

Name: _____

Date: _____

Ms. Streffacio

Class: _____

8.F.3

1. Which of the equations listed below are linear equations?

Equation I: $C = 2\pi r$
Equation II: $A = \pi r^2$
Equation III: $V = \frac{4}{3}\pi r^3$

- A. Equation I only
B. Equation II only
C. Equations I and III
D. Equations II and III
2. The height of a falling object can be modeled by the equation $h = 16t^2 + v_0t + h_0$ where v_0 is the initial velocity in feet per second, t is time in seconds, and h_0 is the initial height in feet. Is the function linear or nonlinear, and why?

- A. It is linear, because the object falls in a straight line.
B. It is linear, because the object falls at a constant speed.
C. It is nonlinear, because the object does not fall in a straight line.
D. It is nonlinear, because the object does not fall at a constant speed.

3. The table below lists ordered pairs of a function.

x	y
0.8	7
1	8
1.5	11
2.5	15
3.1	17
3.6	20

Is the function linear or nonlinear, and why?

- A. It is nonlinear, because the rate of change is not constant.
B. It is nonlinear, because the rate of change is not positive.
C. It is linear, because the rate of change is constant.
D. It is linear, because the rate of change is positive.
4. The ordered pairs shown in the table represent a function.

x	y
-3	-4
a	4
4	10

5. Which set of ordered pairs (x, y) could represent a linear function of x ?

A $\{(-2, 8), (0, 4), (2, 3), (4, 2)\}$

B $\{(1, 2), (1, 3), (1, 4), (1, 5)\}$

C $\{(-2, 7), (0, 12), (2, 17), (4, 22)\}$

D $\{(3, 5), (4, 7), (3, 9), (5, 11)\}$

6. Which equation describes a linear function?

A $V = s^3$

B $y = \left(\frac{1}{6}\right)x$

C $y = (2)^x$

D $A = \pi r^2$

7. Which statement explains the type of function that is represented by the equation $y = x^2 + 9$?

A The function is linear because it contains more than one term.

B The function is linear because the variable x is raised to the second power.

C The function is nonlinear because it contains more than one term.

D The function is nonlinear because the variable x is raised to the second power.

8. The points $(2, -2)$ and $(-4, 13)$ lie on the graph of a linear function of x . Which point also lies on the graph of this function?

A $(-6, 18)$

B $(-1, 5)$

C $(7, 14.5)$

D $(13, -4)$

Which of the equations listed below are linear equations?

Equation 1: $C = 2\pi r$

9.

10. Which table of values represents a linear function?

A

x	y
0	0
1	1
4	16
9	81

C

x	y
0	0
1	2
4	8
9	18

B

x	y
0	1
1	3
4	9
9	20

D

x	y
0	0
1	2
4	4
9	6

11. Which equation represents a nonlinear function?

A $y = -3x + 1$

B $y = x^2 + 1$

C $y = \frac{x}{2} + 1$

D $y = 2x + \frac{1}{2}$

12. Which equation does **not** represent a linear function?

A $y = 2(x - 3)$

B $y = 2^2 - 3x$

13. Which of these functions are linear?

Choose all that apply.

A $y + 4 = 2x$

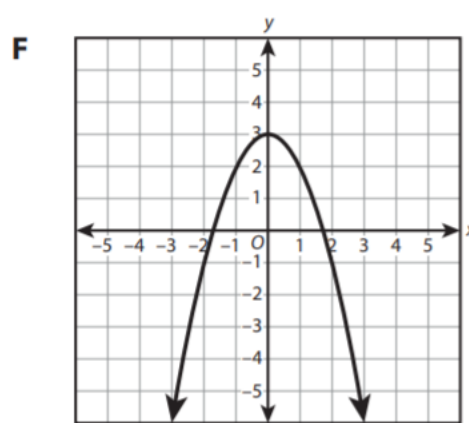
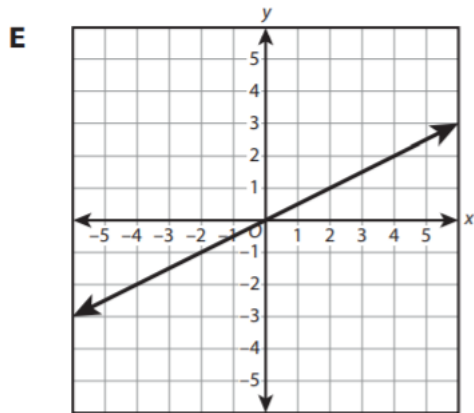
B $y = 3 - x^2$

C

x	0	1	2	3	4
y	-1	-0.5	0	-0.5	-1

D

x	-2	-1	0	1	2
y	2.5	2.75	3	3.25	3.5

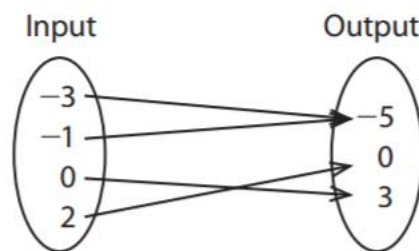


14. Joakim wrote a linear function.

Tell whether each statement is *True* or *False*.

- a. The function can be represented by an equation of the form $y = mx + b$. True False
- b. The rate of change is always constant. True False
- c. The initial value cannot be 0. True False
- d. The graph of the function is a line. True False
- e. The graph of the function could be a vertical line. True False

15. Tell whether each of the following statements about the diagram is *True* or *False*.



- a. The diagram represents a function because each input value maps to just one output value. True False
- b. The diagram does not represent a function because two input values map to the same output value. True False
- c. If the input and output values were switched, the diagram would represent a function. True False

16. Ioana and Valentin are twins. They have each kept track of their heights every year since they were 5.

Ioana made a table to track her height:

Age, a	5	6	7	8	9	10
Height, h (cm)	102	107	112	117	122	127

Valentin wrote an equation to track his height: $h = 104 + 4.5(a - 5)$

Which statement correctly compares the twins' rates of growth?

- A Ioana grew at a faster rate.
- B Valentin grew at a faster rate.
- C Ioana and Valentin grew at the same rate.
- D Not enough information is given to compare the rates of growth.