

Lesson 5.2

8. Domain and Range

9. Identify Functions

10. Common Point of 2 Functions

Goal: To solve equations/inequalities in math and real world context and to write rules for arithmetic sequence.

SWBAT determine if a table, graph, and equation is a function.

SWBAT to identify domain and range.

SWBAT interpret domain restriction within real world context.

SWBAT find a common point of two functions.

Domain and Range

- ▶ Domain is the (x) values in a table/order pair.
- ▶ Range is the (y) values in a table/order pair.
- ▶ Examples:

x(Domain)	y(Range)
-2	5
-1	10
0	15
1	20
2	25

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

→ Domain: {3,4,5,6}

→ Range: {2,4,8}

least to greatest

Problem 1:

► State the domain and range.

x	y
-6	2
-4	3
0	7
1	6
3	9

Domain: $\{-6, -4, 0, 1, 3\}$
Range: $\{2, 3, 6, 7, 9\}$

x	y
-2	3
-1	5
0	7
1	9
2	11

Domain: $\{-2, -1, 0, 1, 2\}$
Range: $\{3, 5, 7, 9, 11\}$

Problem 1b:

► State the domain and range.

$(2,4)(3,4)(5,2)(8,11)(-3,5)$

Domain: $\{-3, 2, 3, 5, 8\}$

Range: $\{2, 4, 5, 11\}$

$(-4,2)(0.5,1)(6,7)(-3,-4)(1.2,3.5)$

Domain:

Range:

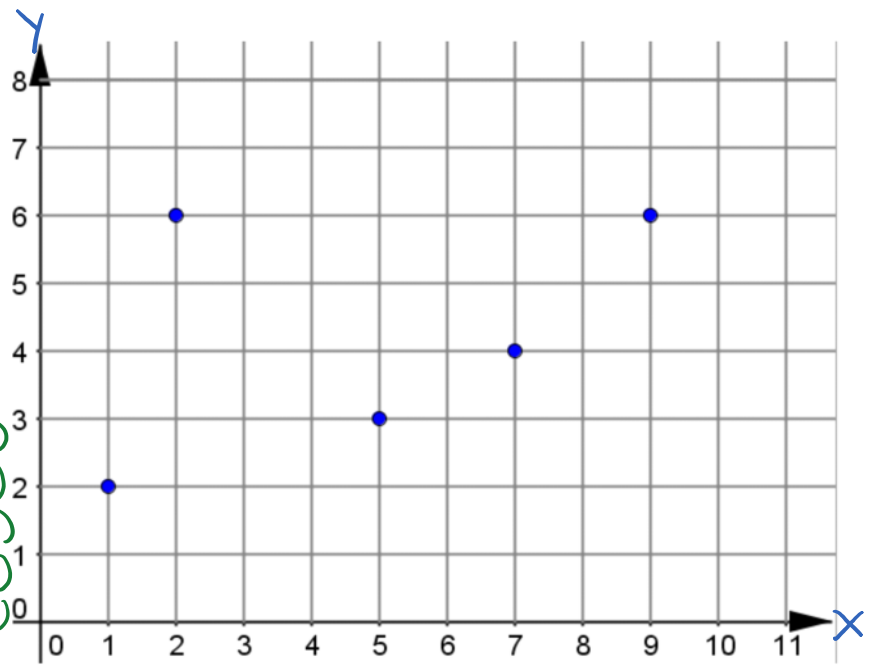
Problem 1c:

► State the domain and range.

Domain: $\{1, 2, 5, 7, 9\}$

Range: $\{2, 3, 4, 6\}$

- $(1, 2)$
- $(2, 6)$
- $(5, 3)$
- $(7, 4)$
- $(9, 6)$



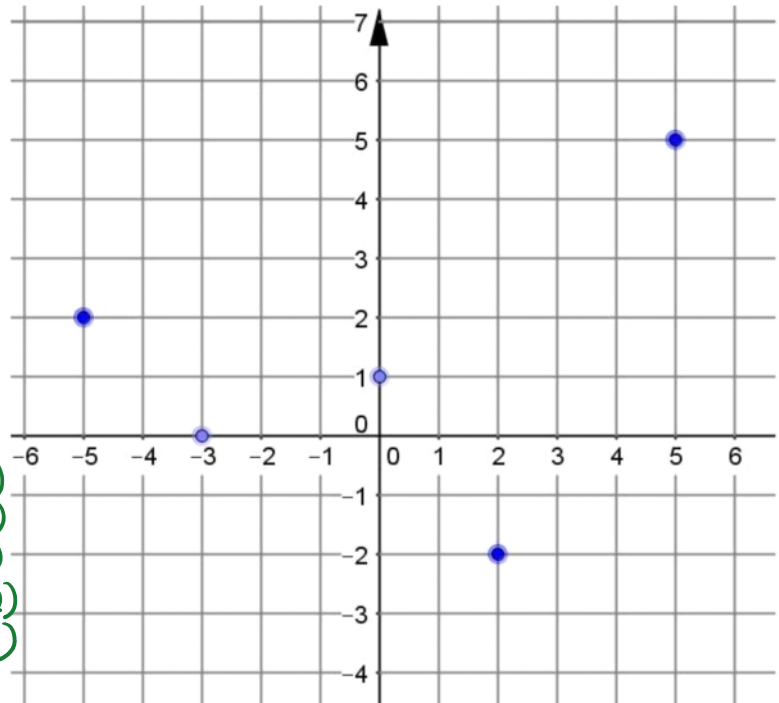
Problem 1d:

