

the function machine

domain

x-values

independent

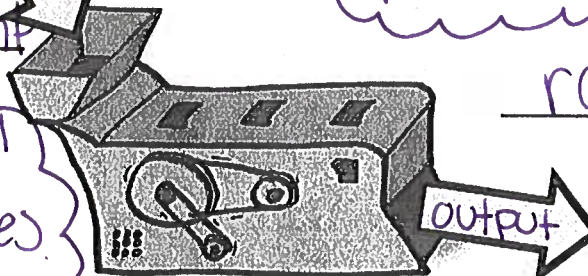
Domain: all possible x-values

Range: all possible y values

range

y-value

dependent



A function is a relation with one or more variable

where each input

has a single output.

FUNCTIONS

Each x-value is only allowed to correspond to ONE y-value!

This relation is a function because none of the input values (x-values) has more than one different output (y-value). ✓

x	0	1	2	3	4
y	0	3	6	9	12

This relation is NOT a function because at least one of the input values (x-values) has more than one different output (y-value). ✗

x	-3	2	-3	5	8
y	1	5	-1	2	-2

notation

When dealing with functions, you will see f(x) in place of y.

How to say it out loud: "f of x"

evaluating

To evaluate a function for a particular x-value, just substitute and then simplify!

Example: If $f(x) = 2x + 1$, find $f(3)$.

Work: $f(3) = 2(3) + 1$

Answer: 7

When we put something in, we can always expect a consistent result to come back out.

Name: _____

determining whether a relation is a function

Add circles, arrows, lines, etc. to demonstrate why each relation is/isn't a function.

table

Review the columns. The relation will not be a function if any x-value corresponds to more than one different y-value.

A

x	y
-1	1
0	0
1	1

B

x	y
3	-6
0	1
3	6

Set-notation

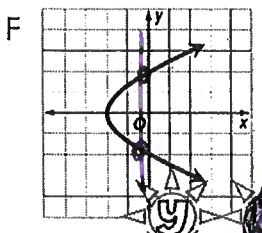
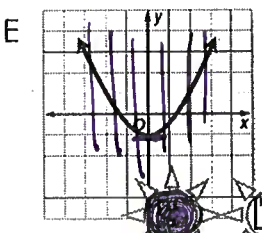
Review each ordered pair. The relation will not be a function if any x-coordinate corresponds to more than one different y-coordinate.

C
 {(3, 3), (4, -1), (2, 3)}

D
 {(1, 8), (0, -2), (1, -3)}

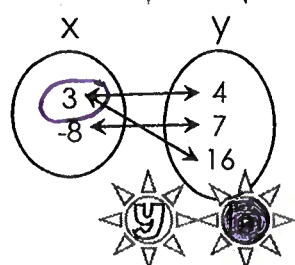
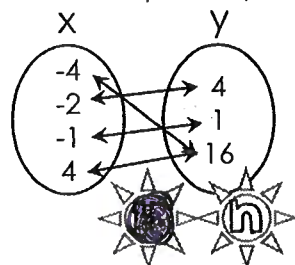
graph

Use the vertical line test. The relation will not be a function if a vertical line ever passes through more than one point.



mapping-diagram

Review the arrows. The relation will not be a function if any x-values maps to more than one different y-value.



finding domain and range

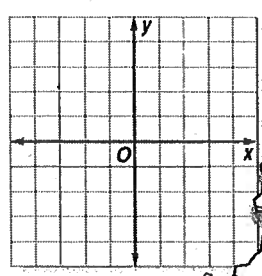
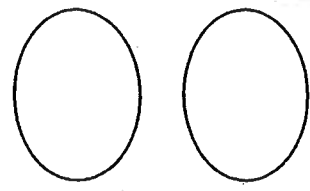
The domain is the set of all possible x-values.
 The range is the set of all possible y-values.

Identify the domain and range of the relations in the "table," "set notation," and "graph" examples above.

