

# DAILY QUEST:

1) Given the formula  $v = \frac{1}{2}bh$ , solve the equation in terms of  $b$ .

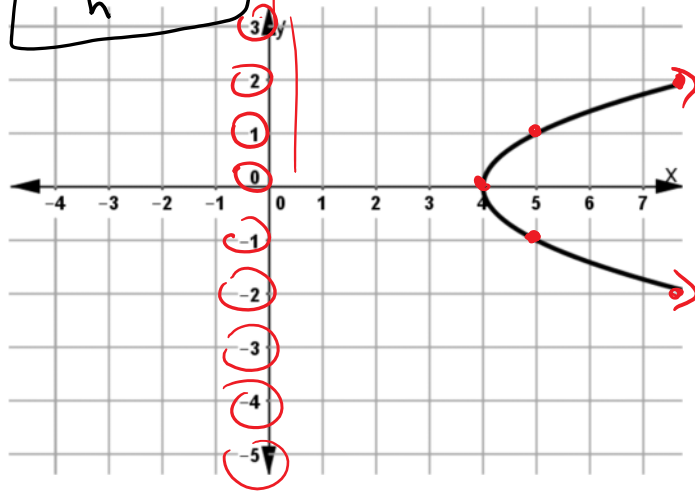
$$V = \frac{1}{2}bh$$

$$\frac{V}{h} = \frac{1}{2}b \cdot 2$$

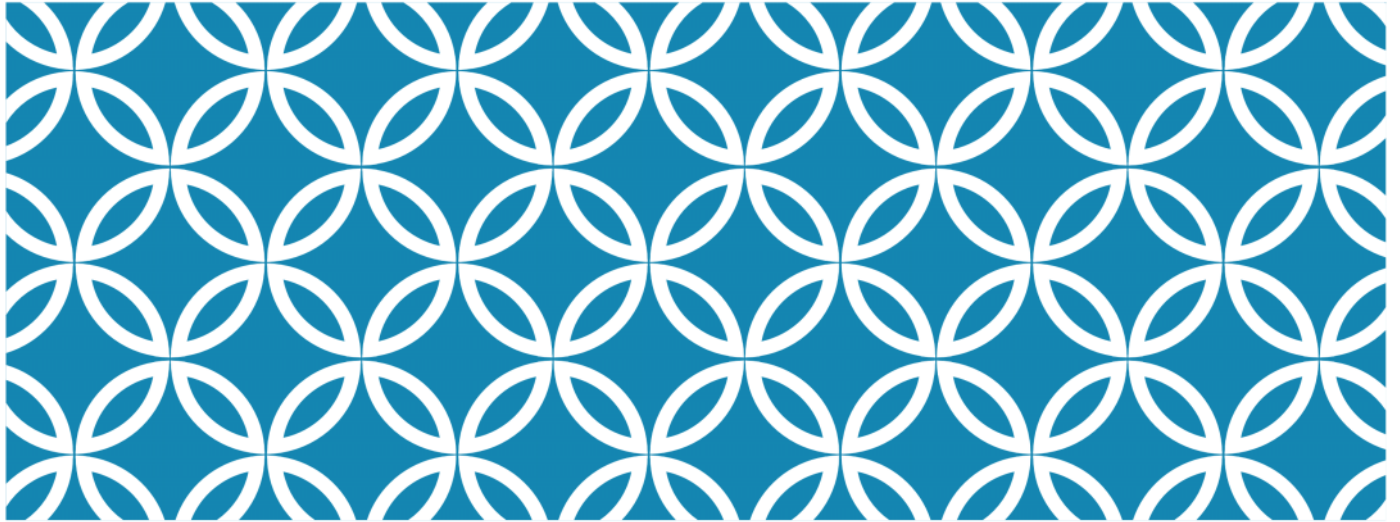
$$\frac{2V}{h} = b$$

Do b	Undo b
$\cdot \frac{1}{2}$	$\cdot 2$ ✓
$\cdot h$	$\div h$ ✓

2) Given the graph. State the domain and range in inequality notation.



Domain:  $x \geq 4$   
 Range:  $-\infty < y < \infty$



## LESSON 5.3

# II. ARITHMETIC SEQUENCES

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

**Obj:** SWBAT write an both explicit rules for an arithmetic sequence.

**Obj:** SWBAT generate an arithmetic sequence given explicit

## PROBLEM 1:

A go-cart racing track charges \$7 for a go-cart license and \$2 per lap. If you list the charges for 1 lap, 2 laps, 3 laps, and so on, in order, the list forms a sequence of numbers. 9, 11, 13, 15,...

Lap ( $x$ )	0	1	2	3	4	5	6	7	8
Cost $f(x)$	7	9	11	13	15	17	19	21	23

A) Complete the table.

B) What is  $f(2) = \underline{11}$        $f(4) = \underline{15}$

$f(\underline{3}) = \underline{13}$        $f(\underline{1}) = \underline{9}$

C) Write an equation for the situation above.

$$f(x) = \underline{2x} + \underline{7}$$

## SEQUENCES

A **sequence** is simply a list of numbers/ordered pairs that have a pattern to them.

Sequences are created with a equation call an **explicit rule**. These rules are exactly like the linear equations which can help us make tables, graph, etc.

