

Name: _____
8.F.2

Date: _____

_____ 1. Madison created two functions. (2014)

For Function A, the value of y is two less than four times the value of x .

The table below represents Function B.

Function B

| x | y |
|-----|-----|
| -3 | -9 |
| -1 | -5 |
| 1 | -1 |
| 3 | 3 |

In comparing the rates of change, which statement about Function A and Function B is true?

- A. Function A and Function B have the same rate of change.
- B. Function A has a greater rate of change than Function B has.
- C. Function A and Function B both have negative rates of change.
- D. Function A has a negative rate of change and Function B has a positive rate of change.

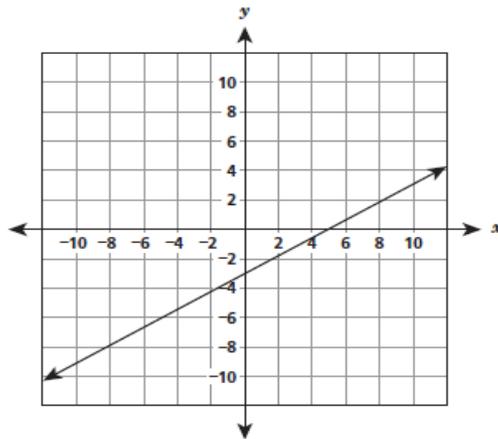
_____ 2. The table below represents a linear function. (2014)

| x | y |
|-----|-----|
| -1 | 5 |
| 1 | 9 |
| 3 | 13 |
| 5 | 17 |

Which function has a greater slope and a greater y -intercept than the linear function represented in the table?

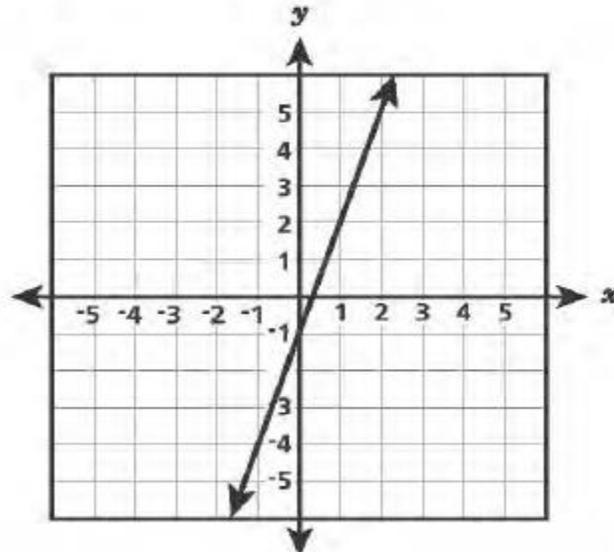
- A. $y = 2x + 8.5$
- B. $y = 3x + 7.5$
- C. $y = 5x + 6.5$
- D. $y = 10x + 5.5$

- _____3. Function 1 is defined by the equation $y = \frac{3}{4}x + 1$, and function 2 is represented by the graph below. (2015)



Which statement about the functions is true?

- A. Function 1 has the greater rate of change and the greater y-intercept.
 - B. Function 2 has the greater rate of change and the greater y-intercept.
 - C. Function 1 has the greater rate of change, and function 2 has the greater y-intercept.
 - D. Function 2 has the greater rate of change, and function 1 has the greater y-intercept.
- _____4. Function J is shown on the coordinate grid below. (2016)



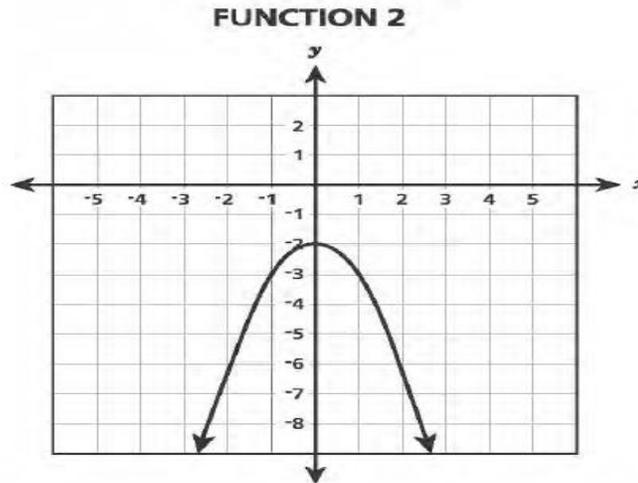
If the y-intercept of Function R is $\frac{3}{2}$ greater than the y-intercept of Function J, which equation could represent Function R ?

