

6.1 Practice

Given the relation described, identify the input and the output.

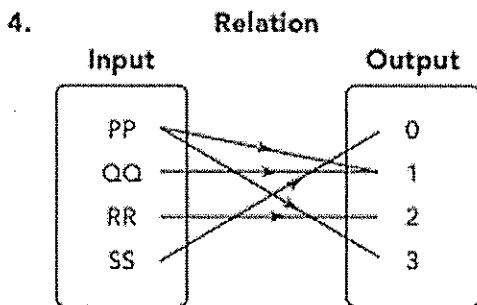
- Alison wants to find the total cost of buying 4 adult admission tickets to an amusement park.

input: # tickets output: cost

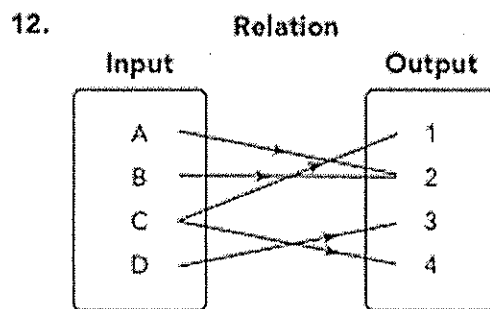
- Bruce wants to find the volume of a sphere given its radius.

input: radius output: volume

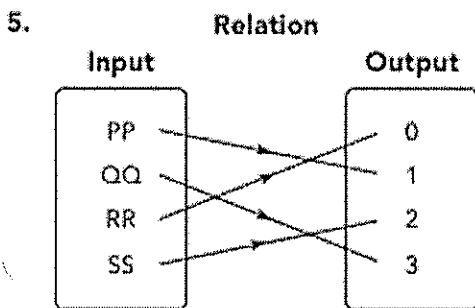
Based on the mapping diagram, tell whether the relation is a function. EXPLAIN.



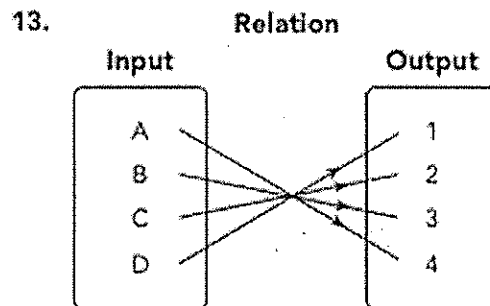
NO:
PP used twice as input



NO:
C used twice as input



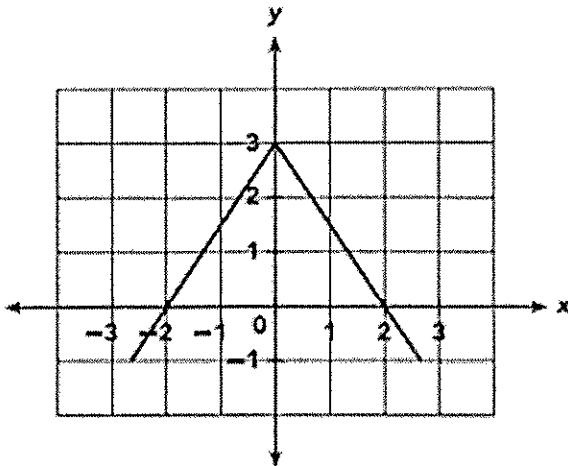
Yes, no input used twice



Yes, no input used twice

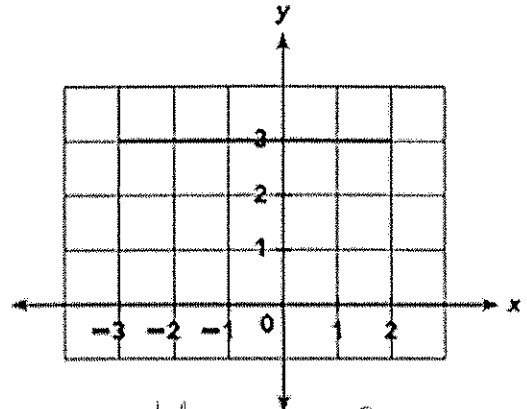
Tell whether the relation represented by each graph is a function.
EXPLAIN.

