Get out your homework and have it ready to check. We will have a Quiz on Tuesday!

Classwork - Identifying Functions

Find each function value.

1. $f(6)$ if $f(x) = 4x$ **24**
2. $f(8)$ if $f(x) = x + 11$ **19**
3. $f(3)$ if $f(x) = 2x + 4$ **10**
4. $f(5)$ if $f(x) = 3x - 2$ **13**
5. $f(-6)$ if $f(x) = 4x + 7$ **−17**
6. $f(-14)$ if $f(x) = 2x - 3$ **−31**
7. $f\left(\frac{2}{9}\right)$ if $f(x) = 3x + \frac{1}{3}$ **1**
8. $f\left(\frac{3}{4}\right)$ if $f(x) = 2x - \frac{1}{4}$ **$1\frac{1}{4}$**
9. $f\left(\frac{4}{5}\right)$ if $f(x) = 4x - \frac{1}{5}$ **3**

Choose four values for x to make a function table for each function. Then state the domain and range of the function.

10. $f(x) = 5x - 4$

Sample answer:

x	$5x - 4$	$f(x)$
−4	5(−4) − 4	−24
−1	5(−1) − 4	−9
3	5(3) − 4	11
6	5(6) − 4	26

Domain: {−4, −1, 3, 6}
Range: {−24, −9, 11, 26}

11. $f(x) = 2 - 3x$

Sample answer:

x	$2 - 3x$	$f(x)$
−3	2 − 3(−3)	11
0	2 − 3(0)	2
2	2 − 3(2)	−4
5	2 − 3(5)	−13

Domain: {−3, 0, 2, 5}
Range: {−13, −4, 2, 11}

12. $f(x) = 6 + 2x$

Sample answer:

x	$6 + 2x$	$f(x)$
−3	6 + 2(−3)	0
−1	6 + 2(−1)	4
1	6 + 2(1)	8
4	6 + 2(4)	14

Domain: {−3, −1, 1, 4}
Range: {0, 4, 8, 14}

13. $f(x) = x - 7$

Sample answer:

x	$x - 7$	$f(x)$
−3	−3 − 7	−10
−2	−2 − 7	−9
5	5 − 7	−2
10	10 − 7	3

Domain: {−3, −2, 5, 10}
Range: {−10, −9, −2, 3}

14. $f(x) = 9x$

Sample answer:

x	$9x$	$f(x)$
−6	9(−6)	−54
−4	9(−4)	−36
1	9(1)	9
3	9(3)	27

Domain: {−6, −4, 1, 3}
Range: {−54, −36, 9, 27}

15. $f(x) = 3x + 5$

Sample answer:

x	$3x + 5$	$f(x)$
−5	3(−5) + 5	−10
−1	3(−1) + 5	2
2	3(2) + 5	11
6	3(6) + 5	23

Domain: {−5, −1, 2, 6}
Range: {−10, 2, 11, 23}

16. JACKETS The school baseball team wants to have each player's name imprinted on the player's jacket. The cost is $75 plus $8.50 for each name. Write a function to represent the cost $c(n)$ for n names. What is the cost to have names imprinted on 25 jackets? **$c(n) = \$75 + \$8.50n$; \$287.50**

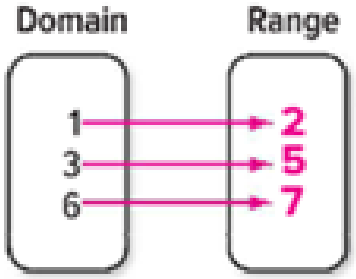
17. LEMONADE Gene sold 10 glasses of lemonade while setting up his lemonade stand. After opening, he sold an average of 20 glasses each hour. Write a function to represent the approximate number of glasses $g(h)$ sold after h hours. About when did he sell the 100th glass of lemonade?
$g(h) = 20h + 10$; 4.5 hours after opening

Function - A relation in which every input value (domain) is paired with exactly one member of the output value (range).

Identifying Functions

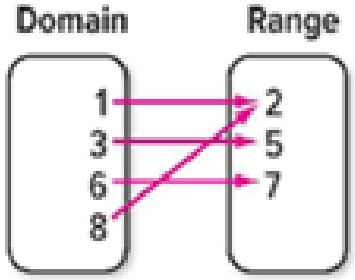
Determine if the if the following relations are functions using the definition of a function.

