Draw a mapping diagram of the set of ordered pairs.
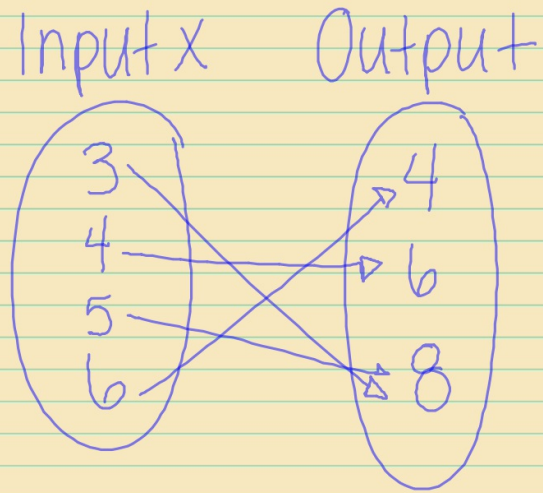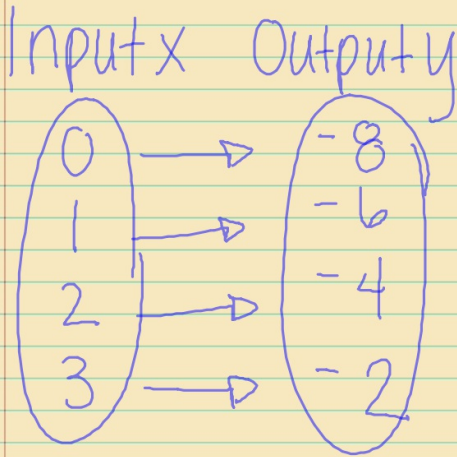
1. $(0, -8), (1, -6), (2, -4), (3, -2)$ **2.** $(3, 8), (4, 6), (5, 8), (6, 4)$
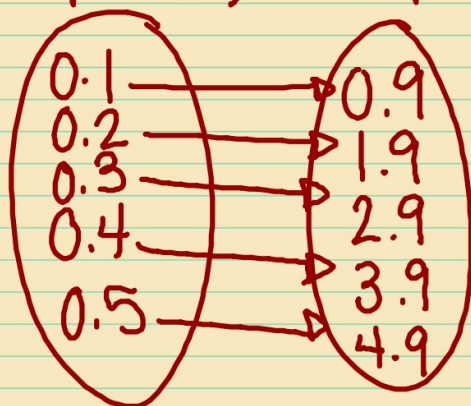
Input x   Output y

0	→	-8
1	→	-6
2	→	-4
3	→	-2

Input x   Output

3 → 8
4 → 6
5 → 4
6 → 8

3. The table shows the speed of a falling parachutist.

Time (seconds)	0.1	0.2	0.3	0.4	0.5
Speed (meters per second)	0.9	1.9	2.9	3.9	4.9

a. Use the table to draw a mapping diagram.

b. What output would you expect for an input of 0.7 second? Explain.

a.) Input (x) output (y)   b.) 6.9

0.1	→	0.9
0.2	→	1.9
0.3	→	2.9
0.4	→	3.9
0.5	→	4.9

The speed for 0.6 second is 5.9 m per second and speed 0.7 sec is 6.9 m. per seconds

Write a function rule for the statement.

4. The output is 2 less than the input.

5. The output is one third the input.

output = y
input = x
is = (=)
lessthan (−)

4.) $y = x - 2$

5.) $y = \frac{1}{3}x$

Find the value of x for the given value of y.

6. $y = 2x - 2; y = 14$

7. $y = 5x - 1; y = -6$

$14 = 2x - 2$
$+2 \qquad +2$
$\dfrac{16 = 2x}{2}$
$8 = x$

$-6 = 5x - 1$
$+1$
$\dfrac{-5 = 5x}{5}$
$-1 = x$

8. A clerk earns \$8 an hour. Write a function that relates the earnings E and hours worked h. How much does the clerk earn after working 40 hours?

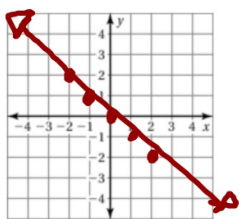$y = mx \longrightarrow$ $E = 8h$

put 40 hours in for h

$$E = 8(40)$$
$$E = \$320$$
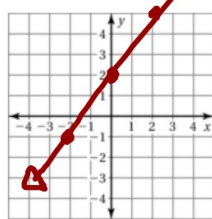
If you work 40hrs you Earn
\$320

Graph the function.

