Name: _Key_

Day 8: Review

Date: _____

7/8A

## Functions Review

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{slope}$$

1. The table represents the number of computer tablets sold. Determine the average rate of change over the interval $1 \le x \le 4$.

| Week | 1 | 3 | 4 | 8 |
|------|---|---|---|---|
| Number Sold | 32 | 96 | 128 | 224 |

$$\frac{128 - 32}{4 - 1} = \frac{96}{3} = \boxed{32}$$

2. Determine whether each relationship is a function? Justify.

a:

| Input | Output |
|-------|--------|
| 2 | 10 |
| 4 | 12 |
| 6 | 24 |
| 4 | 8 |

No because the x-values repeat.

b:

| Input | Output |
|-------|--------|
| 2 | 10 |
| 4 | 10 |
| 6 | 6 |
| 8 | 8 |

Yes because the x-values do not repeat.

3. Given the following points, first find the slope of the line passing through the pairs of points and then write the equation of the lines in slope-intercept form.

a: M (2, 1); A (4, 5)

$$\frac{5-1}{4-2} = \frac{4}{2} = 2$$

m = _2_

$y = mx + b$

$1 = 2(2) + b$

$1 = 4 + b$

$\underline{-4 \quad -4}$

$-3 = b$

$y = \underline{2x - 3}$

b: T (−1, 0); H (3, −5)

$$\frac{-5 - 0}{3 - -1} = \frac{-5}{4}$$

m = $\frac{-5}{4}$

$y = mx + b$

$0 = \frac{-5}{4}(-1) + b$

$0 = \frac{5}{4} + b$

$\underline{-\frac{5}{4} \quad -\frac{5}{4}}$

$-\frac{5}{4} = b$

$y = \underline{-\frac{5}{4}x - \frac{5}{4}}$

4. Is the ordered pair (3, –1) a solution to the linear equation y = 2x – 7? Justify.

$-1 = 2(3) - 7$
$-1 = 6 - 7$
$-1 = -1$ ✓

Yes because when I plugged (3,-1) into the equation, it was true.

**(#5-8) State the slope and y-intercept of the graph of the following linear equations.**

5. y = x + 1

$m = 1$

$b = (0, 1)$

6. y = 7x – 5

$m = 7$

$b = (0, -5)$

7. y = –4x + 2

$m = -4$

$b = (0, 2)$

8. $y = \frac{3}{2}x - 3$

$m = \frac{3}{2}$

$b = (0, -3)$

9. Write an equation of a line that passes through the point (5, 11) and has a slope of –4.

$m = -4$

$b = 31$

$y = mx + b$
$11 = -4(5) + b$
$11 = -20 + b$
$\underline{+20 \quad +20}$
$31 = b$

$\boxed{y = -4x + 31}$

10. Find an equation of the line passing through the points (3, 5) and (5, 15).

$m = 5$

$b = -10$

$\frac{15 - 5}{5 - 3} = \frac{10}{2} = 5$

$\boxed{y = 5x - 10}$

$y = mx + b$
$5 = 5(3) + b$
$5 = 15 + b$
$\underline{-15 \quad -15}$
$-10 = b$

11. Does the point (1, −1) lie on the line 3x + 7y = 9? Justify.
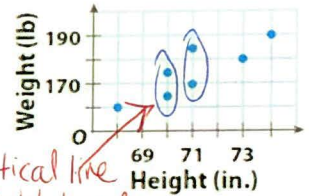
$$3(1) + 7(-1) = 9$$
$$3 - 7 = 9$$
$$-4 \neq 9$$

No because when I plugged (1, −1) into the equation, it was not true.

12. The graph shows the relationship between the heights and weights of the members of a basketball team. Is the relationship represented by the graph a function? Explain.
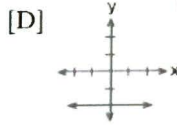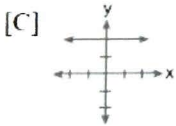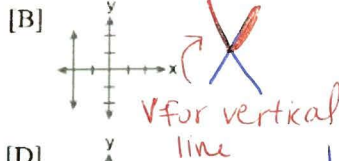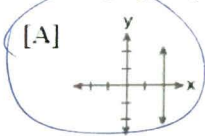
No because it does not pass the vertical line test.

**Heights and Weights of Team Members**



Vertical line here would touch the graph twice

13. Which graph represents the equation x = 2 ?

[A] *(circled)*

[B]  ✗ V for vertical line

[C]

[D]

14. If a line is horizontal, its slope is

[A] negative    [B] 1

[C] undefined    [D] 0 *(circled)*

Horizontal
↑
"zero"

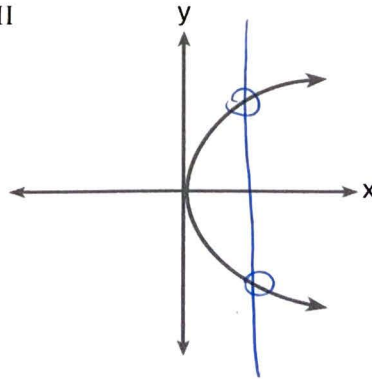15. Given the following information on four different relations, which representations are **functions**?
   Circle all that apply.

I

| x | y |
|---|---|
| 2 | 6 |
| 3 | −12 |
| 4 | 7 |
| 5 | 5 |
| 2 | −6 |

X-values repeat, NOT a function

III



Does not pass the vertical line test, NOT a function

II  { (1,1), (2,1), (3,2), (4,3), (5,5), (6,8), (7,13) } *(II circled)*

x-values are all different
FUNCTION

IV  y = 2x + 1 *(IV circled)*
y = mx + b

In slope-intercept form
FUNCTION

**(#16-19)** Write the following equations in slope-intercept form. Then, identify the slope and y-intercept of each equation.

16. $2x + 5y = 10$

$$-2x \quad -2x$$

$$\frac{5y}{5} = \frac{-2x + 10}{5}$$

$$y = \frac{-2}{5}x + 2$$

m = $\dfrac{-2}{5}$    b = $(0, 2)$

17. $-6x + 3y = 54$

$$+6x \quad +6x$$

$$\frac{3y}{3} = \frac{6x + 54}{3}$$

$$y = 2x + 18$$

m = $2$    b = $(0, 18)$

18. $4 - y = 3x$

$$-4 \quad -4$$

$$\frac{-y}{-1} = \frac{3x - 4}{-1}$$

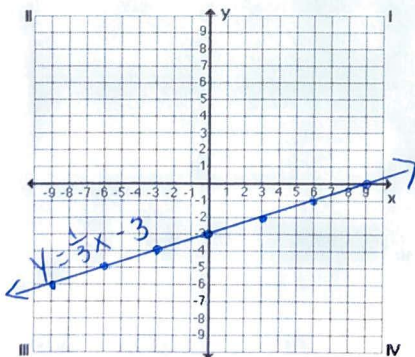$$y = -3x + 4$$

m = $-3$    b = $(0, 4)$

19. $15x - 12y = 24$

$$-15x \quad -15x$$

$$\frac{-12y}{-12} = \frac{-15x + 24}{-12}$$

$$y = \frac{5}{4}x - 2$$

m = $\dfrac{5}{4}$    b = $(0, -2)$

20. Given the linear equation: $y = \dfrac{1}{3}x - 3$

**Part A:** Graph the following linear equations using either the table method or the slope-intercept form.



**Part B:** What are the slope and y-intercept?

$$m = \frac{1}{3} \quad b = (0, -3)$$

**Part C:** In which quadrant will the graph of the line never pass through?

$$II$$