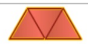
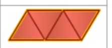
Figure number	1	2	3	4
Visual depiction				
Perimeter	3 units	4 units	5 units	6 units

Look again at the sequence of perimeters of figures generated by joining congruent equilateral triangles. You may recall from a previous course that a sequence can be thought of as a function whose domain is a subset of the integers. For this sequence, the domain is the set of positive integers {1, 2, 3, 4, …}. The range consists of the terms in the sequence: {3, 4, 5, 6, …}.

1. How do the domain values relate to this situation?
   The domain values are the term numbers in the sequence (Figure #'s)
2. Why is this relationship a function?
   Yes. Every term number gives rise to only one of the terms in the sequence.

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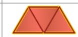
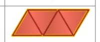
Explicit Formula: (General Formula) Formula that will give any term of a sequence by subsituting the term number (n) into the formula.

Recursive Formula: Formula that tells you how to find any term $t_n \rightarrow f(n)$ using the previous term $t_{n-1} \rightarrow f(n-1)$

Function Notation equivalent

Recursive Formulas always require these two statements.

1. State t_1
2. Write formula to find t_n using previous term t_{n-1}

Figure number	1	2	3	4
Visual depiction				
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You can represent this arithmetic sequence using function notation:

$f(1) = 3$
$f(n) = f(n-1) + 1$ for integer values of $n > 1$

What is $f(8) \rightarrow t_8$?

It represents the 8th term or 8th figure:

$f(8) = 10$

How does the recursive formula illustrae that the sequence is arithmetic?

the +1 one means you move from one term to the next by always adding 1 - Common Difference.

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Answer the questions on SAS2

Go over questions 2-4 on SAS2

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Go over SAS2 - question 6 (go back to page 3 of Agile Mind Topic 1 - Explorings)

1. What do the common differences tell us about the graphical representation of the data?

The slope of the line

2. What does the n indicate in t_n ?

The term number

3. What about (n-1) in the formula $t_n = 20+3(n-1)$?

One less than the term number

4. What formula would you use if the number of seats increased by 4 with the addition of each new row and the front row had 10 seats?

$t_n = 10+4(n-1)$

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Write both the Explicit and Recursive Formulas for each sequence.

1. -7, -4, -1, 2, 5, ...

Arithmetic $d=3$

2. 7, 28, 112, 448, ...

Geometric $r=4$

Explicit

$t_n = -7 + 3(n-1)$

$t_n = 7 \cdot 4^{n-1}$

Recursive

$t_1 = -7$

$t_n = t_{n-1} + 3$

$t_1 = 7$

$t_n = t_{n-1} \cdot 4$