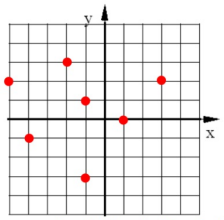
Domain: All different the x-values listed in order without repeating

Range: All different the y-values listed in order without repeating

These are called Discrete Graphs.

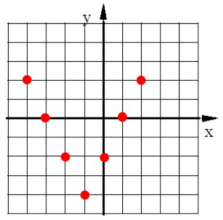
The domain and range can just be listed using all the values of x and y.

Discrete Quantity
a quantity that can be counted



Domain: {-5,-4,-2,-1,1,3}

Range: {-3,-1,0,1,2,3}

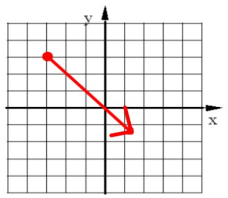


Domain: {-4,-3,-1,-1,0,1,2}

Range: {-4,-2,0,2}

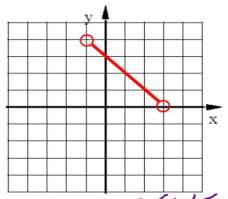
These are called Continuous Graphs.

The domain and range can't be listed using all the values of x and y because there are an infinite # of points. You must use INEQUALITIES



Domain: $x \geq -3$

Range: $y \leq 3$



Domain: $-1 < x < 3$

Range: $0 < y < 4$

Continuous Quantity
Quantity that can't be counted, it has to be measured.

Relation

A set of ordered pairs

(a bunch of points)

Function:

A relation such that each x is paired with ONE and ONLY ONE y.

One input produces only one output.

No x-value can repeat

For a graph to be a function

No vertical line can touch the graph more than once.

Practice Sheet from yesterday.

State if each of the below relations is a function or not.

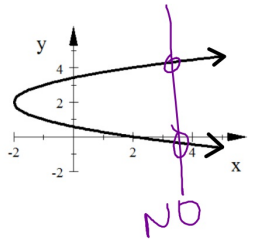
1. $(2,6),(-7,8),(4,3),(5,8),(6,2)$ Yes No x-value repeats

2.

X	Y
4	7
9	1
2	5
−3	−8
4	6

NO

3.



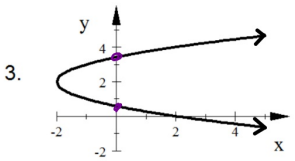
NO

1. $(2,6),(-7,8),(4,3),(5,8),(6,2)$

4. Use Problem #1:

Domain: $\{-7,2,4,5,6\}$ Range: $\{2,3,6,8\}$

3.



5. Use problem #3:

Domain: $x \geq -2$ Range: $\mathbb{R}$

Slope: $m = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1}$

6. $(6,-3)\&(-9,-13)$

Slope = $\frac{-3--13}{6--9} = \frac{10}{15} = \frac{2}{3}$

7. $(4,-1)\&(-8,-1)$

Slope = 0 $= \frac{-1--1}{4--8} = \frac{0}{12}$

8. $(-5,11)\&(-5,2)$

Slope = Undefined $\frac{11-2}{-5--5} = \frac{9}{0}$ =

9. Point-Slope Form: $y - y_1 = m(x - x_1)$

Find the slope and use the above formula to write the equation of the line that passes through the given points. $(7,4)\&(11,-2)$

First: Find Slope

$m = \frac{4--2}{7-11} = \frac{6}{-4} = -\frac{3}{2}$

Second: Put the slope in place of m and pick any point on the line and replace x_1 & y_1 with these coordinates.

EQ :

Use the pt (7,4)

$y - 4 = -\frac{3}{2}(x-7)$

Use the pt (11,-2)

$y + 2 = -\frac{3}{2}(x-11)$

You can have many equations of a line when using Pt-Slope Form.

10. Slope-Intercept Form: $y = mx + b$

Find the slope and use the above formula to write the equation of the line that passes through the given points. $(12,9)\&(-8,-6)$

Method 1:

First: Find Slope

$\frac{9--6}{12--8} = \frac{15}{20} = \frac{3}{4}$

Second: Write the equation in Point-Slope Form

pick (12,9) $y - 9 = \frac{3}{4}(x-12)$

Third: Rewrite equation into Slope-Intercept Form starting with the Distributive Property.

$y - 9 = \frac{3}{4}x - 9$

$+9 \quad +9$

EQ : $y = \frac{3}{4}x$

10. Slope-Intercept Form: $y = mx + b$

Find the slope and use the above formula to write the equation of the line that passes through the given points. Method 2: $(12,9)\&(-8,-6)$

First: Find Slope

$m = 3/4$

Second: Replace m with slope and x & y with coordinates of any point on the line.

$y = 3/4x + b$

Third: Solve for b

using (12,9) $9 = 3/4(12) + b$

$9 = 9 + b$

$-9 \quad -9$

$b = 0$

Fourth: Rewrite equation with both m and b. EQ :

$y = 3/4x$

What is Function Notation?

- Another way to write y=
- Instead of writing $y = x^2 + 1$

  Function Notation writes it as: $f(x) = x^2 + 1$
- How do you say "f(x)"? f of x
- f is the function name
- x is the independent variable (domain)