	Domain	Range
A	{-1, 0, 1}	1, 0, 1
B		
C	3, 4, 2	-1, 3
D		
E	$x \in \mathbb{R}$	$y \geq -1$
F	$x \geq -2$	$y \in \mathbb{R}$

Try it

Create a mapping diagram and a graph that each represent functions.

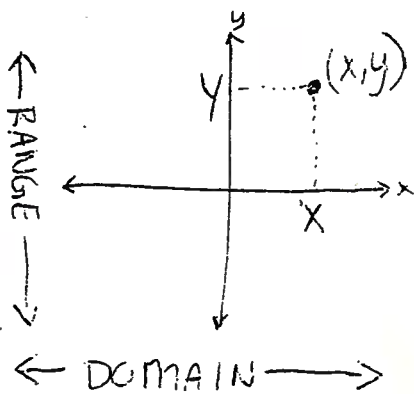


Unit 4 Review

Name: _____

Block: _____

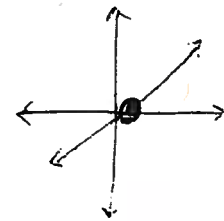
* Ordered pair: (x, y)



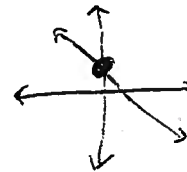
↑
 • input
 • independent variable
 • domain

↑
 • output
 • dependent variable
 • range

* x-intercept means $y = 0$
 $\hookrightarrow f(x) = 0$



* y-intercept means $x = 0$
 $\hookrightarrow f(0) = y$ ex.

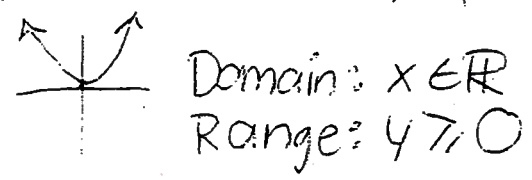
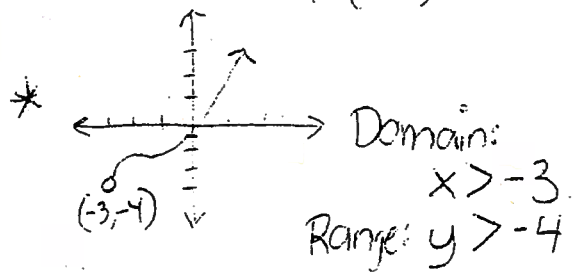


* function: $f(x) = x^2 + 1$

\hookrightarrow does it pass the vertical line test?

$f(x) = 2$ means $y = 2$, solve for x

$f(2) =$ means $x = 2$ and we have to input it



For review, study the notes on the front side and complete the following questions on a SEPERATE SHEET of paper. Staple your review to this sheet for marks. Due test day, Tuesday, May 31.

p229 ~~p393~~ # 2a-f 1/6

p246 ~~p408~~ # 7c 1

p253 ~~p447~~ # 3aceh 4

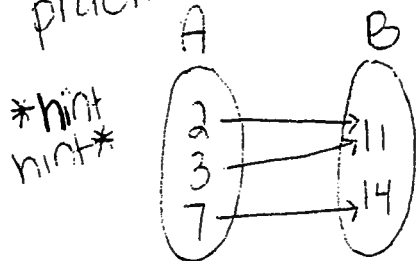
~~p263~~ ~~p426~~ # 1g, 2c, 3h, 4j, 5k, 6l, 7m, 8n, 9o, 10p (4a-h. 9ab)

p303 ~~p464~~ # 7, 11, 3bdf 1

p311 ~~p467~~ # 2b, 5b, 7b, 8bd, 12 1/6

p318 ~~p473~~ # 8 1/3

extra practice: p330 ~~p486~~ # 7a 1



• Inputs? _____

• Outputs? _____

• Independent variable _____

• Dependent variable _____

Domain: _____

Range: _____

40

*record mark on the front page please