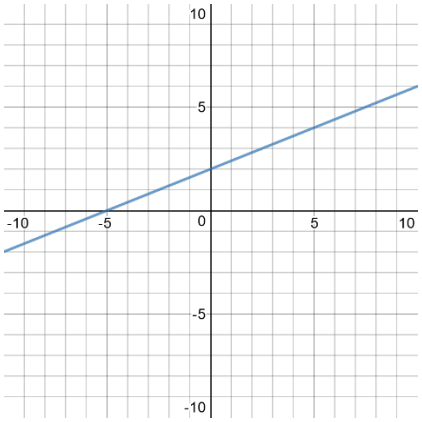
25. What is the range of the graph?

a. $-10 \leq y \leq 10$
b. $-3 \leq y \leq 0$
c. $0 \leq y \leq 8$
d. $-3 \leq y \leq 8$

26. Is the graph a function or not?

a. Function
b. Not a function

27. Which equation represents the line shown in the graph below?

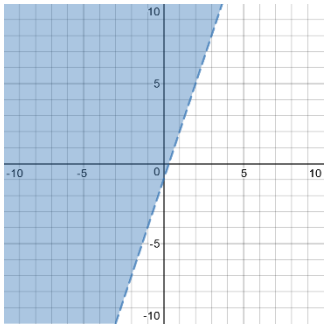


a. $y = \frac{2}{5}x - 5$
b. $y = \frac{2}{5}x + 2$
c. $y = \frac{5}{2}x - 5$
d. $y = \frac{5}{2}x + 2$

28. Which point satisfies the inequality $x + 2y > 10$?

a. $(2, 5)$
b. $(5, 2)$
c. $(1, 3)$
d. $(3, 1)$

29. The accompanying diagram shows the graph of which inequality?



a. $y < 3x - 1$
b. $y > 3x - 1$
c. $y \leq 3x - 1$
d. $y \geq 3x - 1$

30. Which table shows a relationship between the values of x and y that represents a linear function?

a.

x	y
1	

c.

x	y
-1	

b.

x	y
-1	-4

d.

x	y
1	4

31. Determine the slope and y-intercept of the equation $6x - 3y = 9$. Make sure you put it into slope-intercept form first.

a. $m = 2\ b = -3$
b. $m = -3\ b = 6$
c. $m = 2\ b = 3$
d. $m = 6\ b = 9$

32. Solve the following system of equations using substitution. Be sure to show your work on the back of the page.

$$y = 2x - 4y = x + 1$$

a. $(-1, 0)$
b. $(-5, -4)$
c. $(5, 6)$
d. $(1.7, 2.7)$

33. Solve the following system of equations using elimination. Be sure to show your work on the back of the page.

$$4x + 8y = 20 - 4x + 2y = -30$$

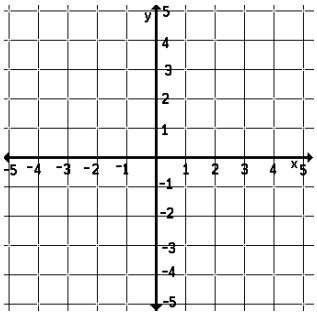
a. $(10, -5)$
b. $(7, -1)$
c. $(11, 8)$
d. $(6, -3)$

