

Geometric Sequences Worksheet

Determine whether each of the following sequences is arithmetic, geometric, or neither. Explain your decisions.

1) $-4, 1, 6, 11, \dots$

2) $2, 8, 32, 128, \dots$

3) $1.5, 4.5, 13.5, 40.5, \dots$

For each of the following geometric sequences, find the common ratio. Then write the explicit formula for the sequence.

4) $10, 20, 40, 80, \dots$

5) $7, -7, 7, -7, \dots$

6) $3, -12, 48, -192, \dots$

7) $162, 108, 72, 48, \dots$

8) $100, 50, 25, 12.5, \dots$

9) Show work: What is the 14th term of the geometric sequence: $3, 9, 27, 81, \dots$

10) Show work: What is the 11th term of the geometric sequence: $-2, 10, -50, 250, \dots$

11) Lidia's parents have offered her two different options to earn her allowance for a 9-week period over the summer. She can either get paid \$30 each week, or \$1 the first week, \$2 the second week, \$4 the third week, and so on.

a) Clearly explain if the second option forms a geometric sequence or not.

b) Show work and explain which option Lidia should choose.

12) Gabe and Erik are finding the 9th term of the geometric sequence $-5, 10, -20, \dots$

Is either of them correct? Explain.

Gabe

$$\begin{aligned} r &= \frac{10}{-5} = -2 \\ a_9 &= -5(-2)^{9-1} \\ &= -5(512) \\ &= -2560 \end{aligned}$$

Erik

$$\begin{aligned} r &= \frac{10}{-5} = -2 \\ a_9 &= -5(-2)^{9-1} \\ &= -5(-256) \\ &= 1280 \end{aligned}$$