Relation 1



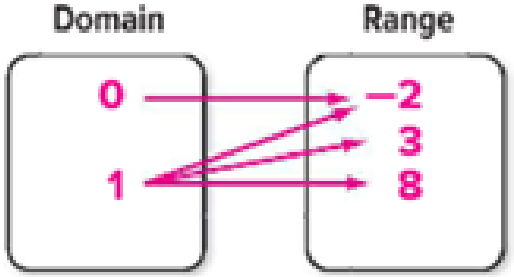
Function? Yes or No

Relation 2



Function? Yes or No

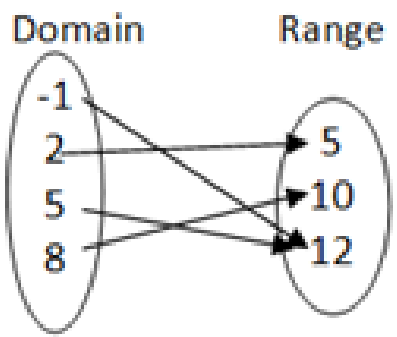
Relation 3



Function? Yes or No

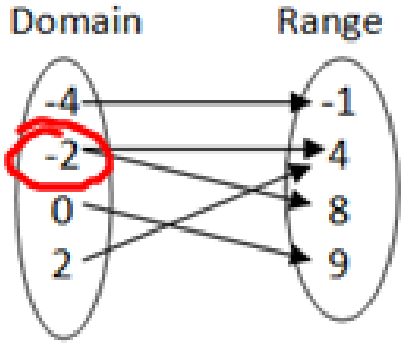
Practice: Determine if the if the following relations are functions.

A)



Function? Yes or No

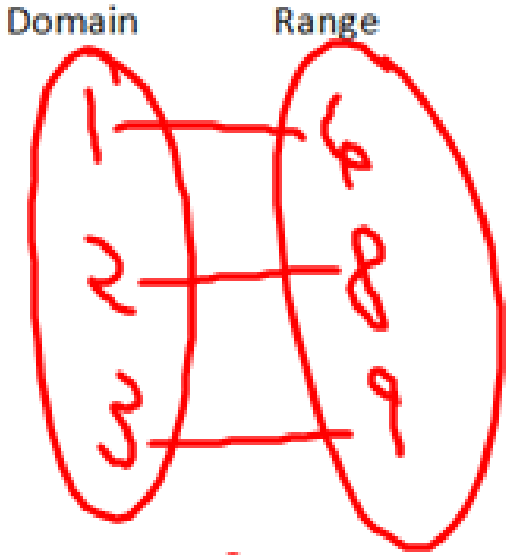
B)



Function? Yes or No

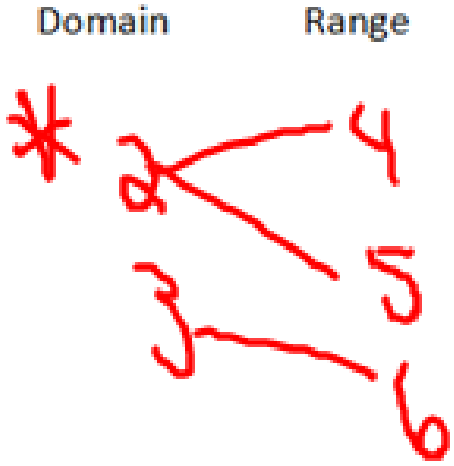
Determine if the following relations are functions. Draw a diagram with arrows to help.

A) {(1,6), (2, 8), (3, 9)}



Function? Yes or No

B) {(2,4), (2, 5), (3, 6)}



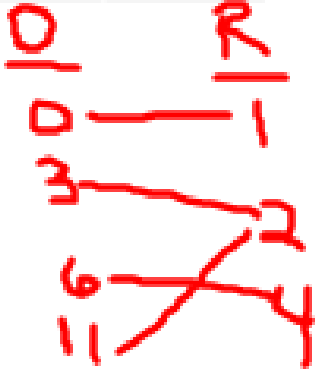
Function? Yes or No

Determine if the following tables are functions.

A) x is the domain

x	0	3	6	11
y	1	2	4	2

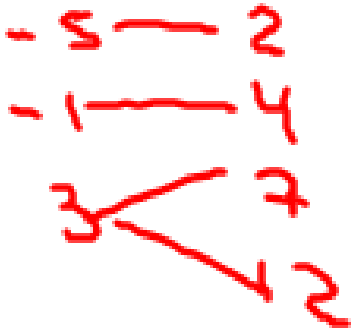
Function? Yes or No



B)

x	-5	-1	3	3
y	2	4	7	12

Function? Yes or No



C)

