

Name: KEY

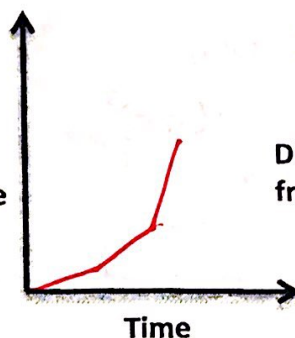
Review: Functions and Linear

Draw a graph to represent each situation.

1) Bob leaves home walking slowly to school. He then thinks he might be late, so he starts walking faster. He then realizes he's definitely going to be late, so he starts running quickly.

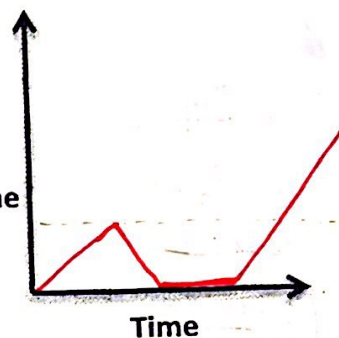
1)

Distance from home



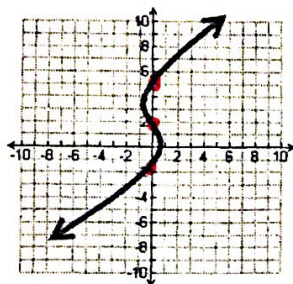
2)

Distance from home



2) Bob leaves home walking to his friend's house. He gets halfway there before he sees that it's about to rain. He turns around to go back home and get his umbrella. He spends a long time at home looking for it. Finally, he finds it, then walks all the way to his friend's house.

3)



Function? No

Why or why not? A few inputs (for example, $x=0$) have multiple outputs

4) a) Create an x/y table that is not a function.

Sample:

x	y
0	2
1	5
2	8
3	14
3	20

↑
1 input → 2 outputs

b) Create an x/y table that is a function, but not linear.

Sample:

x	y
0	1
2	3
4	6
6	18
8	99

Not a constant
r.o.c.

c) Create an x/y table that is a function and linear.

Sample:

x	y
0	11
1	13
2	15
3	17
4	19

constant
r.o.c.

5) Decide whether each is a function or not. Explain each choice.

a. Input: Person, Output: # of apps currently on their smartphone

Yes; each person has one # of apps

b. Input: Number; Output: Person who has that many apps on their smartphone

No; each number could have multiple people with that # of apps

6) Lola is going to the fair. It costs her \$12 to get in. It also costs her \$3 for each ride she goes on.

a) Write in equation in slope-intercept form to represent the situation. $y = 3x + 12$

b) What does the input (x) represent? # of rides

c) What does the output (y) represent? total cost

d) The slope is 3 and it represents cost per ride

e) The y-intercept is 12 and it represents entrance fee (cost without going on any rides)

f) Complete the table:

x	0	1	2	3	4	5
y	12	15	18	21	24	27

g) If you made a graph, would it make sense to connect the points? Why or why not?

No; you won't go on fractions of a ride. The numbers between the values in the table don't make sense.

For 7-8, use the following functions:

$$g(x) = (x-2)^3$$

$$h(x) = \frac{3x+6}{3} - 2$$

7) Find $h(11)$.

$$h(11) = \frac{3(11)+6}{3} - 2$$

$$h(11) = \frac{39}{3} - 2$$

$$h(11) = 13 - 2$$

$$h(11) = 11$$

8) Find $g(-1)$.

$$g(-1) = (-1-2)^3$$

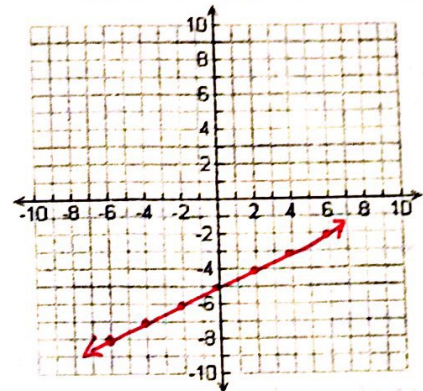
$$g(-1) = (-3)^3$$

$$g(-1) = -27$$

9) Linear or nonlinear? $a(x) = \frac{1}{2}x - 5$ **Linear**

10) Use the table to graph: $a(x) = \frac{1}{2}x - 5$

x	a(x)
-6	-8
-4	-7
-2	-6
0	-5
2	-4
4	-3
6	-2



For 11 – 14, choose the correct option:

- a) Proportional (Must have a constant rate of change and pass through (0, 0). Also, the $y \div x$ ratio must be constant)
 b) Linear but not proportional (Constant r.o.c., but does NOT pass through (0, 0). The $y \div x$ ratio will NOT be constant)
 c) Not linear. (The rate of change is not constant)

11)

x	y
0	16
1	11
2	6
3	1
4	-4

$y = -5x + 16$

B

12)

x	y
4	32
5	40
6	48
7	56
8	64

$y = 8x$

A

13)

x	y
0	12
6	15
7	18
8	21
11	30

C

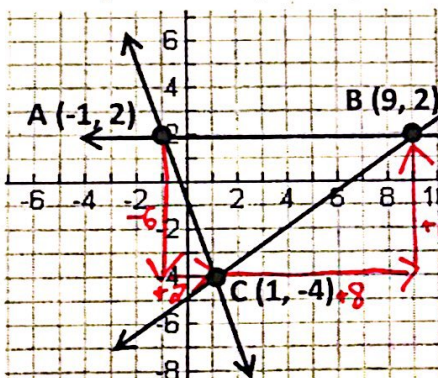
14)

x	y
6	18
8	22
10	26
12	30
14	34

$y = 2x + 6$

B

For 15 – 16, find the slope using TWO DIFFERENT methods – the graph (drawing a slope triangle) and by using $\frac{y_2 - y_1}{x_2 - x_1}$.



15) A and C

$$\frac{-6}{2} = -3$$

$$\frac{-4-2}{1-(-1)} = \frac{-6}{2} = -3$$

16) B and C

$$\frac{6}{8} = \frac{3}{4}$$

$$\frac{-4-2}{1-9} = \frac{-6}{-8} = \frac{3}{4}$$

Write an equation of the line in slope-intercept form.

17) line a

$$y = -\frac{3}{2}x + 3$$

18) line b

$$y = 4x - 4$$

Graph both lines on the same coordinate plane.

19) $y = \frac{1}{5}x - 7$

20) $y = -5x + 10$

