

9.2H Geometric Sequences Intro.

Name: _____ Per: _____

SHOW YOUR WORK. WORK IN PENCIL.

1. Loreal had a shampoo that she loved to use. She decided to tell her friends about the type she used. The first time she shared the information, two of her friends started using the same shampoo. Then they told two friends. Those friends told two friends, and so on, and so on. Make and label a 4-column table showing the number of friends that use the same shampoo as Loreal.

a. Recursive equation _____

b. Explicit equation _____

c. What is the multiplier in your short hand _____

d. What is the base? _____

e. For this story problem, explain why the decision to start the table at 0 or 1 makes a difference:

EC. This is from a commercial in the 70's and 80's, there is a mistake. What was the mistake made by this multi-million dollar company?

2. In the year 1900, Zach Cooper was born. In 1930, he had three sons. Each of them grew up and in 1960, they each had three sons. This patterned continued with each child having three sons of their own every 30 years. How many Cooper children were born in the 10th generation?

a. Draw a picture to represent the **increase** in the number of Coopers.

b. Make and label a 4-column table to show the **increase** in mini-Cooper each generation.

c. Should this table start with an input of 0 or 1? _____ Why?

d. Where does the starting input appear in your short hand?

e. What is the multiplier in your short hand?

f. What is the base in your short hand?

g. Predict how many Coopers will be born in the 100th generation if the trend continues.

h. How would your equation change if there were 20 Coopers in 1900?

i. How would your graph change if there were 20 Coopers in 1900?

Given the explicit formula, **find $f(1)$, $f(2)$, $f(3)$ and $f(8)$** . Then **write the recursive formula**.

3. $f(n) = 3^{n-1}$

4. $f(n) = 2 \times \left(\frac{1}{4}\right)^n$

Given the recursive formula, **find $f(2)$, $f(3)$, $f(4)$** . Then write the explicit formula.

5. $f(n) = f(n-1) \times 2, f(1) = 2$

6. $f(n) = f(n-1) \times -3, f(1) = -3$

Find the missing terms in each table. **CIRCLE** if Arithmetic, Geometric, or Neither. **CIRCLE AND STATE** the common difference **OR** common ratio. **IF IT IS ARITHMETIC OR GEOMETRIC, WRITE** the recursive **AND** explicit equations for the following sequences. In proper function notation state the 20th term.

7.

Term	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Value	3	8	13	18	23			

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____

8.

Term	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Value	3	9	27	81				

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____

9.

Term	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Value	16	-8	4	-2	1			

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____

10.

Term	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Value	2	8	18	32	50			

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____

11.

Term	0	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
Value	52							31

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____

12.

Term	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Value	729			1			1/729	1/6561

A, G, or N? d OR r = _____ Recursive Eq: _____ Explicit Eq: _____ 20th term: _____