

HS MATH 1
DATE: 9/19/19

1.10 | Using rate of change to find missing terms in a geometric sequence
Mathematics Vision Project
Develop Understanding Task

ESSENTIAL QUESTION(S): How to generate a table given a growing pattern? What are they ways to model a context problem? What steps can be used to generate an equation? What are the characteristics of a geometric sequence?

REVIEW:
geometric sequence uses multiplication or division
 r \uparrow $\frac{1}{r}$

explicit geometric
 $f(x) = a_0 \cdot r^x$
recursive geometric
 $a_n = a_{n-1} \cdot r$
 $a_0 = \#$

geometric mean
 $r = \sqrt[\text{step}]{\frac{\text{last \#}}{\text{first \#}}}$

NOTES:
Each of the tables below represent a geometric sequence. Find the missing terms in the sequence, showing your method.

1.

x	1	2	3
y	3	6	12

Is the missing term that identified the only answer? Why or why not?
No, we could also use arithmetic

2.

x	1	2	3	4
y	7	35	175	875

Are the missing terms that identified the only answers? Why or why not?
for geometric it is the only answer but not if arithmetic

3.

x	1	2	3	4	5
y	6	12	24	48	96

Are the missing terms that you identified the only answers? Why or why not?
No! there is a possible different answer. We can also use -2.

4.

x	1	2	3	4	5	6
y	4	12	36	108	324	972

Are the missing terms that you identified the only answers? Why or why not?
 $\sqrt[5]{\frac{972}{4}} = 3$

a. Describe your method for finding the geometric means.

① Count steps

③ root of the #

② last # \div first #

Based on the steps

b. How can you tell if there will be more than one solution for the geometric means?

• even amount of steps it will have two solutions one positive & one negative

• odd amount of steps it will have one solution