

ARITHMETIC SEQUENCES. Find the next few terms in the sequence and then find the requested term.

1) 2 , 4 , 6 , 8 , _____ , _____ , _____

Find a_{42} = _____

Determine the RECURSIVE DEFINITION:

Determine the EXPLICIT DEFINITION:

2) 5 , 8 , 11 , 14 , _____ , _____ , _____

Find a_{33} = _____

Determine the RECURSIVE DEFINITION:

Determine the EXPLICIT DEFINITION:

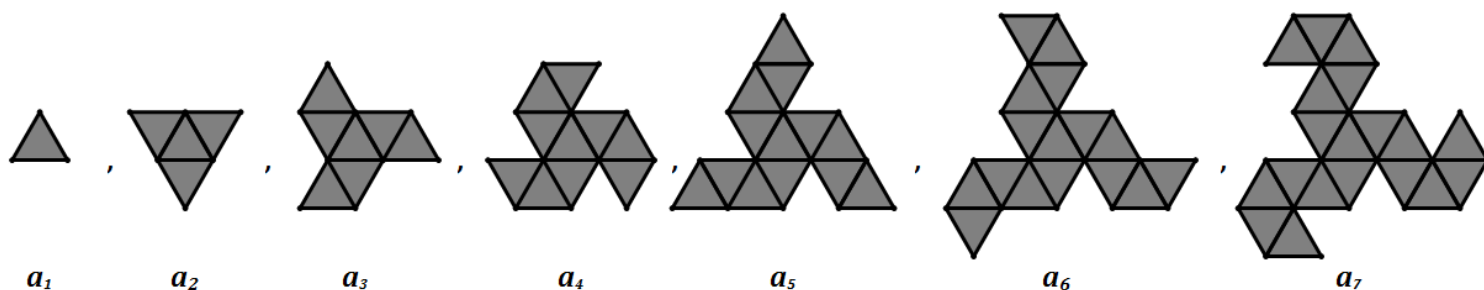
3) 10 , 7 , 4 , 1 , _____ , _____ , _____

Find a_{29} = _____

Determine the RECURSIVE DEFINITION:

Determine the EXPLICIT DEFINITION:

4) Josh was making a sequence pattern out of triangle pattern blocks.



If Josh continues this pattern, how many triangles will he need to make the 20th step of this pattern?

Functions can be used as explicit definitions for a sequence:

Consider the sequence: 4, 7, 10, 13, 16, 19, 22, 25,..... The function $f(x) = 4 + (x - 1)3$ could be used define the sequence where x = the term number. The domain would be $\{1, 2, 3, 4, \dots\}$ and the range would be $\{4, 7, 10, 13, \dots\}$

5) Create a sequence based on the function: $f(x) = 4x - 1$

6) Describe the **domain** and **range** of a function that might describe the sequence of $\{14, 11, 8, 5, \dots\}$

7) Determine the **common difference** of the sequence and write a function that could be used to describe the sequence: $\{14, 11, 8, 5, \dots\}$

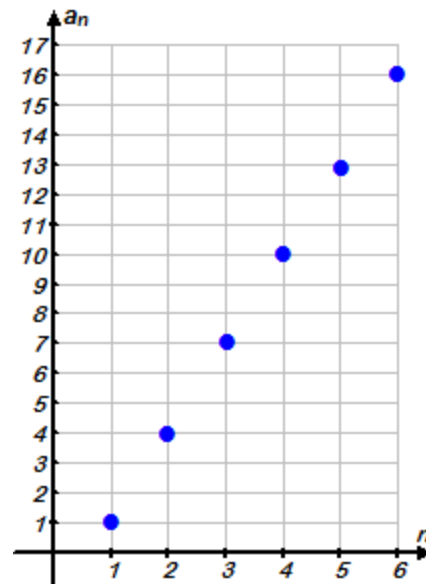
8) Write a **recurrence relation** and an **explicit definition** for the following table:

n	1	2	3	4	5	
a_n	5	7	9	11	13	

RECURRENCE RELATION:

EXPLICIT DEFINITION:

9) Write a **recurrence relation** and an **explicit definition** for the following graph:



RECURRENCE RELATION:

EXPLICIT DEFINITION:

GEOMETRIC SEQUENCES. Find the next few terms in the sequence and then find the requested term.