14.



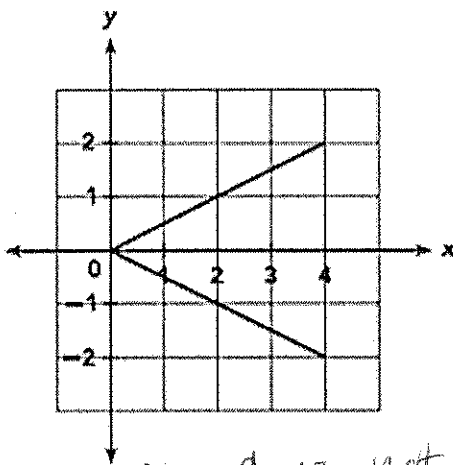
Yes. Passes vertical
line test

15.



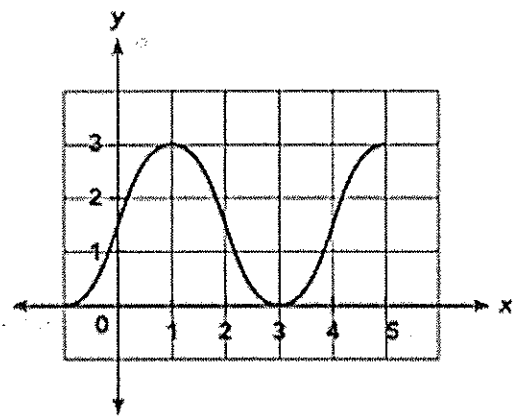
Yes, passes
vert. line test

16.



no, does not
pass vert.
line test

17.

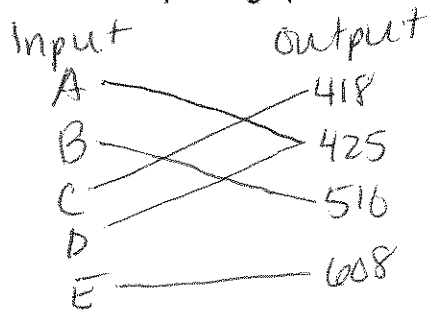


Yes, passes
vertical
line test

20. The table shows the number of available parking spots in each of the five parking garages.

Input, Garage	A	B	C	D	E
Output, Number of Available Parking Spots	425	510	418	425	608

- a) Draw a mapping diagram to represent the relation between each garage and the number of available parking spots.



- c) Tell whether the relation represented by the mapping diagram is a function. Explain.

Yes, inputs all used once

6.2 Practice

1. Laura can type 75 words per minute on a computer keyboard. The number of words she can type, N , is a function of the amount of time, t minutes, she spends at the computer keyboard.

a. Identify the independent and dependent variables.

independent: t , minutes

dependent: N , # of words

b. Write an algebraic equation for the function

$$N = 75t$$

2. When Melissa goes on vocation, she boards her dog at a kennel. The kennel charges a flat fee of \$50 and a daily rate of \$10. The total amount Melissa pays for her dog to stay at the kennel, y dollars, is a function of the number of days that she boards the dog, d .

a. Identify the independent and dependent variables.

independent: d , days

dependent: y dollars

b. Write an algebraic equation for the function

$$y = 50 + 10d$$

3. Maria and her friends are making beaded bracelets to raise funds for their mission trip. Each bracelet is made up of 12 beads. The total number of beads needed, y , is a function of the number of bracelets they make, x .

a. Identify the independent and dependent variables

independent: # bracelets, x

dependent: # beads, y

b. Write an algebraic equation for the function

$$y = 12x$$

1. A rental store rents movies at a base rate of \$5, and a daily rate of \$2. The total amount charged, y dollars, is a function of x , the number of days a movie is rented.