x	-2	0	1	2
y	5	5	5	5

Function? Yes or No

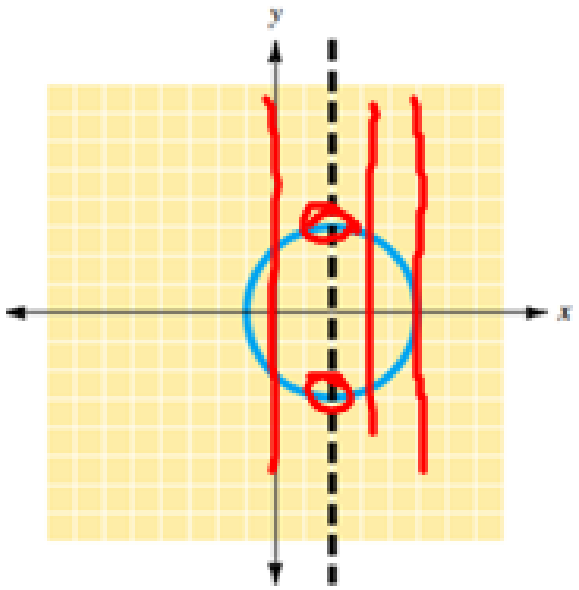
D)

x	-8	-8	1	5
y	10	6	2	-5

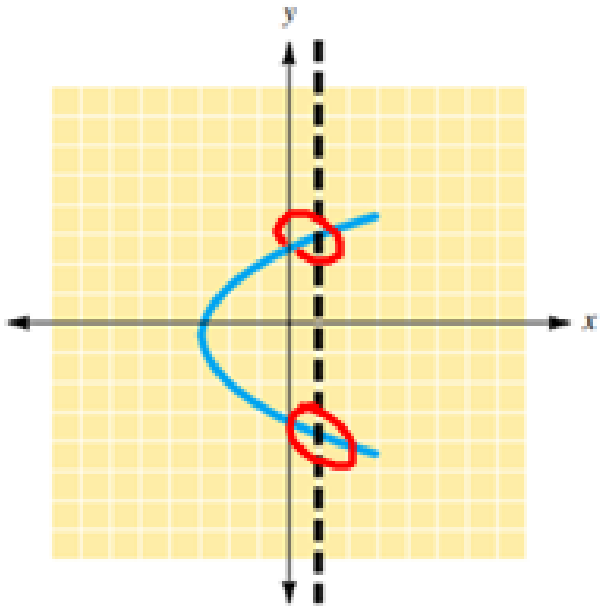
Function? Yes or No

Vertical Line Test

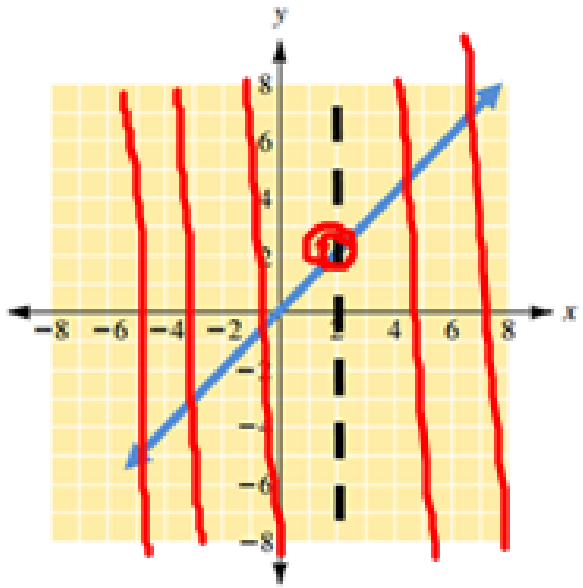
To determine whether or not a graph is a function, we use the vertical line test. To use the vertical line test, draw vertical line through the graph, if this line touches the graph more than once at ANY point on the graph, the relationship is NOT a function.



