


## *Eighth Grade Benchmark #2*

### *Math Essential Standards*

#### *Learning Objective #1:*

-  "Fluently solve linear equations and inequalities with one variable." (8.M.EE.C.07)

#### *Practice:*

1. From the given equation, determine which line holds the error.

Equation:  $118 + x = 4(22 - x)$

Line 1:  $118 + x = 88 - 4x$

Line 2:  $118 = 88 - 5x$

Line 3:  $30 = -5x$

Line 4:  $x = -6$


- a. Line 1:  $-4x$  is an incorrect simplification
- b. Line 2:  $-5x$  is an incorrect simplification
- c. Line 3: 30 is an incorrect simplification
- d. There are no errors in the problem.

2. Solve  $2(x - 8) = 6(2x - 12)$

3. Solve  $2(x - 7) > -x + 13$

4. Solve & Graph.  $-2 < 4p + 6 + 4$

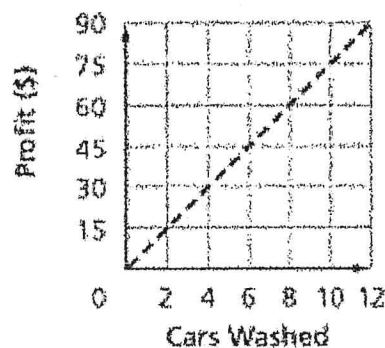
**Learning Objective #2:**

-  "Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways." (8.M.EE.B.05)

**Practice:**

5. Find the rate of change in the following linear function and interpret its meaning.

**Fundraiser Profits**



- \$15.00 profit for each car washed
- \$7.50 profit for each car washed
- \$30.00 profit for every 3rd car washed
- \$45.00 profit for every 4th car washed

6. Find the rate of change in the following linear function and interpret its meaning.

Width (ft)	Height (in.)
$x$	$y$
2	10
4	14
6	18
8	22


- a. 5 in height to 1 in width
- b. 3 in height to 1 in width
- c. 4 in height to 1 in width
- d. 2 in height to 1 in width

7. The cost of paper varies directly with the number of reams bought. Suppose 2 reams costs \$5.10. Write a linear equation that could be used to find the cost of  $x$  reams of paper. Find the cost of 15 reams of paper.

Equation: \_\_\_\_\_

15 Reams of Paper Costs: \_\_\_\_\_

**Learning Objective #3:**

 "Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions)."  
(8.M.F.A.02)

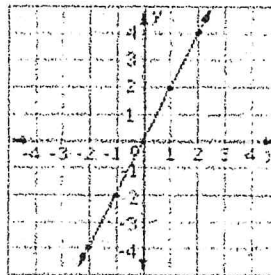
**Practice:**

Compare the functions below and answer the following questions.

**FUNCTION 1**

X	Y
0	3
2	5
4	7
6	9

**FUNCTION 2**



8. Which function has the greatest rate of change?

\_\_\_\_\_

9. Which function has the lowest y-intercept?

\_\_\_\_\_


10. Which function shows a negative slope?

\_\_\_\_\_

11. Beth is joining a gym. Her registration fee is \$100 and then \$25 per month. Her friend Jamie joined a different gym and had to pay \$50 for her registration fee and pays \$40 per month. After 1 year, who pays the least amount of money?

\_\_\_\_\_

**Learning Objective #4:**

 "Given a description of a situation, generate a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or a graph. Track how the values of the two quantities change together. Interpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values." (8.M.F.B.04)

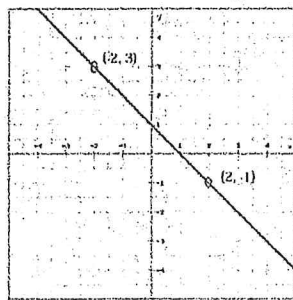
**Practice:**

12. Which linear equation represents the table below?

X	Y
-2	-6
-1	-5
0	-4
1	-3

- a.  $y = x - 1$
- b.  $y = x + 4$
- c.  $y = -x - 4$
- d.  $y = x - 4$

13. Which linear equation represents the graph below?



- a.  $y = x + 1$
- b.  $y = -x - 1$
- c.  $y = -x + 1$
- d.  $y = x - 1$

14. Logan has \$950 in his bank account. Every month he spends \$75. He does not add money to the account. Which linear equation represents this situation?

- a.  $y = -75x + 950$
- b.  $y = 75x - 950$
- c.  $y = -75x - 950$
- d.  $y = 75x + 950$

15. Write the equation of the line through the following pair of points:

$(-6, -11)$   $(2, -5)$

\_\_\_\_\_

**Learning Objective #5:**

“Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.” (8.M.F.A.03)

**Practice:**

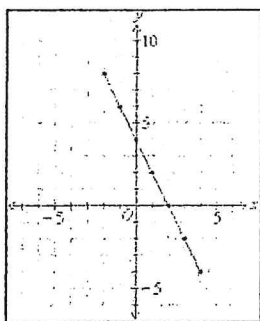
16. The graph of a linear function is a \_\_\_\_\_?

- a. parabola
- b. asymptote
- c. curve
- d. line

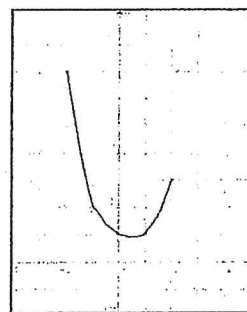
17. Which scenario does not represent a linear function?

- a. A phone plan costs \$50 a month and \$.25 per text.
- b. Jon rents a Rug Doctor it costs \$30 plus \$5 for every day it is late.
- c. You buy a printer for \$100 and the ink cartridges cost \$25 each.
- d. A baseball is hit into the air at a speed of 90 mph. The equation for the ball's height is  $f(x) = -5x^2 + 38.7x + 25.5$

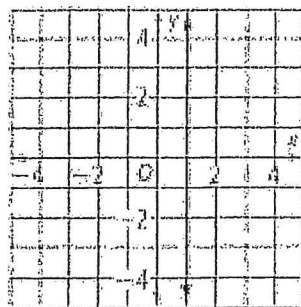
**Identify each graph as a linear or nonlinear function.**



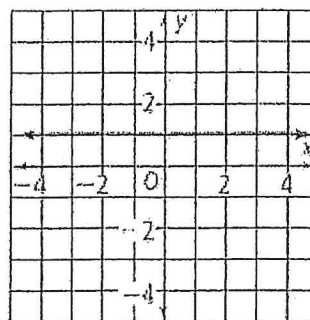
18. \_\_\_\_\_



19. \_\_\_\_\_



20. \_\_\_\_\_



21. \_\_\_\_\_