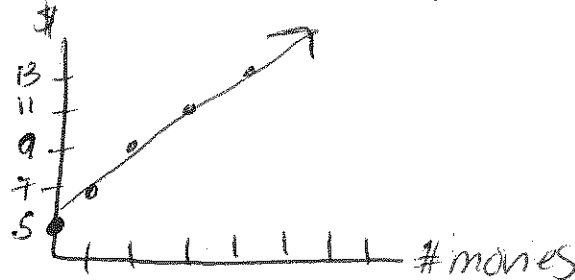
- a. Write an algebraic equation for the function

$$y = 5 + 2x$$

- b. Construct a table of values for the function of at least 5 points.

x	y
0	5
1	7
2	9
3	11
4	13

- c. Graph the function. Use 1 unit on the horizontal axis to represent 1 day for the x interval and 1 unit on the vertical axis to represent \$2 for the y interval, starting from \$5.



2. A sand pit is filled with sand at a rate of 6 square meters per minute. The total amount of sand in the pit, y square meters, is a function of the number of minutes, x , that the pit is filled with sand.

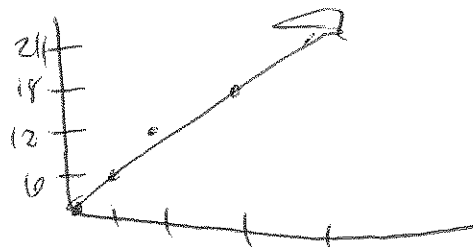
- a. Write an algebraic equation for the function

$$y = 6x$$

- b. Construct a table of values for the function of at least 5 points.

x	y
0	0
1	6
2	12
3	18
4	24

- c. Graph the function on the coordinate plane provided. Use 1 unit on the horizontal axis to represent 1 minute for the x interval and 1 unit on the vertical axis to represent 6 square meters for the y interval



6.3 Practice

Tell whether each table of values represents a linear or nonlinear function.