- State the domain and range.

Domain: $\{-5, -3, 0, 2, 5\}$

Range: $\{-2, 0, 1, 2, 5\}$

$(-5, 2)$
 $(-3, 0)$
 $(0, 1)$
 $(2, -2)$
 $(5, 5)$

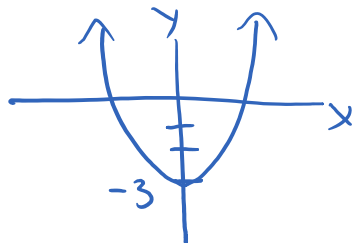
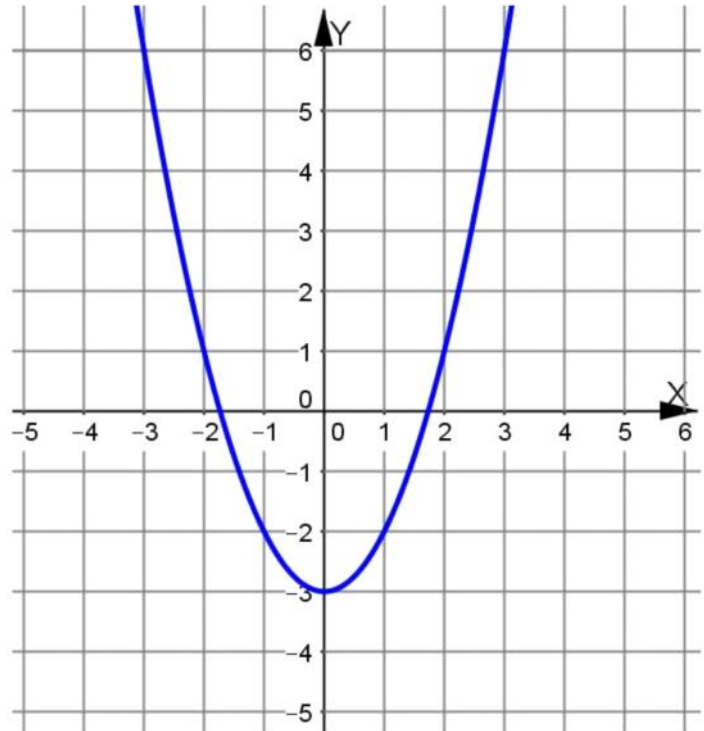


Problem 2:

State the domain and range of the graph in inequality notation.

all real numbers
Domain: $-\infty < x < \infty$

Range: $y \geq -3$

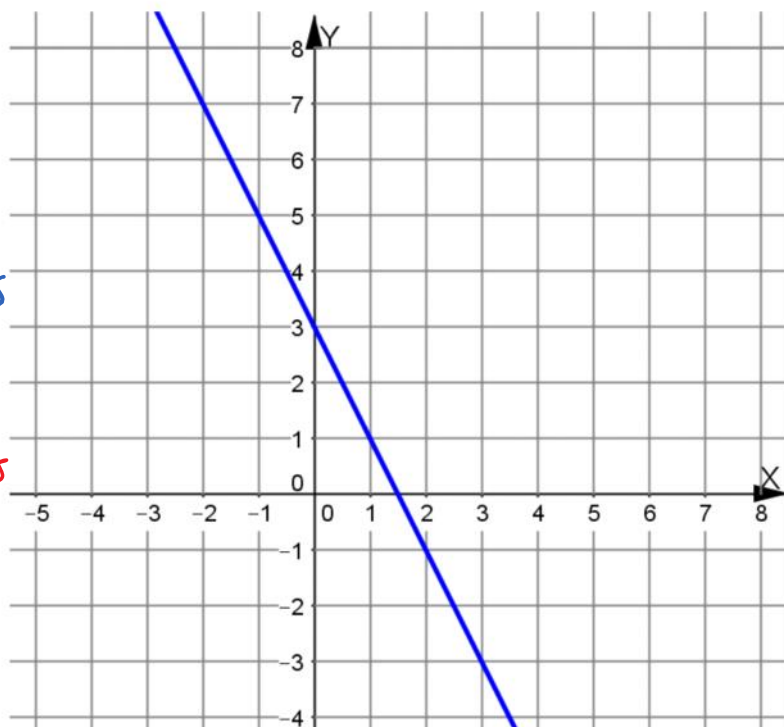


Problem 2a:

