1.7 Practice | Comparing rates of growth in arithmetic and geometric sequences
High School Math 1
Mathematics Vision Project

Recursive and explicit equations

Determine whether the given information represents an arithmetic or geometric sequence. Then, write the recursive and the explicit equations for each.

1. 2, 4, 6, 8, ...
Arithmetic or geometric? Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

2. 2, 4, 8, 16, ...
Arithmetic or geometric? Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

3. Time (in days) | Number of dots
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

4. Time (in days) | Number of cells
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>12.8</td>
</tr>
<tr>
<td>4</td>
<td>20.48</td>
</tr>
</tbody>
</table>
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

5. Michelle likes chocolate, but it causes her acne. She chooses to limit herself to three chocolate bars every 6 days. So, she eats ½ of a bar each day.
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

6. Scott decided to add running to his exercise routine and runs a total of one mile his first week. He plans to double the number of miles he runs each week.
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

7. Vanessa has $60 to spend on rides at the state fair. Each ride costs $4.
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________

8. Cami invested $6,000 into an account that earns 10% interest each year. (You may want to make a table of values to help yourself)
Arithmetic or geometric?
Recursive: __________________________
Explicit: __________________________
Distinguishing between arithmetic and geometric sequences

Find the missing values for each arithmetic or geometric sequence. Indicate if the sequence is arithmetic or geometric by circling the correct answer. Circle whether it has a constant difference or a constant ratio. State the value of the constant difference or ratio.

9. 5, 10, 15, ____ , 25, 30, ____ , ...
   Circle one:
   a. Arithmetic or Geometric
   b. Common difference or Common ratio
   State the value:
   Common Difference/ratio = _____________

10. 20, 10, ____ , 2.5, ____ , ...
    Circle one:
    a. Arithmetic or Geometric
    b. Common difference or Common ratio
    State the value:
    Common Difference/ratio = _____________

11. 2, 5, 8, ____ , 14, ____ , ...
    Circle one:
    a. Arithmetic or Geometric
    b. Common difference or Common ratio
    State the value:
    Common Difference/ratio = _____________

12. 30, 24, ____ , 12, 6, ...
    Circle one:
    a. Arithmetic or Geometric
    b. Common difference or Common ratio
    State the value:
    Common Difference/ratio = _____________

Modeling Arithmetic and Geometric Growth

For the two problems below, create a graph, table, and both a recursive and explicit function.

13.

Context:
Alex has $10 saved. Each week he is going to save $15.

Table:

Graph:

Functions:
Recursive:
Explicit:
**Context:**
Mary is collecting stickers. On the first day, her friend gives her 1 sticker. On the second day, a friend gave her 3 stickers. On the third day, a friend gave her 9 stickers. Mary is lucky and her friends keep up this pattern.

**Graph:**

**Functions:**

**Recursive:**

**Explicit:**

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**Review**

**Graphing and counting slope between two points**

*For each of the following problems, two points and a slope are given. Plot and label (using their variable name) the 2 points on the graph. Draw the line segment between them. Then, sketch a slope triangle to calculate and show the slope of the line.*

15. \( A(2, -1) \) and \( B(4, 2); m = \frac{3}{2} \) 
16. \( H(-2, 1) \) and \( K(2, 5); m = 1 \) 
17. \( P(0, 0) \) and \( Q(3, 6); m = 2 \)