Warm-up:
Which unit of measure is more precise?
1. 4.75cm ; 9 cm 2. 2.0 quarts ; 2 gallons

Determine the number of significant digits.
3. 124.02 4. 0.0023

5 2

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Goals

Section 1.5/1.6: Determine what a function is and represent functions with tables, rules, and graphs.

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Function

- A set of numbers called the domain (inputs) and a set of numbers called the range(outputs). x y
- A pairing of inputs with outputs such that each input is paired with exactly one output.
- Tables, Mappings, and Graphs are ways to determine a function

Functions

A function is a mathematical process that uniquely relates the value of one variable to the value of one (or more) other variables.

Input Variable (s) X → function Y = f(X) → Output Variable Y

Examples:

sin (x) exp (x) e^x $x^3 + x^2 + 5x + 12$

cos (x) ln (x) $\sqrt[2]{x}$ cosh (x)

tan (x) $\tan^{-1}(x)$ x!

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Ordered Pair	Input Value	Output Value
Formed by input & output values	*x*-coordinate	*y*-coordinate
Plotted using (*x*, *y*)	Horizontal axis of the graph	Vertical axis of the graph
	Domain	Range
Ex: {(1, 2), (2, 4), (3, 0), (4, 5)}	Independent Variable Ex: {1, 2, 3, 4}	Dependent Variable Ex: {2, 4, 0, 5}

Ordered Pair → (input, output) → (x, y)

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Example 1: Determine whether each is a function. Explain.

a. {(–3, 1), (–2, 4), (–1, 7), (0, 10), (1, 13)}

yes

b. {(–2, 1), (–2, 8), (–1, 3), (0, 9), (4, 6)}

no

c.

x	-6	-4	0	2	3	5
y	2	-2	3	1	3	1

yes

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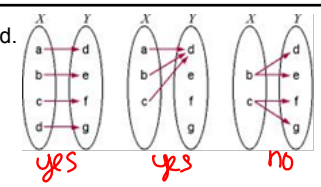
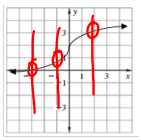
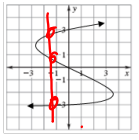
d. 

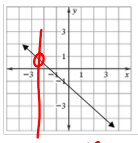
yes yes no (b,d) (b,e)

e. 

yes

f. 

no

g. 

yes

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Example 2: Identify the domain and range of a function.

The input-output table shows the price of various lobsters at a fish market. Identify the domain and range of the function.

x

Input (pounds)	1.5	2.3	3.1	4.2
Output (dollars)	$7.80	$11.96	$16.12	$21.82

y

Domain: {1.5, 2.3, 3.1, 4.2}

Range: {7.80, 11.96, 16.12, 21.82}

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Example 3: Find the range for the function. $y = x - 3$

y=x-3

x Domain = {2, 5, 8, 11}

x	2	5	8	11
y = x - 3	2-3=-1	5-3=2	8-3=5	11-3=8

Range: {-1, 2, 5, 8}

y

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Example 4: Write a rule for the function.

Input x	3	6	7	10
Output y	15	30	35	50

y=5x

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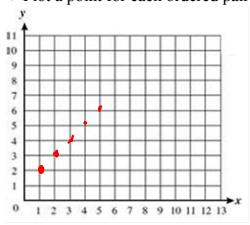
Example 5: Graph the function $y = x + 1$ with domain 1, 2, 3, 4, and 5.

Step 1: Make an input-output table.

y=x+1

x	1	2	3	4	5
y	1+1=2	2+1=3	4	5	6
(x,y)	(1,2)	(2,3)	(3,4)	(4,5)	(5,6)

Step 2: Plot a point for each ordered pair



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