Warm-Up 8/23

Evaluate each expression.

$a = 3,$	$b = 5,$	$c = 6$

1. $a + 5$ _____

2. $15 - c$ _____

3. $4b$ _____

4. $\frac{18}{c}$ _____

5. $20 - a$ _____

6. $11b$ _____

Evaluate each expression.

$a = 3,$	$b = 5,$	$c = 6$

1. $a + 5$ 8

$3 + 5$

2. $15 - c$ 9

$15 - 6$

3. $4b$ 20

$4(5)$

4. $\frac{18}{c}$ 3

$\frac{18}{6}$

5. $20 - a$ 17

6. $11b$ 55

Today's Goals

I can...

- define functions
- identify functions in all forms
- identify dependent and independent variables

Section 3 ~ Relations and Functions

Relation *a pairing between two sets of numbers to create a set of ordered pairs*

Function *a special type of relation; a pairing between two sets of numbers in which each element of the first set is paired with exactly one element of the second set*

***** Each input has a specific output***

(1, 5) (2, 6)
(3, 7) (4, 8)

Two Variables: **Independent** and **Dependent**

(x, input) (y, output)

the variable whose behavior is known or the value is given

value of interest and is determined by the function rule acting upon the independent variable

Work in table groups on the

"Input and Output Values"

Complete the front.
Problems 1-4 (except the creating function questions)

Every function can be represented in many different ways

Types of representations:

- verbal description

words

- set of ordered pairs or table

(x, y) x | y

- mapping

- graphing

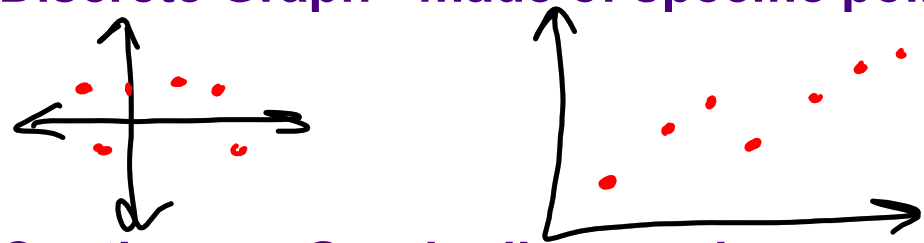
- algebraic representation; nth rule

equation

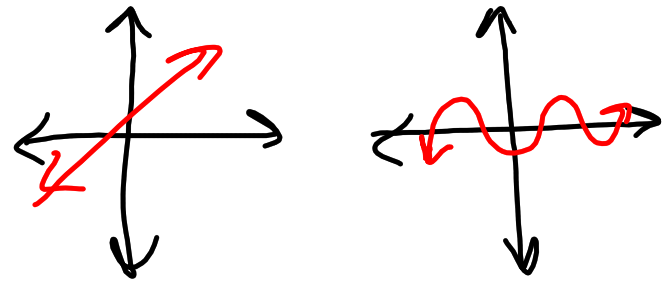
$y = 2x^2$ $f(x) = 3x$ $A_n = 2(n-1)$

Types of graphs:

Discrete Graph - made of specific points



Continuous Graph - lines and curves



Section 3 ~ Relations and Functions

Relation — *a pairing between two sets of numbers to create a set of ordered pairs*

Function — *a special type of relation; a pairing between two sets of numbers in which each element of the first set is paired with exactly one element of the second set*
***** Each input has a specific output***

Domain and Range of a Function

Domain - input, x values, independent variable

Range - output, y values, dependent variable

1. Look for any repeating x-values. *if none repeat then it is a function.
2. If the x-value repeats then check y value.
3. If the y-value is different, then it is not a function.

Examples: (x,y) (6, 7), (5, 8), (4, 9), (-1, 14)

first determine if the relation is a function.

then list the domain and range

function? yes

domain? (6, 5, 4, -1)

range? (7, 8, 9, 14)

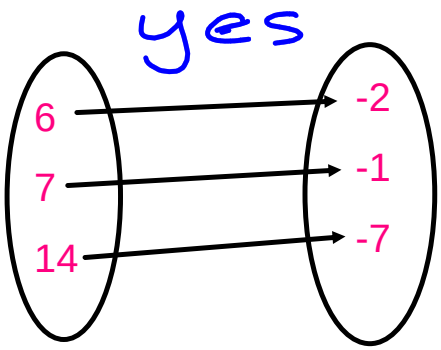
1. (3, 0), (4, 0), (5, 0) , (-3, 0)
   function: yes
   domain: (3, 4, 5, -3)
   range: (0)

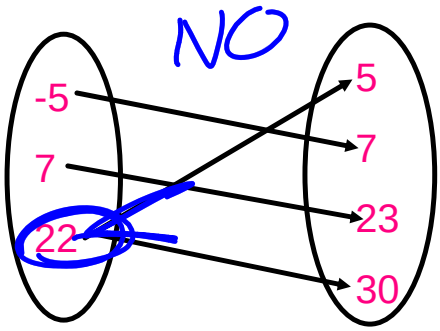
2. (-2, 1), (-5, 6), (-9, 15), (2, -2)
   function: yes
   domain: (-2, -5, -9, 2)
   range: (1, 6, 15, -2)