- A. $y = -x + 4.5$
- B. $y = 0.5x + 3$
- C. $y = 3x + 0.5$
- D. $y = 4.5x - 1$

_____5. Function P is a linear function with a y-intercept of 5. Function Q is defined by the equation $y = -\frac{1}{3}x + 4$. Which statement **must** be true about functions P and Q? (2016)

- A. Both functions have the same slope.
- B. Both functions have a negative slope.
- C. The functions will have the same input when $y = 0$.
- D. The functions will have different outputs when $x = 0$.

_____6. Function 1 is represented by the equation $y = -\frac{4}{5}x - 2$, and function 2 is represented by the graph below.



For which of the functions are all the output values less than -1? (2016) (no calculator)

- A. both functions
- B. only function 1
- C. only function 2
- D. neither function

_____7. Functions W and Z are both linear functions x . (2018)

Function W
 $y = -\frac{1}{16}x + 30$

Function Z

| | | | | |
|-----|------|-------|-------|-------|
| x | 0 | 1 | 2 | 3 |
| y | 15.8 | 15.76 | 15.72 | 15.68 |

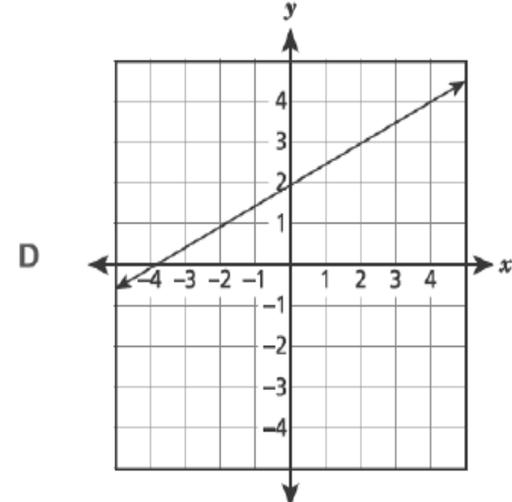
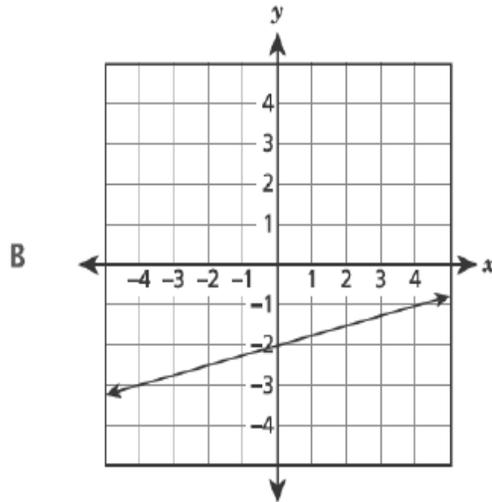
Which statement comparing the functions is true?

- A. The slope of Function W is equal to the slope of Function Z.
- B. The slope of Function W is less than the slope of Function Z.
- C. The y-intercept of Function W is equal to the y-intercept of Function Z.
- D. The y-intercept of Function W is less than the y-intercept of Function Z.

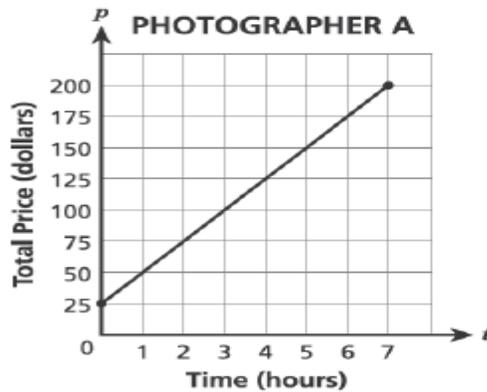
8. Which function of x has the **least** value for the y -intercept? (2018)

A. $y = -4x + 15$

C. $y = 2x - 3$



9. Two photographers offer different pricing plans for their services. The graph below models the prices Photographer A charges. The table below shows the prices Photographer B charges. Each photographer charges a one-time equipment fee and an hourly rate.



PHOTOGRAPHER B

| | | |
|--------------|------|-------|
| Time (hours) | 2 | 4 |
| Total Price | \$80 | \$110 |

Which statement about the two pricing plans is true? (2017)

- A. Photographer A charges \$15 per hour **more** than Photographer B
- B. Photographer B charges \$15 per hour **more** than Photographer A
- C. Photographer A's equipment fee is \$25 less than Photographer B's
- D. Photographer B's equipment fee is \$25 less than Photographer A's

____10. The table represent linear Function F.

| x | y |
|-----|-----|
| 4 | 18 |
| 6 | 24 |
| 10 | 36 |

The equation $y = 4x + 2$ represents Function G. (2017) no calculator

Which statement is true?