34. Solve the following system of equations by graphing using the coordinate plane below.

$y = 3x - 5y = -2x$

a. $(-2, -2)$
b. $(0, 0)$
c. $(1, -2)$
d. $(0, -5)$

35. Which ordered pair is in the solution set of the system of inequalities shown in the graph below?

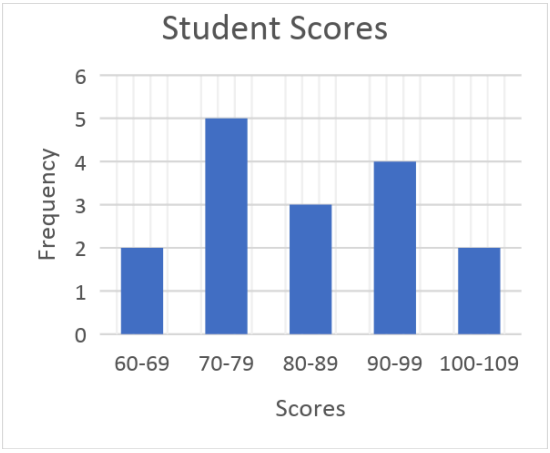


a. $(-3, -2)$

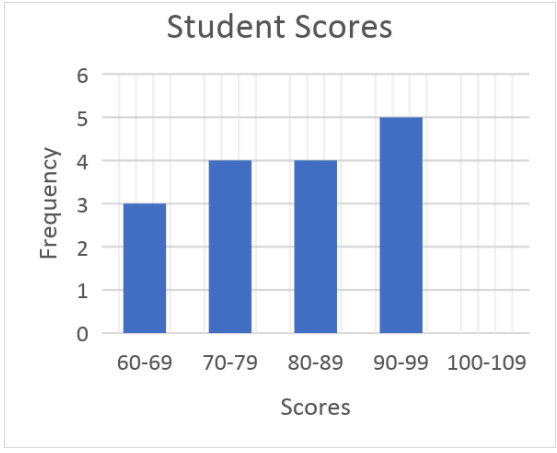
b. $(-4, 3)$
c. $(2, 1)$
d. $(1, -3)$

36. Make a histogram for the following data set. Student scores: 100, 98, 77, 76, 85, 62, 73, 88, 85, 92, 93, 72, 66, 70, 90, 100, 63, 81.

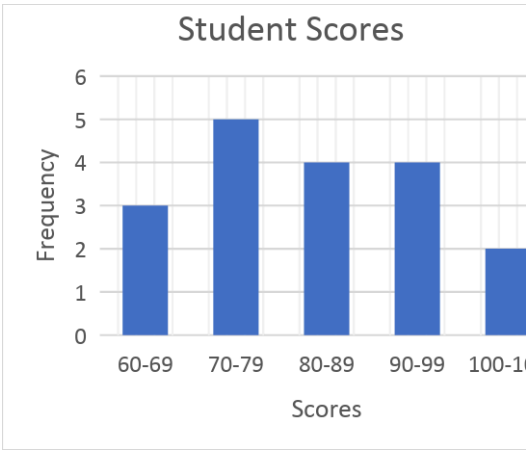
a.



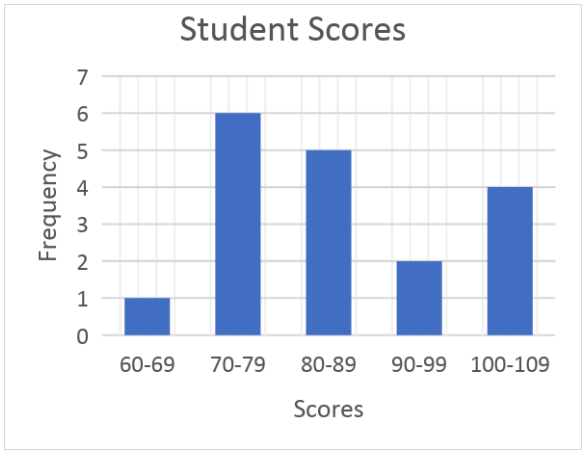
c.



b.

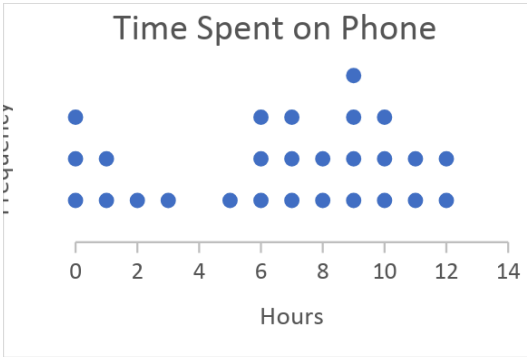


d.