9. $y = -x$

10. $y = \frac{3}{2}x + 2$

Slope =
$\dfrac{-1}{1}$
y-int = 0

y-int = 2
Slope = 3/2

Use the graph or table to write a linear function that relates *y* to *x*.
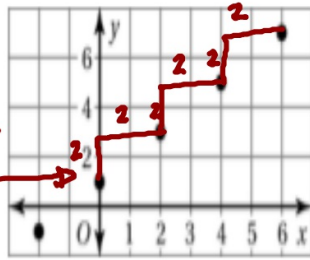
11.

12.

x	−12	−6	0	6
y	6	3	0	−3

−3 −3   − 3

y-int
→

Slope=

$$\frac{2}{2} = 1$$

$$y = x + 1$$

y-int

$$Slope = \frac{-3}{6} = \frac{-1}{2}$$

$$y = -\frac{1}{2}x$$

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13. You are packing candles in boxes. You can fit 15 candles in each box.

y = candles

a. Write a function that represents the number of candles that you pack into *x* boxes. $y = 15x$

x = boxes

**b.** How many boxes do you need to pack 75 candles?

5 boxes

$$\frac{75 = 15x}{15}$$

$$5 = x$$

14. The table shows the values y (in dollars) of Car A and Car B after x years of ownership. Which function represents a linear function: the function for *Car A*, for *Car B*, for *both*, or for *neither of them*?

Years, x	0	1	2	3
Value of Car A, y	24,000	20,000	16,000	12,000
Value of Car B, y	24,000	12,000	6000	3000

Car A   -4000   -4000   4000

24,000   20,000   16000   12,000

0   1   2   3

+1   +1   +1
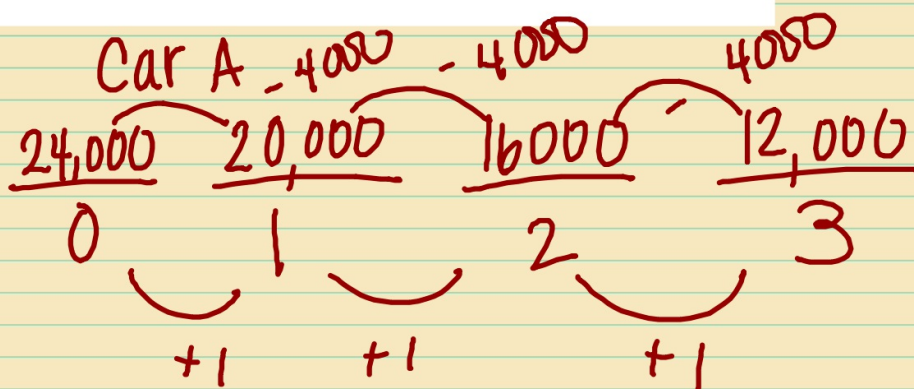
Does the equation represent a *linear* or *nonlinear* function? Explain.

Linear

15. $y = \dfrac{2}{x} + 1$

16. $y + 7 = 2x + 3y$

Non Linear.
graph is not a line
(dividing by x)
Not Mult.

$y+7=2x+3y$

$-3y \qquad\qquad -3y$

$-2y+7=2x$

$\quad -7 \qquad\qquad -7$

$\dfrac{-2y}{-2} = \dfrac{2x}{-2} - \dfrac{7}{-2}$

$y = -1x + \tfrac{7}{2}$

17. The table shows the cost y (in dollars) for x theater tickets. Find the missing y-value that makes the table represent a linear function.

Tickets, x	2	4	6
Cost, y	26	?	78

52

18. An anthropologist uses the two functions below to estimate the height h of an individual given the length t of the thigh bone. Both measurements are in inches.

Male: $h = 2.2t + 27$ Female: $h = 2.3t + 24$

a. If you graphed the two functions, which one would rise more steeply? How do you know?

b. Find the height of a male and of a female with a 15-inch thigh bone.

c. Find the length of the thigh bone of a 71-inch tall man.

a.) Female height. IF the length of the femur increases 1 inch, the male graph rises 2.2 in. and the female rises 2.3 in.

b.) Male 60 in ; female 58.5 in

c.) 20 in