10) 3 , 6 , 12 , 24 , ____ , ____ , ____ Find a_{24} =_____

RECURRENCE RELATION:

EXPLICIT DEFINITION:

11) 2 , -6 , 18 , -54 , ____ , ____ , ____ Find a_{16} =_____

RECURRENCE RELATION:

EXPLICIT DEFINITION

12) Create a sequence based on the function: $f(x) = 5 \cdot 2^x$

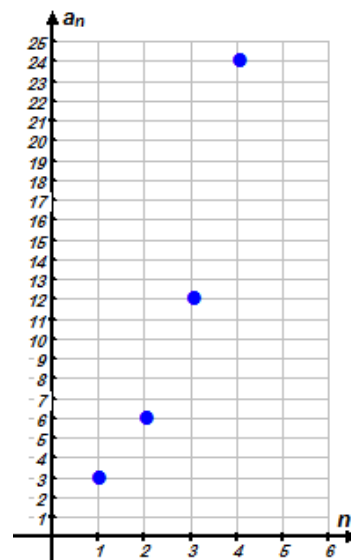
13) Write a **recurrence relation** and an **explicit definition** for the following table:

n	1	2	3	4	5	
a_n	2	10	50	250	1250	

RECURRENCE RELATION:

EXPLICIT DEFINITION:

14) Write a **recurrence relation** and an **explicit definition** for the following graph:



RECURRENCE RELATION:

EXPLICIT DEFINITION:

SEQUENCES

15) Given that a sequence is **arithmetic**, $a_1 = 5$, and the common difference is 4, find a_{37} .

16) Given that a sequence is **arithmetic**, $a_{52} = 161$, and the common difference is 3, find a_1 .

17) Given that a sequence is **geometric**, the first term is 1536, and the common ratio is $\frac{1}{2}$, find the 7th term in the sequence.

18) Given that a sequence is **geometric**, $a_{10} = 98415$, and the common ratio is 3, find a_1 .

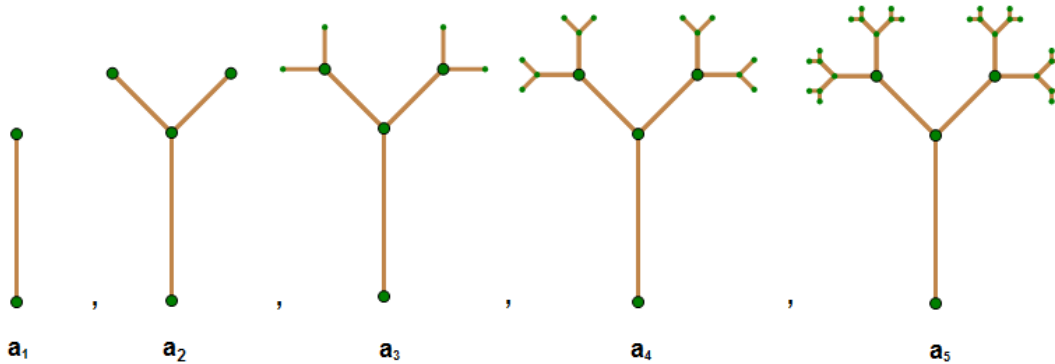
- 19) The value of an ounce of silver is about \$16 and over the last several years silver has increased in value by about 7%. How much should an ounce of silver be worth 20 years from now?



- 20) A person was having a graduation party and noticed that only 5 people were there after the first hour but grew in size by 61% every hour. If the size of the party grew this way for 6 hours, how many people would be at the party on the 6th hour?



- 21) Jessica is creating a drawing on her paper called a Binary Tree.



If Jessica continue drawing more and more branches, how many new branches would she need to draw on the 12th step?