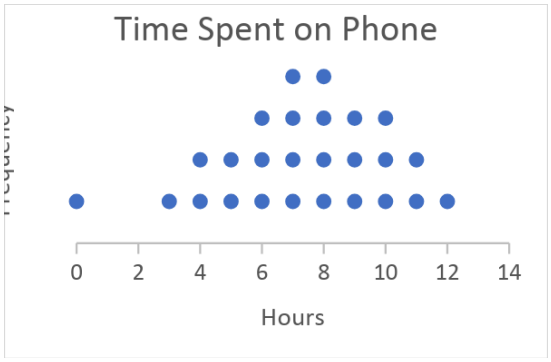


37. Make a dot plot for the following data set. Time spent on phone in hours: 9, 12, 0, 5, 10, 9, 1, 0, 11, 2, 10, 10, 9, 6, 7, 8, 11, 8, 6, 1, 7, 12, 9, 7, 3, 6, 0

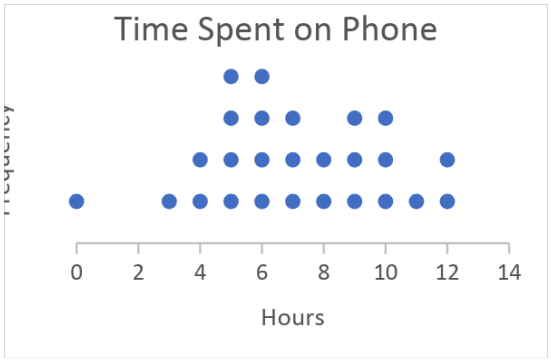
a.

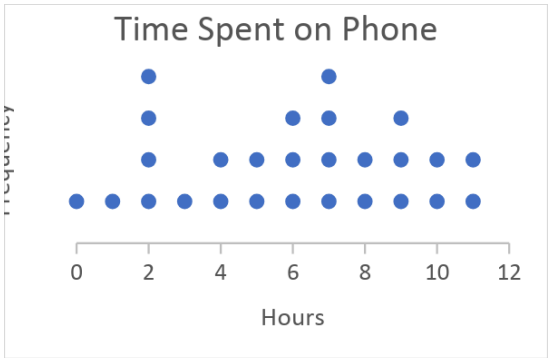


b.



c.





d.

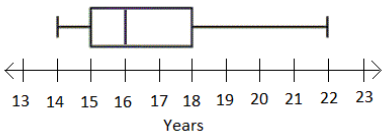
For problems 38 & 39, use the following data set.

Age at First Job: 14, 14, 15, 15, 15, 15, 16, 16, 16, 17, 18, 18, 18, 18, 18, 20, 22

38. Find the mean, median, and mode of the data set.
    a. mean = 16, median = 18, mode = 16.8
    b. mean = 16, median = 16, mode = 16
    c. mean = 18, median = 16.7, mode = 16
    d. mean = 16.8, median = 16, mode = 18

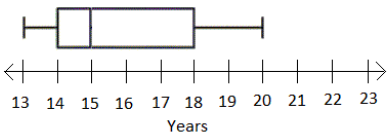
39. Draw a box plot for the data.

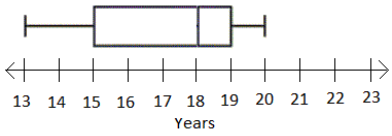
a.



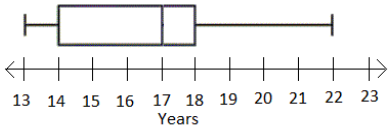
b.

c.