## ARITHMETIC SEQUENCES AND THEIR NOTATION

Sequence: 5 , 10 , 15 , 20 , 25 ...  $n$

Function Notation:  $f(1)$   $f(2)$   $f(3)$   $f(4)$   $f(5)$  ...  $f(n)$

Term position: Term 1 , Term 2 , Term 3 , Term 4 , Term 5 ...  $n^{th}$  Term

## EXPLORE WRITING AN EXPLICIT FOR AN ARITHMETIC SEQUENCE.

$n$	$f(n)$	$d$
1	16	
→ 2	21	↓ >+5
3	26	>+5
4	31	>+5
5	36	>+5
6	41	>+5

Explicit Rule

$$f(n) = 5n + 11$$

$$f(n) = 5(n-1) + 16$$

$$f(n) = 5n + 16$$

$$f(2) = 5(2) + 16$$

$$10 + 16$$

$$f(2) = 26$$

$$f(3) = 5(3) + 16$$

$$15 + 16$$

$$f(3) = 31$$

$$f(n) = 5(n-1) + 16$$

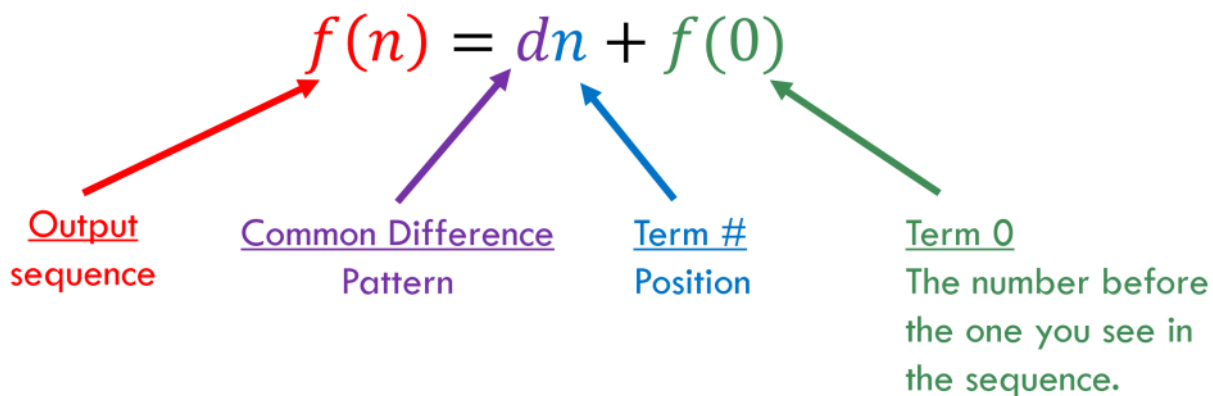
$$f(2) = 5(2-1) + 16$$

$$5(1) + 16$$

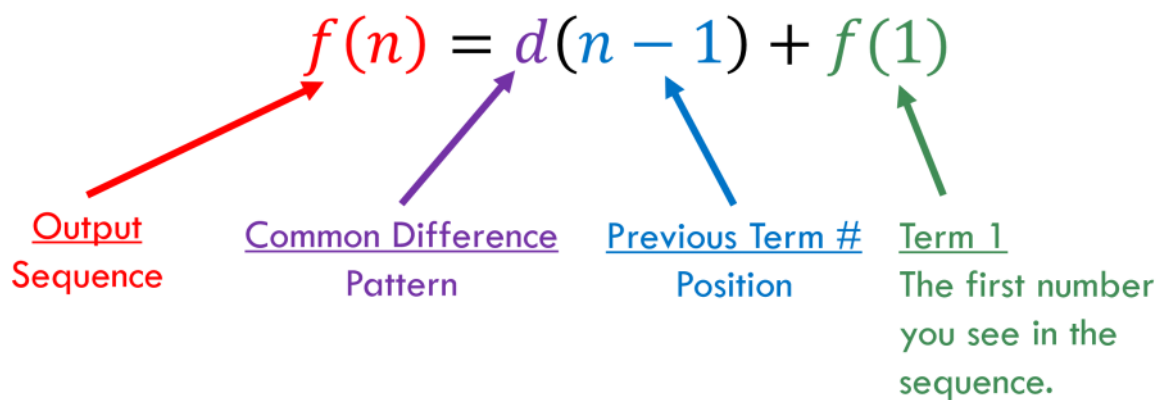
$$5 + 16$$

$$f(2) = 21$$

## EXPLICIT RULES FOR ARITHMETIC SEQUENCE



## EXPLICIT RULES FOR ARITHMETIC SEQUENCE





**PROBLEM 2:**

Write both explicit rules for the sequence shown in the table below.

$n$	$f(n)$
0	15
1	12
2	9
3	6
4	3
5	0
6	-3

Handwritten annotations: A box around the first two rows (n=0, f(n)=15 and n=1, f(n)=12) with arrows pointing to the right and down, labeled with  $d$  and  $-3$ . Additional arrows labeled  $-3$  point from each row to the next row below it, indicating a constant difference of  $-3$ .

$$f(n) = dn + f(0)$$

$$f(n) = -3n + 15$$

$$f(n) = d(n-1) + f(1)$$

$$f(n) = -3(n-1) + 12$$

**PROBLEM 2A:**

Write both explicit rules for the sequence shown in the table below.

$n$	$f(n)$
0	0
1	1
2	5
3	9
4	13
5	17
6	21

$$f(n) = dn + f(0)$$

$$f(n) = 4n - 3$$

$$f(n) = d(n-1) + f(1)$$

$$f(n) = 4(n-1) + 1$$

**PROBLEM 2B:**

Write an explicit rule for the sequence shown in the table below.

$n$	$f(n)$
1	28
2	26
3	24
4	22
5	20
6	18

### PROBLEM 3: SHOULD WE CONNECT THE POINTS?

A go-cart racing track charges \$1 for a go-cart license and \$2 per lap.

Lap ( $n$ )	Cost $f(n)$
1	3
2	5
3	7
4	9
5	11
6	13
7	15

