

# 3 models: table, graph, & equation

HS MATH 1  
DATE:

1.3 | Representing geometric sequences with equations, tables, graphs, and story context

Mathematics Vision Project  
Develop Understanding Task

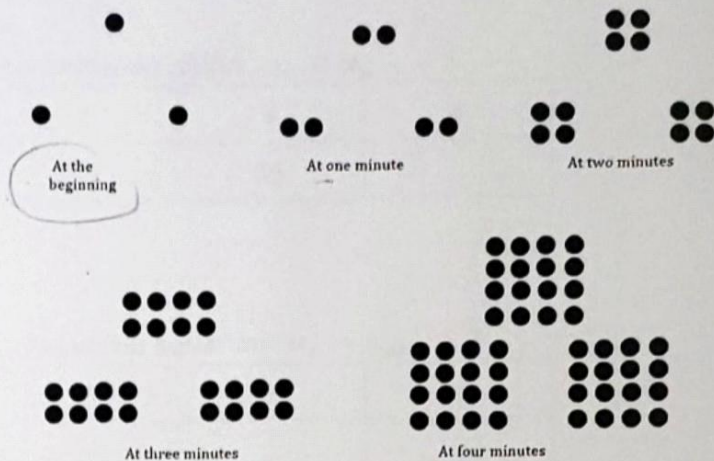
**ESSENTIAL QUESTION(S):** How can I generate a table given a growing pattern? What are ways I can model a context problem? What steps can I use to generate an equation? What are the characteristics of a geometric sequence? What is the difference between an arithmetic and geometric sequence?

REVIEW:

geometric sequence -  
Sequence that increases or decreases by multiplication (↑) or division (↓)

t	d	↑
0	3	
1	6	$\times 2 = r$
2	12	
3	24	
4	48	

NOTES:



1. Describe and label the pattern of change you see in the above sequence of figures.

• grows by multiplication by 2  
• doubles each minute

2. Assuming the sequence continues in the same way, how many dots are there at 5 minutes?

96 dots

Recursive formula

$$a_n = a_{n-1} \cdot r$$

$a_0 = \#$  constant ratio

3. Write a recursive formula to describe how many dots there will be after  $t$  minutes?

$$a_n = a_{n-1} \cdot 2 ; a_0 = 3$$

Explicit formula

$$f(x) = a_0 \cdot r^x$$

↑ zero term constant ratio

4. Write an explicit formula to describe how many dots there will be after  $t$  minutes.

$$f(x) = 3 \cdot 2^x$$

\* show division we use  $\frac{1}{r}$