State the domain and range of the graph in inequality notation.

all real numbers
Domain: $-\infty < x < \infty$

all real numbers
Range: $-\infty < y < \infty$

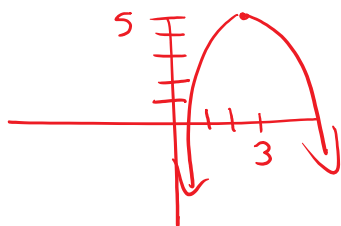
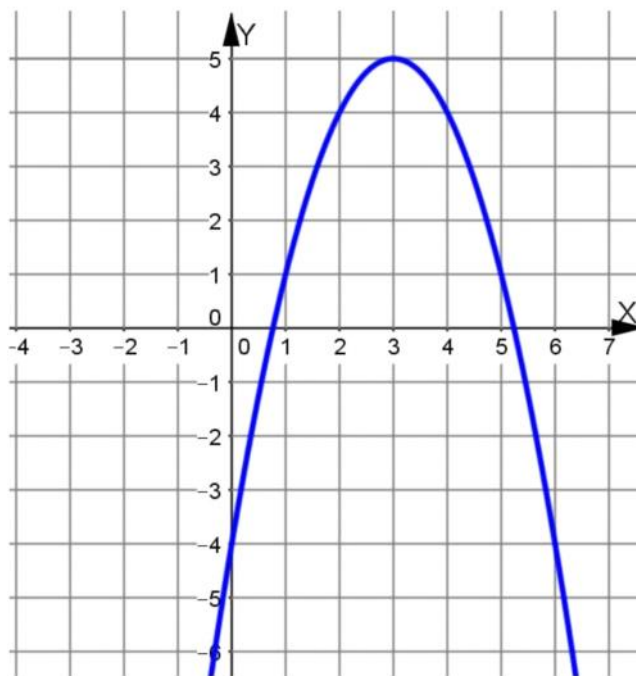


Problem 2b:

State the domain and range of the graph in inequality notation.

Domain: $-\infty < x < \infty$

Range: $y \leq 5$



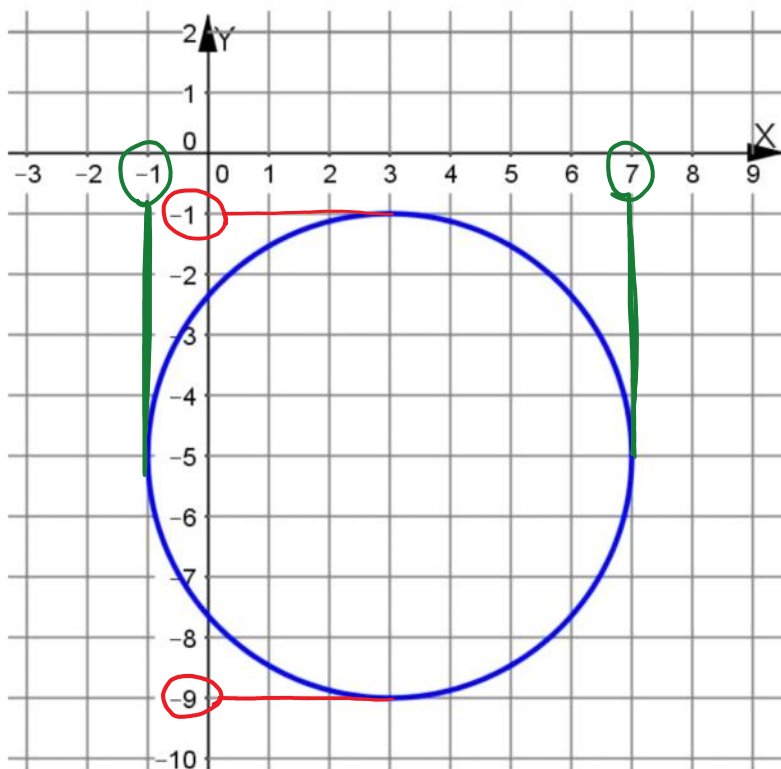
Range \geq \leq

Problem 2c:

State the domain and range of the graph in inequality notation.