1. $+2 +2 +2$

x	1	3	5	7
y	2	18	50	98

~~HO~~
nonlinear

2. $+4 +4 +4$

x	-1	3	7	11
y	-4	8	20	32

$+12 +12$
~~3~~ 3 3
linear

3. $4 4 4$

x	-4	0	4	8
y	4	5	6	7

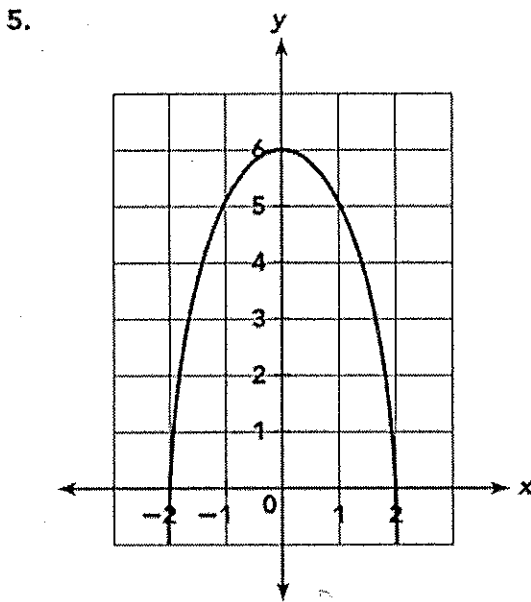
1 1 1
linear

4. $2 2 2$

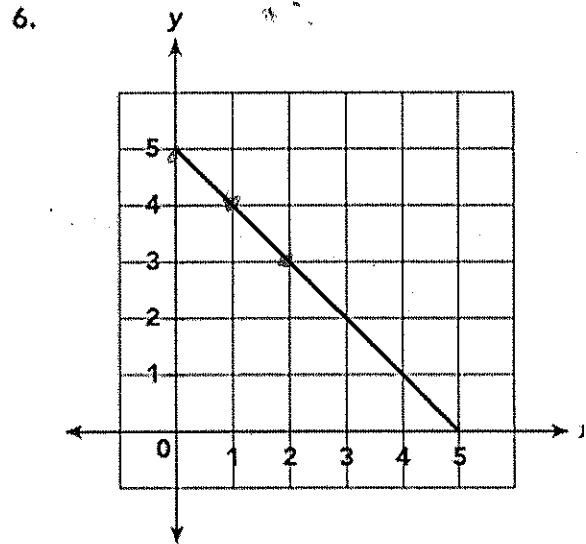
x	-2	0	2	4
y	-8	4	-8	-14

$+12 -12 -6$
nonlinear

Tell whether each graph represents a linear function. If so, find the rate of change.



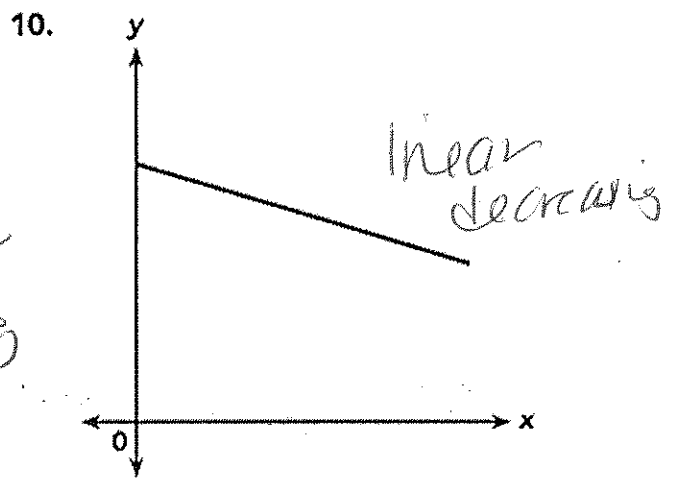
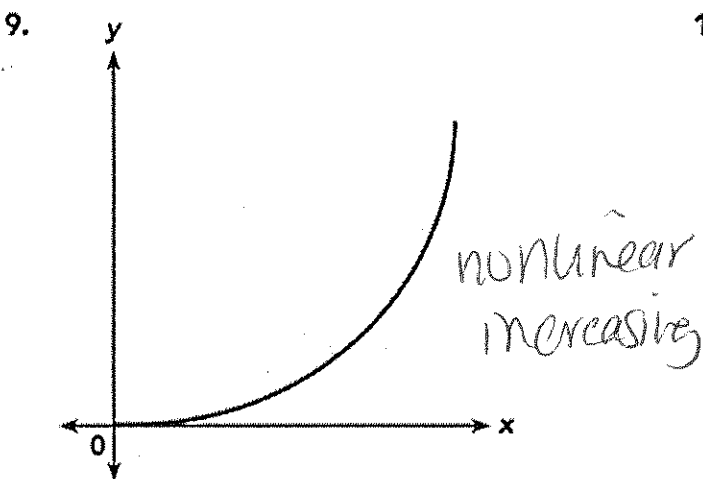
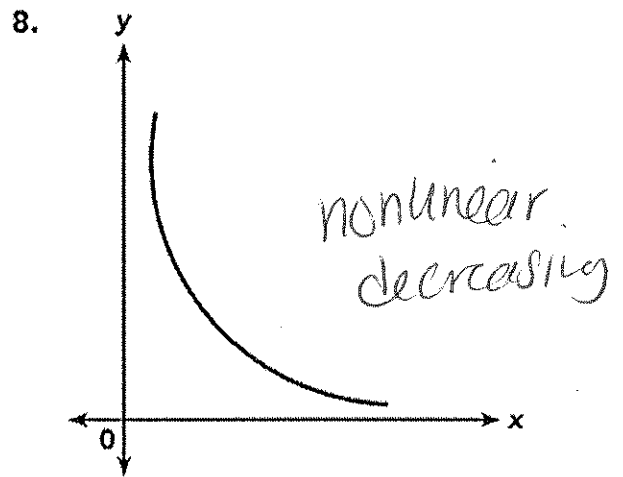
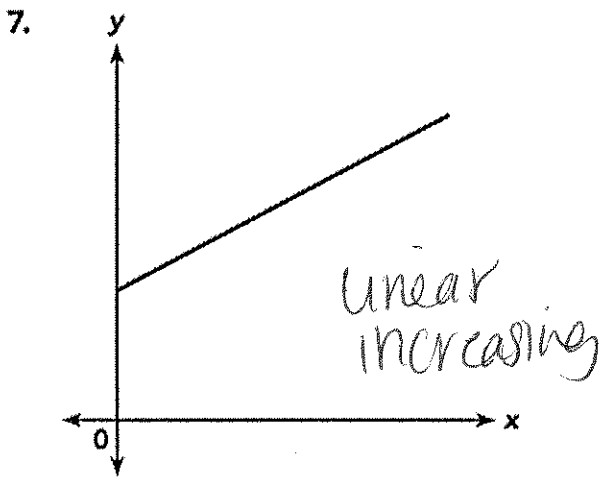
nonlinear