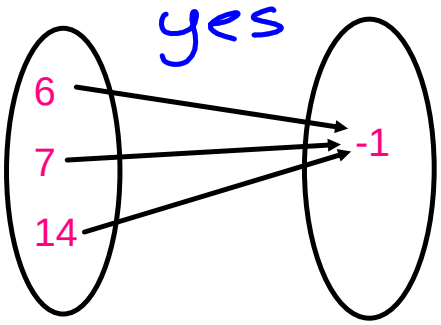
3. (-3, 4), (4, 15) , (-3, 4) , (5, 23)
   function: yes
   domain: (-3, 4, 5)
   range: (4, 15, 23)

4. (1, 5), (-3, -7) , (2, 4) , (1, 9), (-5, -13)
   function: NO
   domain: (1, -3, 2, -5)
   range: (5, -7, 4, 9, -13)

Mapping



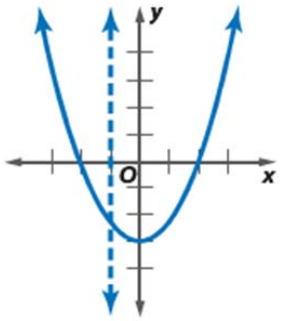
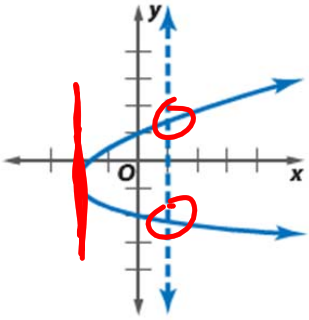




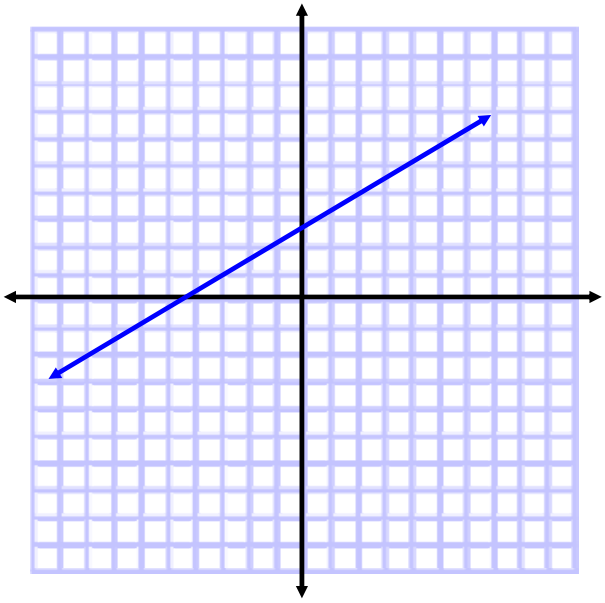
Turn to the back of the **"Input and Output Values"** sheet and complete it.

(NOT #6)

KeyConcept Vertical Line Test

Words	If no vertical line intersects a graph in more than one point, the graph represents a function.	If a vertical line intersects a graph in two or more points, the graph does not represent a function.
Models		 (1, 1.5) (1, -2.5)

How to determine if a graph is a function

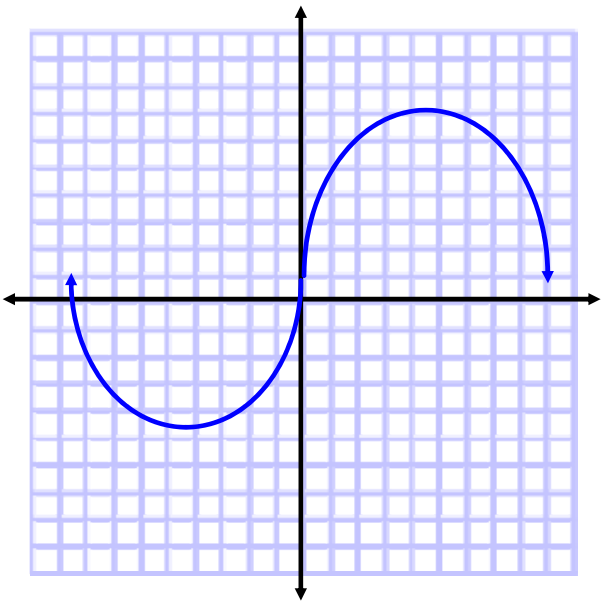


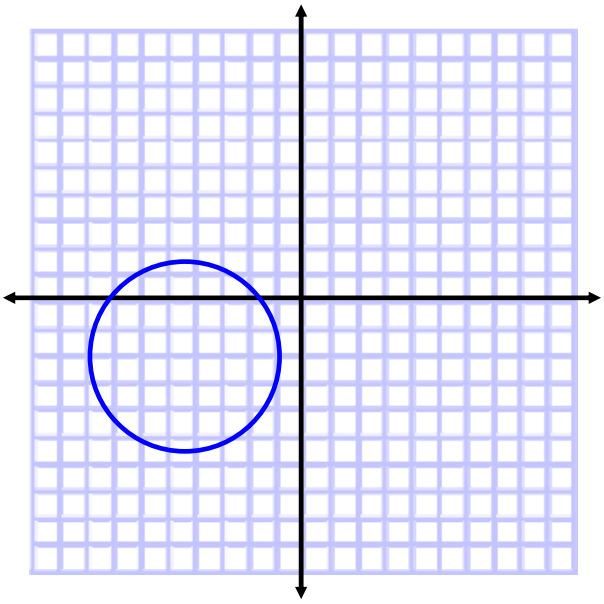
Vertical line test.