Function? Yes or No



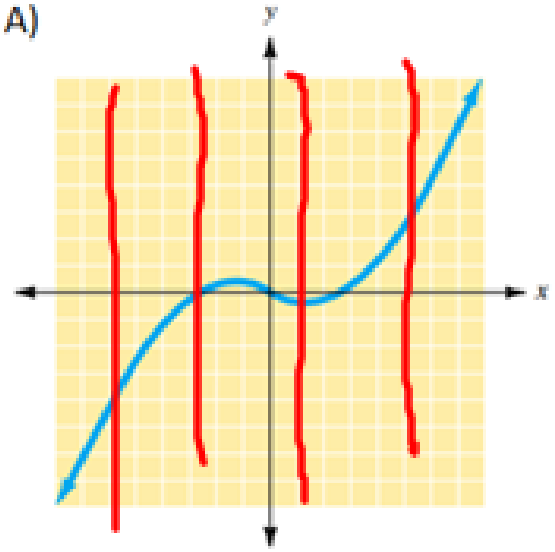
Function? Yes or No



Function? Yes or No

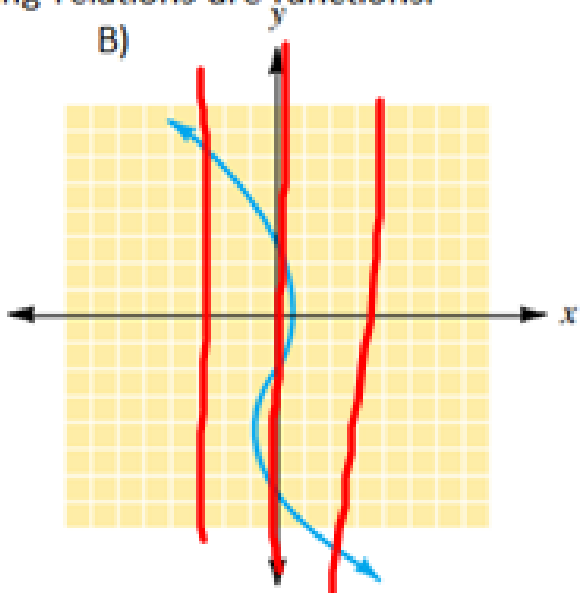
Practice: Determine if the if the following relations are functions.

A)



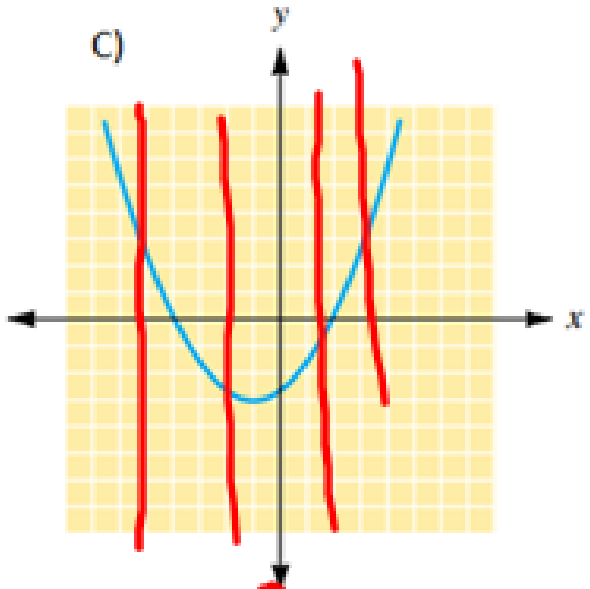
Function? Yes or No

B)



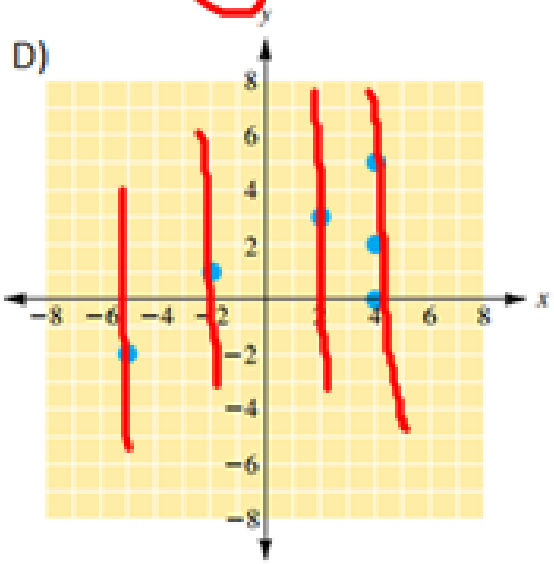
Function? Yes or No

C)



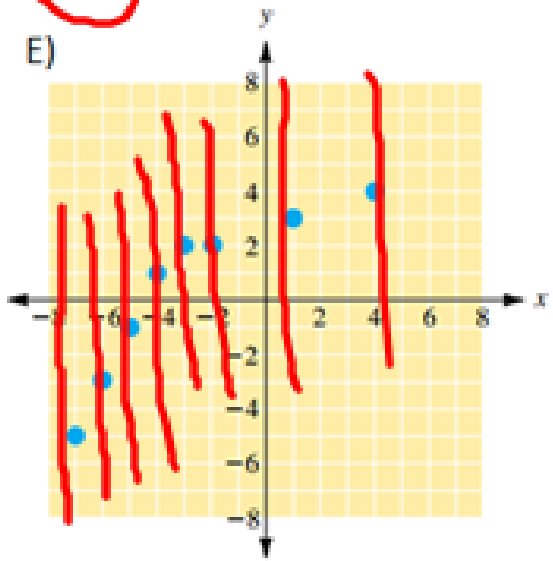
Function? Yes or No

D)



Function? Yes or No

E)



Function? Yes or No