Domain: $-1 \leq x \leq 7$

Range: $-9 \leq y \leq -1$

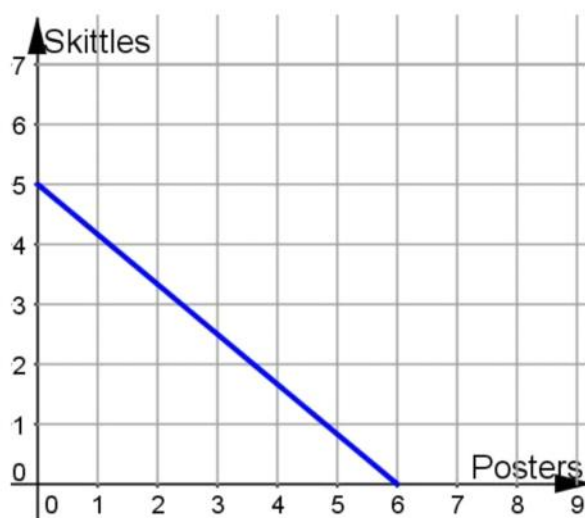
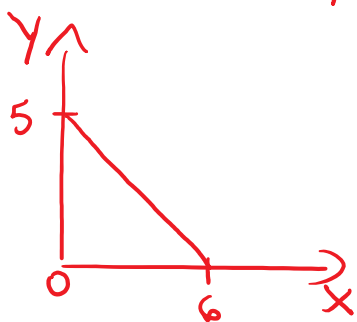


Problem 3:

A poster at Wal-Mart costs \$5 each and a jumbo size bag of skittles cost \$6 each. Jimbob has \$30 in his wallet. State the domain and range for Jimbob's Wal-Mart trip.

Domain: $0 \leq x \leq 6$

Range: $0 \leq y \leq 5$

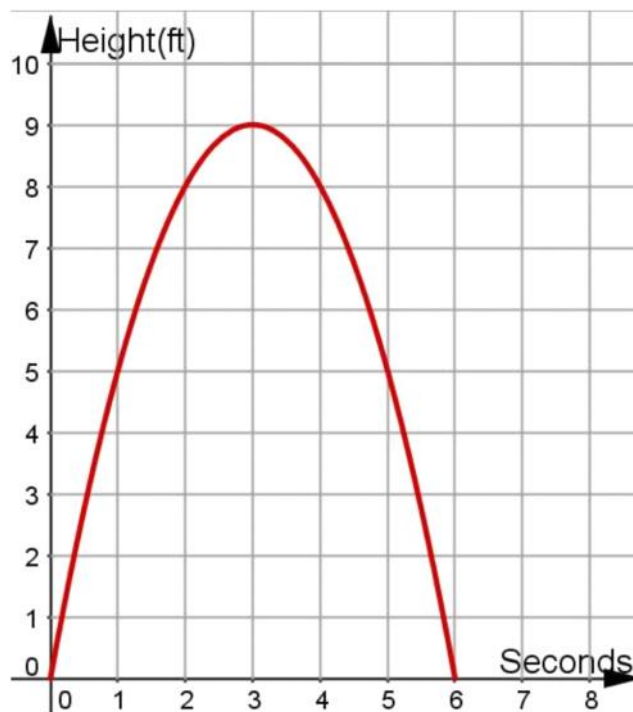


Problem 3a:

A squirrel is kicked into the air. The graph to the right models the path in feet and seconds. (its so sad I know, but he deserved)

Domain: $0 \leq x \leq 6$

Range: $0 \leq y \leq 9$

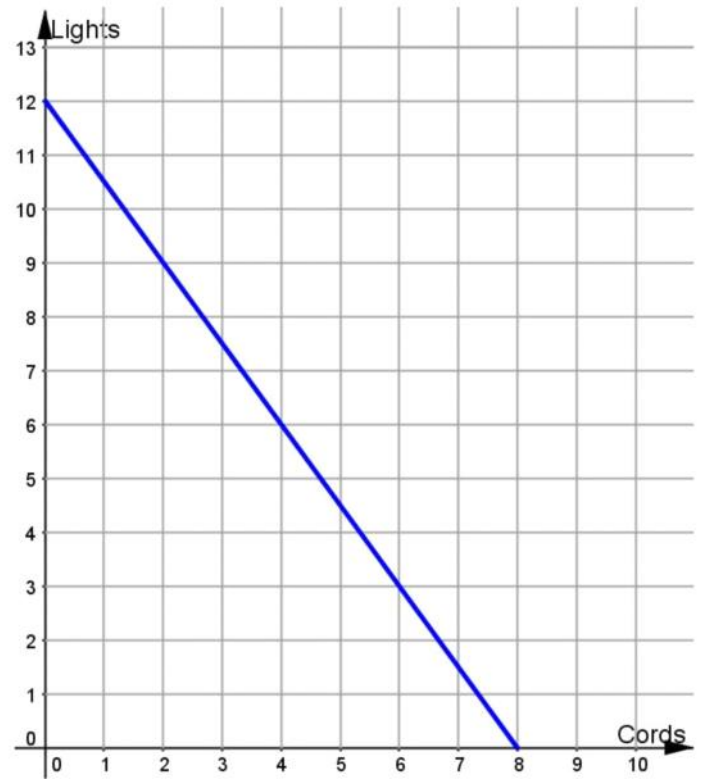


Problem 3b:

A box of holiday lights cost \$2 and extension cords cost \$3 each. Lorelai has \$24 to spend on these items.