*draw 3 or more vertical lines

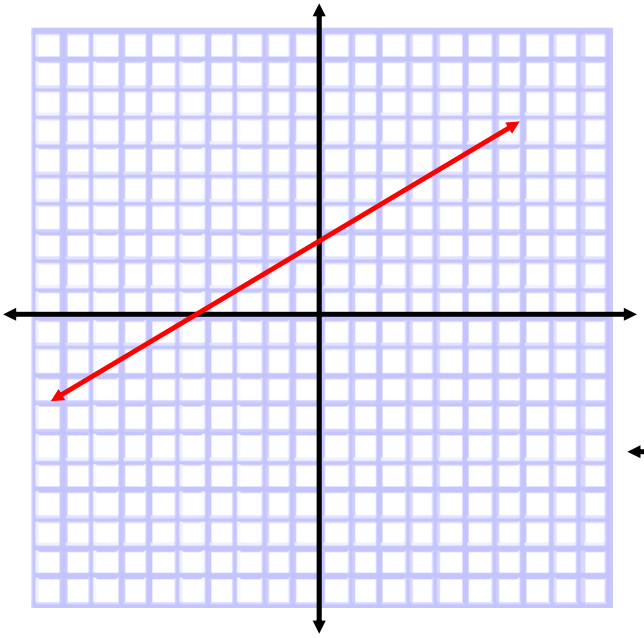
*each line can cross the graph only 1 time

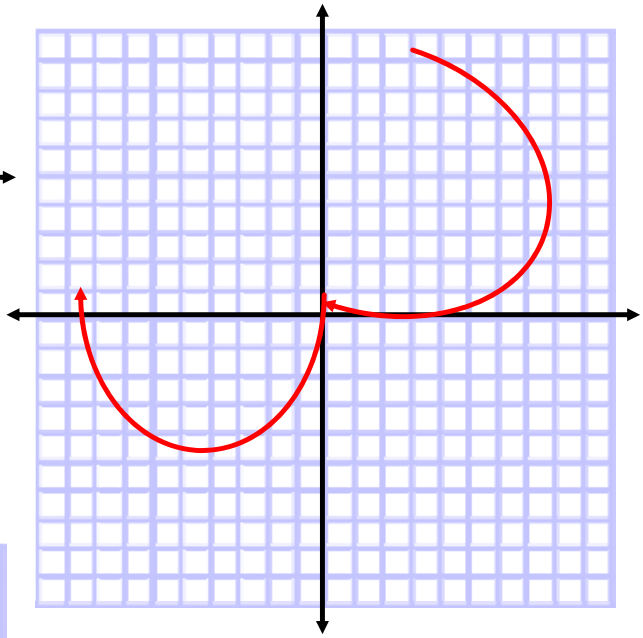
*if it crosses more then it is not a function

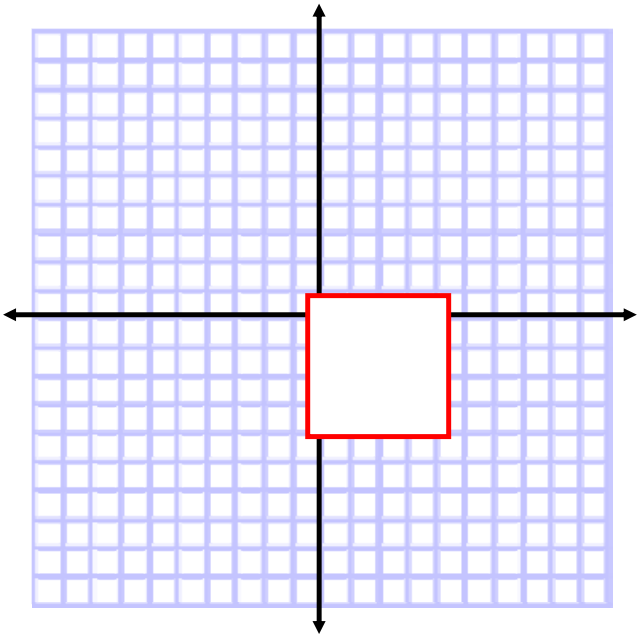




How to determine if a graph is a function







Work in table groups on the

"Key features of Graphs"

Homework

Algebra nation

pg. 55-58 (Topic 1) and 67-68 (Topic 6)

Don't do the questions asking you to create a function.