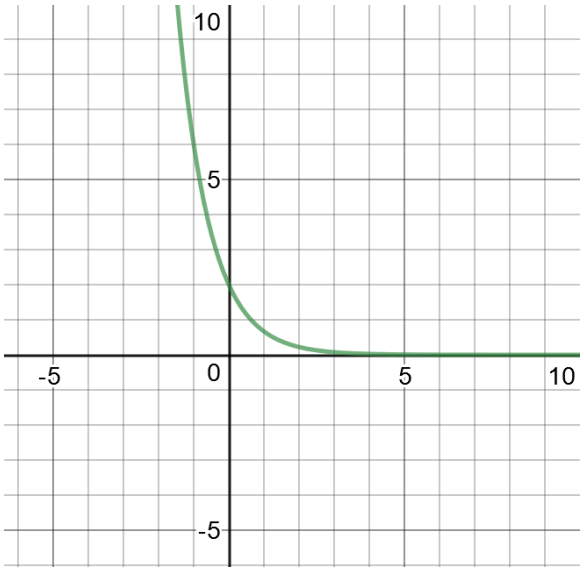
d.



40. The answer to question 40 is a.
    a. Pick me
    b. Don't pick me

41. Given the table and the graph of the exponential function, write the equation.

x	y
-2	18
-1	6
0	2
1	$\frac{2}{3}$
2	$\frac{2}{9}$
3	$\frac{2}{27}$



a. $y = 2 \cdot 3^x$

b. $y = 3 \cdot 2^x$

c. $y = 3 \cdot \left(\frac{1}{2}\right)^x$

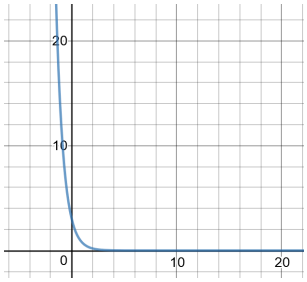
d. $y = 2 \cdot \left(\frac{1}{3}\right)^x$

42. Is the following exponential function an example of growth or decay? $y = 4 \cdot \left(\frac{1}{5}\right)^x$

a. Growth
b. Decay

For problems 43-46, match the graph to the equation.

43.



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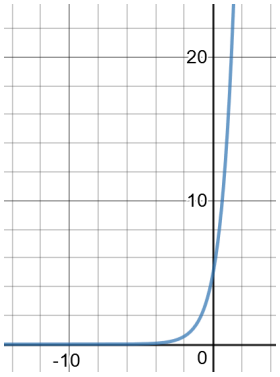
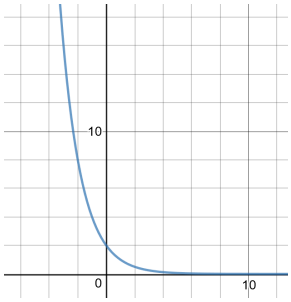


45.



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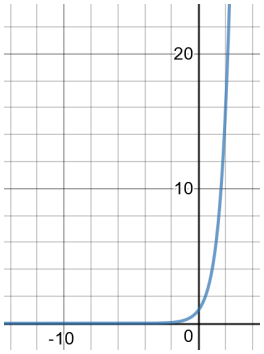

a. $y = 4^x$

b. $y = 5 \cdot 3^x$

c. $y = 3 \cdot \left(\frac{1}{4}\right)^x$

d. $y = 2 \cdot \left(\frac{1}{2}\right)^x$

For problems 47-50, use the following arithmetic sequence.

11, 23, 35, 47, 59, …

47. What is the sequence's common difference?

a. 9
b. 7
c. 12
d. 6

48. What is the recursive formula for the sequence?

a. $a_n = a_{n-1} - 9$
b. $a_n = a_{n+1} - 7$
c. $a_n = a_{n-1} + 12$
d. $a_n = a_{n+1} + 6$

49. What is the explicit formula for the sequence?

a. $a_n = 11 - 7(n - 1)$
b. $a_n = 59 + 9(n + 1)$
c. $a_n = 11 + 12(n - 1)$
d. $a_n = 59 - 6(n + 1)$

50. What is the 12^{th} term of the sequence?

a. 143
b. -66
c. 158
d. 125