- A. The rate of change of Function G is less than the rate of change Function F because $2 < 3$
- B. The rate of change of Function G is less than the rate of change Function F because $4 < 9$
- C. The rate of change of Function G is greater than the rate of change Function F because $2 > \frac{9}{7}$
- D. The rate of change of Function G is greater than the rate of change Function F because $4 > 3$

____11. Linear functions M and P are shown below. (2019 and 2021)

FUNCTION M

| x | y |
|-----|-----|
| -2 | -9 |
| 0 | 1 |
| 2 | 11 |
| 4 | 21 |

FUNCTION P

$$y = 7x + 9$$

In comparing the rates of change, which statement about Function M and Function P is true?

- A. Their rates of change differ by 2.
- B. Their rates of change differ by 4.
- C. Function M has a greater rate of change than Function P.
- D. Function M and Function P have the same rate of change.

12. The values in the table below represent Function B, which is a linear function.

| x | y |
|-----|-----|
| -3 | -7 |
| -1 | -1 |
| 1 | 5 |
| 3 | 11 |

Function L is represented by the equation $y = 6x + 4$. Compare Functions B and L by determining which one has the greater rate of change and which one has the greater y -intercept. Explain why your answers are correct. (2017)

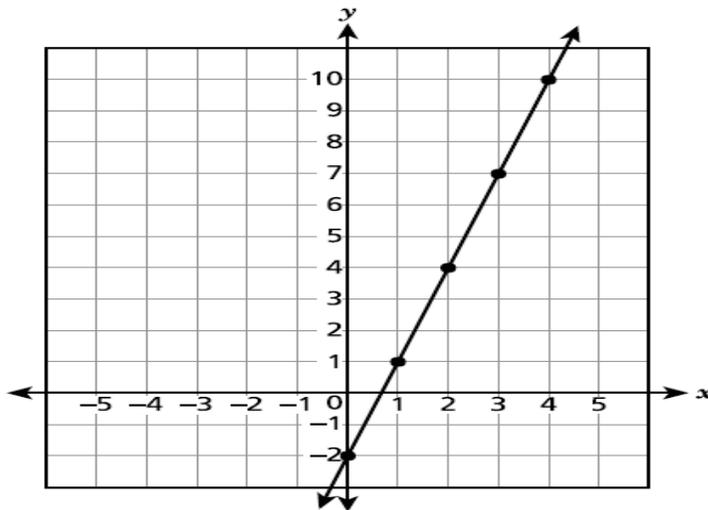
Show your work

13. The table and graph shown below each represent a function of x . (2018)

FUNCTION A

| x | y |
|-----|-----|
| 1 | 5 |
| 2 | 7 |
| 3 | 9 |
| 5 | 13 |
| 6 | 15 |

FUNCTION B



Which function, A or B, has a greater rate of change? Be sure to include the values for the rates of change in your answer.

Explain your answer.

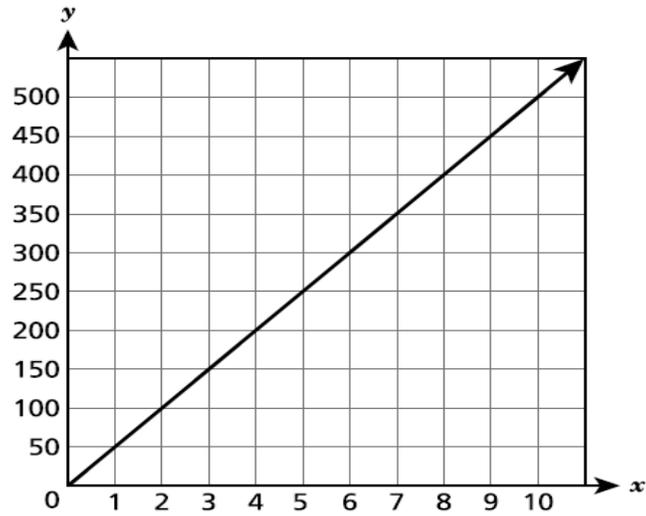
14. Two functions are represented below.

(2022)

FUNCTION A

$$y = 35x$$

FUNCTION B



What is the difference in the rate of change between Function A and Function B? Be sure to include the rate of change of each function in your answer.

Explain your answer.
