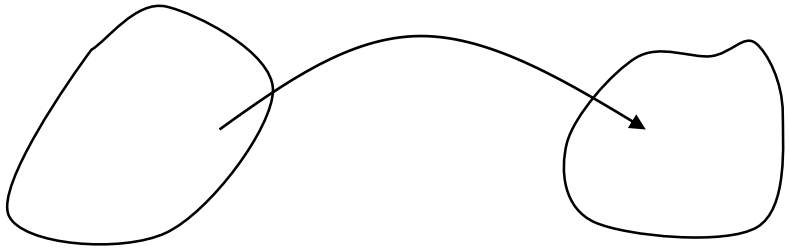
What is a function?



4 Ways to Represent a Function:

1. Verbally ( )

Ex: Favorite Ice Cream Flavor

2. Analytically ( )

Ex: $y = 3x - 4$ or $f(x) = 3x - 4$

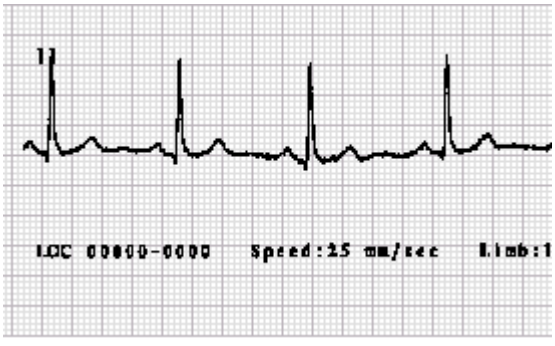
3. Numerically ( )

Ex: Ball Bounce

Drop Height (in)	Bounce Height (in)
36	25.0
40	29.0
44	31.5
48	35.0
52	37.5
56	42.0
60	46.5

4. Graphically ( )

Ex: EKG Reading



Many functions represented in all 4 ways:

Ex: Words: Equation: $y = 3x - 4$

Table: Graph:

Independent Variable: Dependent Variable:

Important Properties of a Function from Set A to Set B

1. Each element in the set A (domain) _____ be matched with

2. Some elements in B _____ be matched with

3. Two or more elements in set A (domain) _____ be matched with

4. A single element in set A (domain) _____ be matched with

To determine whether a relation (or rule) is a function, you must determine whether each input value in set A (domain) is matched with exactly one output value.

Ex Does the following relation define *y* as a function of *x*? (Verbally)

The input value *x* is each of your home addresses, the output value *y* is the person living there.

Ex Does the following relation define *y* as a function of *x*? (Numerically)

Input, *x*	2	3	8	14	20
Output, *y*	3	4	-6	-8	15

Ex Does the following set of ordered pairs define a function from $A=\{2,4,6,8\}$ to $B=\{-1,0,1\}$? (Numerically)

{(2,1), (4,1), (6,1), (8,1)}

Ex Determine whether the equation represents *y* as a function of *x*. (Algebraically)

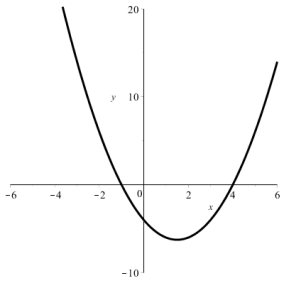
$3x+4y-5=3$

Ex Determine whether the equation represents *y* as a function of *x*. (Algebraically)

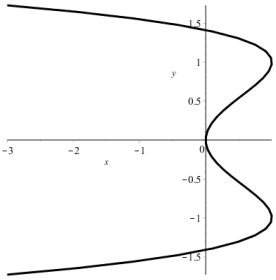
$9x^2+y^2=25$

Ex Determine whether the graph represents *y* as a function of *x*. (Graphically)

(a)



(b)



Homework:
Section 2.2, p. 182: #5-19 (odd)
Section 2.3, p. 194: #11, 13