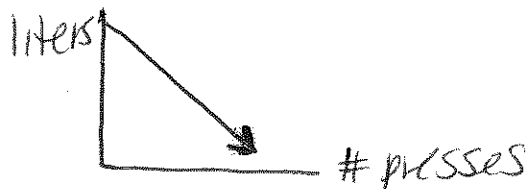
linear

$-1 = \text{rate of change}$

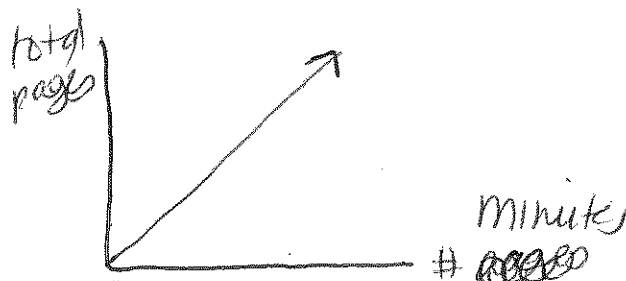
Tell whether each function is linear or nonlinear. Then tell whether the function is increasing or decreasing.



11. A hot beverage dispenser dispenses a beverage into a mug for every press of the button. The total amount of beverage left in the dispenser, y liters, is a function of the number of presses on the button, x . Sketch a graph of the function.



12. A printer prints black and white pages of a book at a constant rate. The total number of pages printed, y , is a function of the number of minutes that the pages are printed, x . Sketch a graph of the function.



6.4 Practice

1. Two identical water tanks A and B contain some water. The functions that relate each tank's total volume of water, V gallons, to the number of minutes, t , that each faucet is running are:

Tank A: $V = 80 + 25t$

Tank B: $V = 100 + 15t$

- a. Use a verbal description to compare the two functions

*tank B starts w/ more
tank A fills faster
Both are increasing*

- b. Which tank is most likely to be filled to capacity first? Explain.

TANK A. It's filling faster

2. You have two options for paying a lawn service. Both options involve paying a flat fee and then paying an additional hourly charge for labor. For each function, the total amount you pay, y dollars, is a function of the number of hours worked, t .

Option A

Number of Hours Worked (t)	0	2	4
Total Fee (y dollars)	25	45	65

+2

+20

Option B

A basic rate of \$20 plus \$12 per hour

- a. Write an algebraic equation to represent each function.

A: $y = 10t + 25$

B: $y = 20 + 12t$

- b. Use verbal description to compare the two functions.

*Both are increasing
A fee starts higher
B charges more per hour*