Domain:

Range:

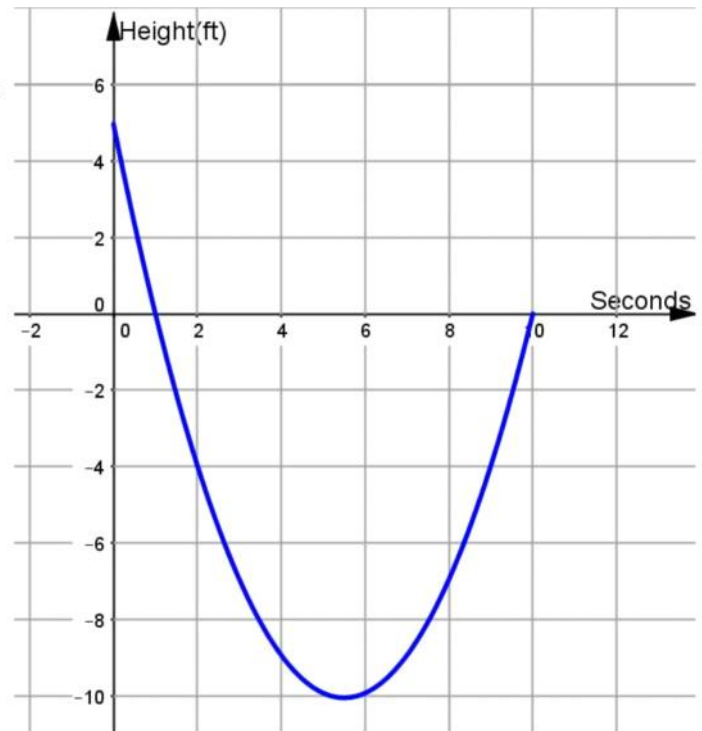


Problem 3c:

The graph to the right show the path on a driver. The person drive into the pool and swim back up.

Domain:

Range:

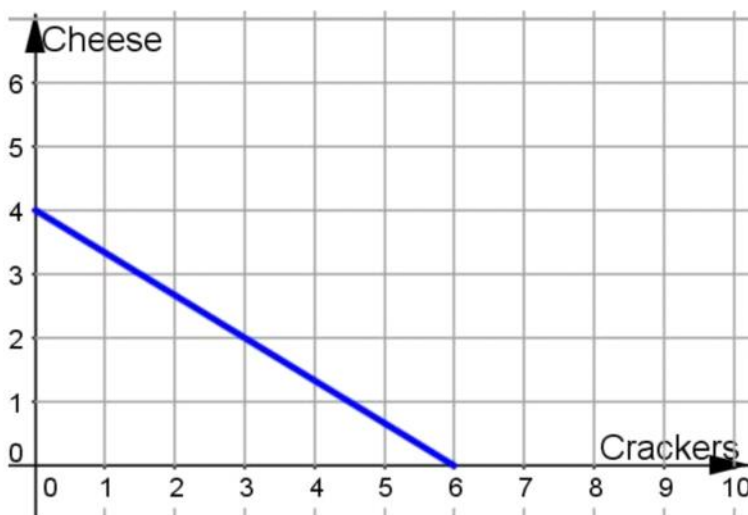


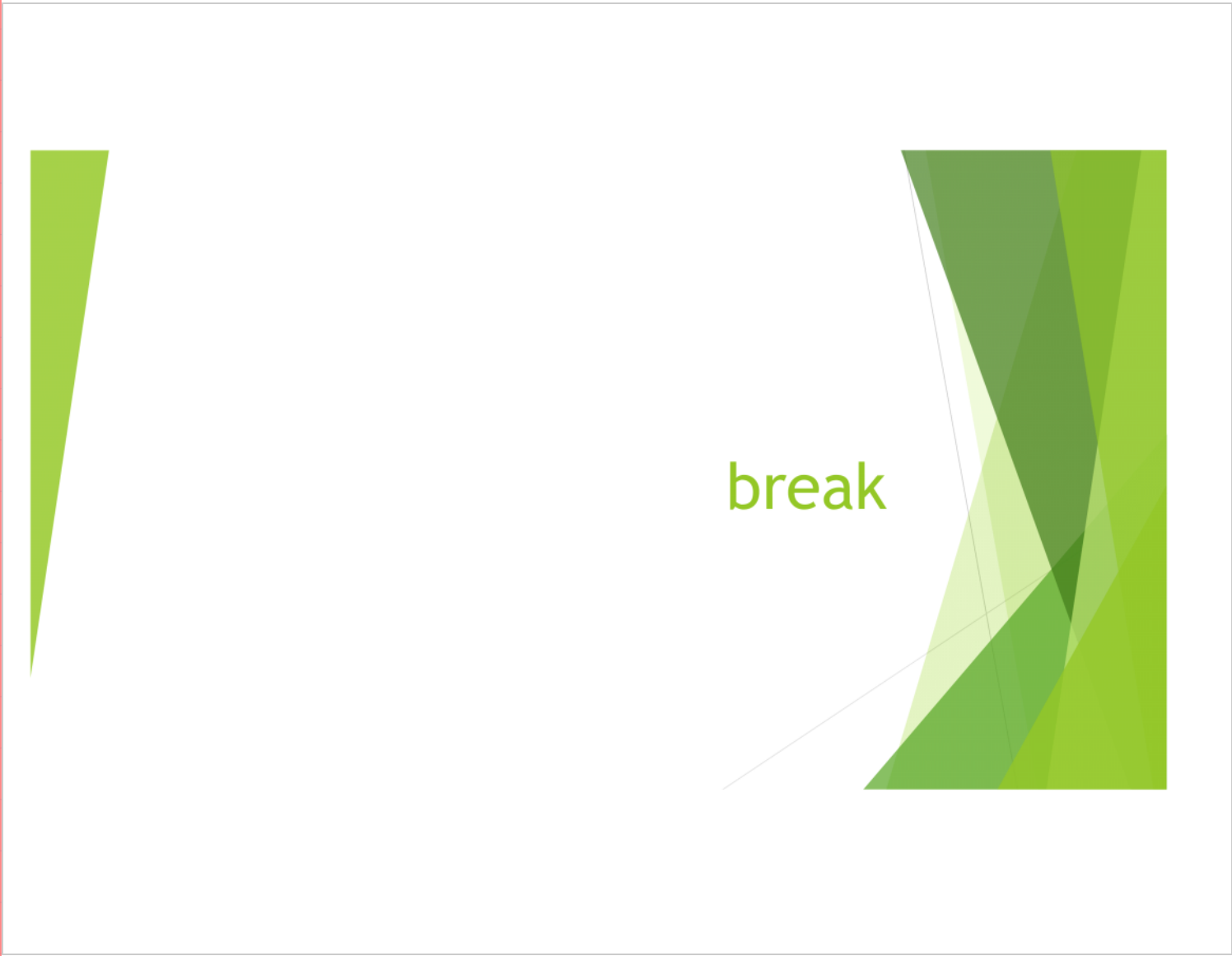
Problem 3d:

A box of crackers cost \$4 and a block of cheddar cheese cost \$6. Kent has \$36 to spend.

Domain:

Range:





The Function Machine

Number of hours that you worked:

- 5
- 7
- 9
- 10



Input (hours worked)	Output (Pay)

A Function

Functions have inputs that product outputs than make sense.
An input(x) will have their own unique output(y).

Problem 3:

Are these tables a function? Justify.

x	y
2	3
3	4
4	6
5	4
7	8

x	y
1	2
4	5
3	3
4	7
5	10

x	y
0	2
3	7
5	10
3	7
9	14

function

Each input has its own unique output.

Not a function
The same inputs have different outputs

function

Problem 3a:

Are these tables a function? Justify.

x	y
1	5
2	7
4	10
6	14
1	6

x	y
-5	8
-2	4
0	2
-2	4
-5	8

x	y
2	5
4	10
6	15
8	20
10	25

Problem 3a:

► Is this a function? Justify.
 $(2, 3)(4, 6)(6, 9)(4, 6)(8, 12)$

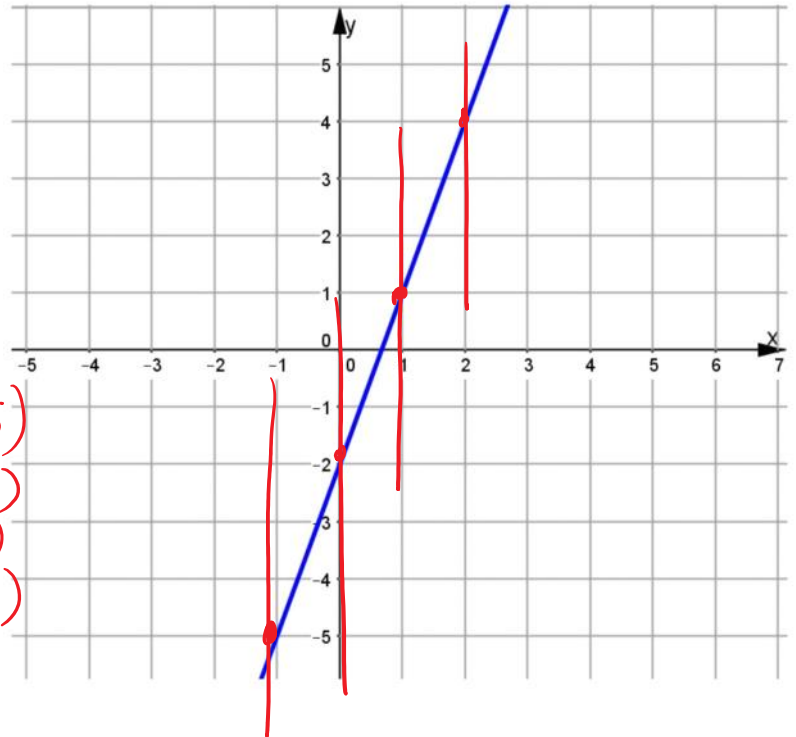
► Is this a function? Justify.
 $(-4, 1)(-3, 3)(-3, 5)(-1, 7)$

Problem 3b:

Is this a function? Justify.

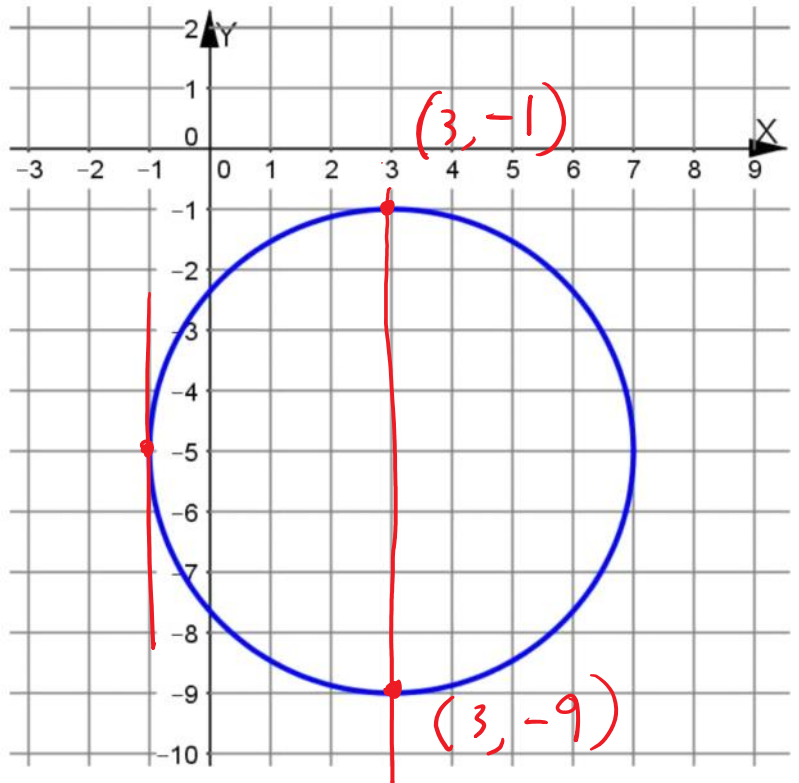
function

- $(-1, -5)$
- $(0, -2)$
- $(1, 1)$
- $(2, 4)$



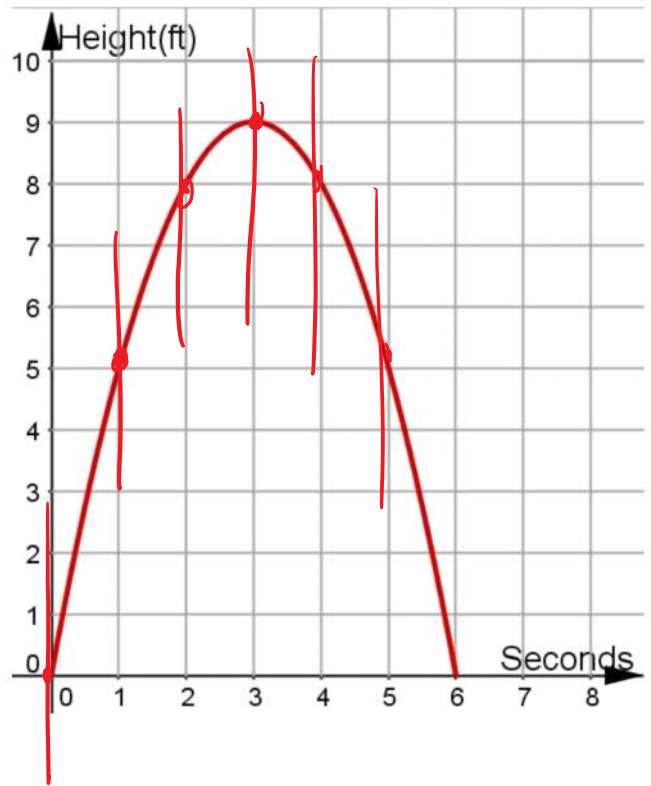
Problem 3c:
Is this a function? Justify.

