Unit 1: Modeling with Equations and Inequalities

Please put up your phones and take your seats.

Unit 1: Modeling with Equations and Inequalities

Essential Question:

How can equations and inequalities be used to represent and solve mathematical and real world problems?

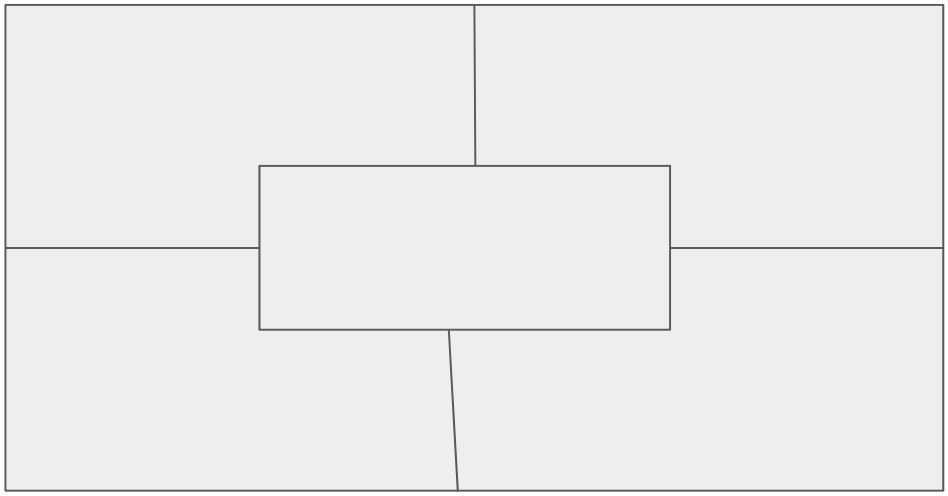
What is a function?

Learning Target:

- I can define a function.

What is a function?

- Create a placemat like the one shown.
- Write what you think a function is in your section.
- Create a group definition in the center. Be prepared to share.



Quizlet Live

Function Vocab

- Function--A relation in which each element of the domain is paired with exactly one element in the range
- Domain--input, x values, independent variable
- Range--output, y values, dependent variable
- In a function, an element of the domain may not be paired with 2 different elements of the range (x cannot repeat)

More Vocab

- Equation--a statement that the value of 2 mathematical expression are equal
- X-intercept--Where the graph crosses the x-axis (y=0)
- Y-intercept--where the graph crosses the y-axis (x=0)
- Function notation--the way a function is written: f(x) g(x)

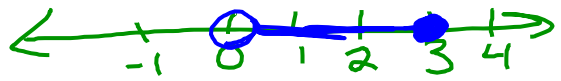
More Vocab

[can = that number

(not = that number

Used to describe sets of numbers

Typically used to describe domain and range



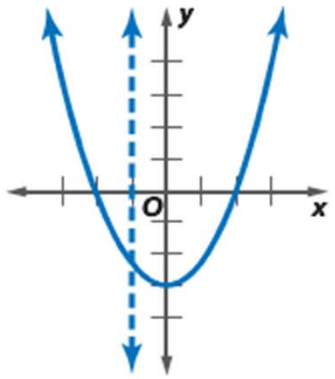
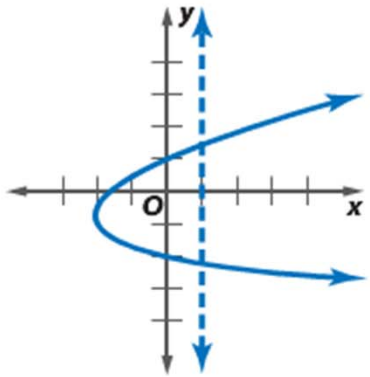
- Interval notation--a set of numbers that represent the minimum (left) and maximum (right) boundaries: [0,3] (0,3) (0,3] [0,3)
- Set notation--(aka set-builder notation)--a verbal description or inequality to describe numbers:
  - {x | x is a real number} "The set of all x such that x is a real number"
  - {y | y > 3} "The set of all y such that y is greater than 3"

$\{x \mid 0 < x \leq 3\}$

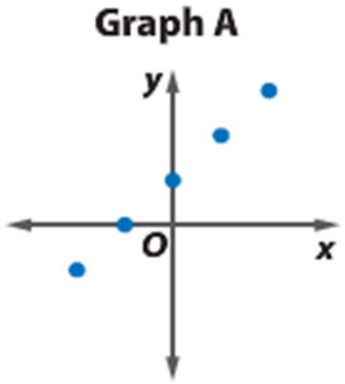
such that

Vertical Line Test

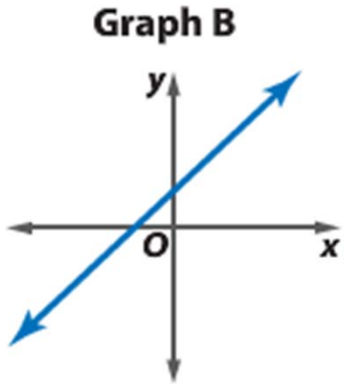
KeyConcept Vertical Line Test

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		

Discrete vs Continuous



discrete relation



continuous relation

Function or not?

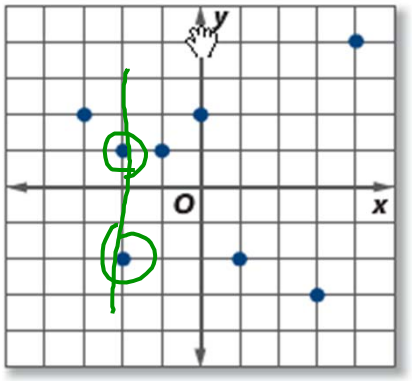
1. {(-6, -1), (-5, -9), (-3, -7), (-1, 7), (6, -9)} Yes

2.

x	2	-1	-2	-1	-2
y	-2	-1	0	1	2

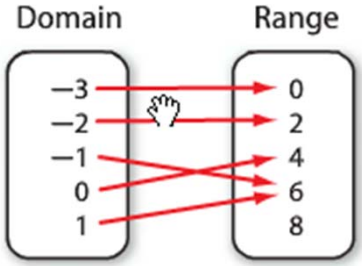
NO

3.



NO

4.



Yes

Domain/Range Activity

Homework

Write the definitions again using your own words. You do NOT need to do “set notation” or “interval notation.”