Not a function



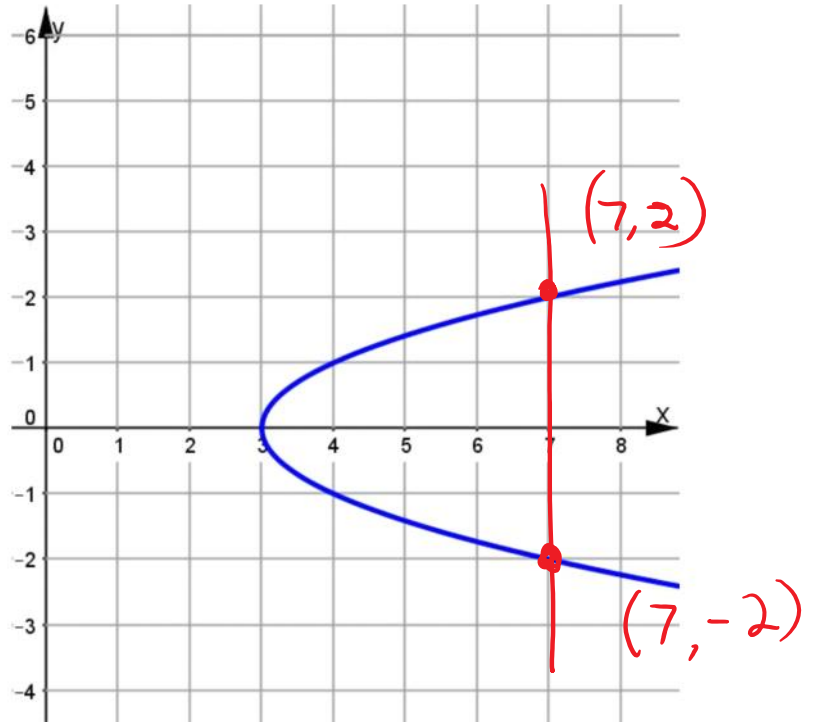
Problem 3d:
Is this a function? Justify.

function

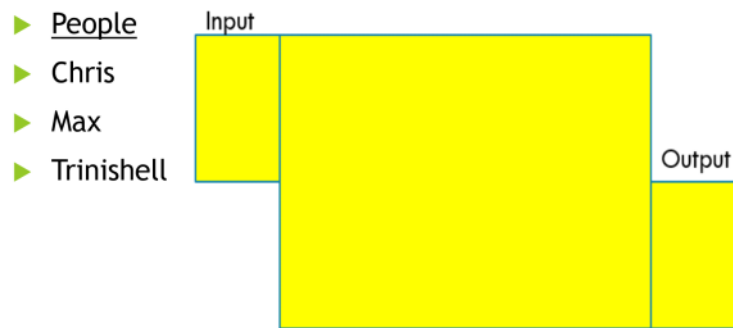


Problem 3e:
Is this a function? Justify.

Not a function



The Function Machine (How to Name Functions)



Input(People)	Output (height)	Name of function

Functions Names are outputs

- ▶ **Function Notation:** The name of the function machine is also the symbols we use indicate the output of the function.

Example:

Old School Notation

Inputs (x)	Outputs (y)
2	5

Function Notation:

Inputs (c)	Outputs s(c)	Inputs (p)	Outputs h(p)
Cars	Top Speed	People	Height

Problem 4:

- Nikki has received 200 dollars in birthday cash this year. She plans to make that money last as long as possible. She will only spend 20 dollars per week. If (w) represents weeks and (c) represents birthday cash. Which notation best represents the Nikki's budget plan?

A) $w(c) = 200 + 20c$

B) $c(w) = 20w + 200$

C) $c(w) = 200 - 20w$

D) $w(c) = 200w - 20$

Problem 4a:

- Carlos has a cell phone plan which charges a \$50 flat fee for calls and texts. However it costs him \$10 for every gigabyte of data he uses. If (g) represents number gigabytes and (b) represents the bill. Which notation best represents the Carlos's cell phone plan?

- A) $b(g) = 10b + 50$
B) $b(g) = 10g + 50$
C) $b(g) = 50g + 10$
D) $g(b) = 10b + 50$