

1. Consider the sequence shown.



a. Describe the pattern.

Each figure has 1 more row of dots at the bottom. That row has one more dot than the bottom row in the previous figure.

b. Draw the next two figures of the pattern.



c. Write a numeric sequence to represent the first 5 figures.

3, 6, 10, 15, 21

2. Identify each sequence as arithmetic or geometric. Then determine the common difference or common ratio for each sequence.

a. 2, 5, 8, 11, 14, 17

arithmetic; common difference: 3

b. -6, 12, -24, 48, -96

geometric; common ratio: -2

c. $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \frac{1}{256}$

geometric; common ratio: $\frac{1}{4}$

d. 0.13, 0.38, 0.63, 0.88, 1.13

arithmetic; common difference: 0.25

3. For each sequence, write an explicit formula. Then determine the 15th term in the sequence.

a. 5, 10, 20, 40, 80, 160

$$g_n = 5 \cdot 2^{n-1}$$

$$g_{15} = 81,920$$

b. $\frac{1}{2}, 1, \frac{3}{2}, 2, \frac{5}{2}, 3, \frac{7}{2}$

$$a_n = \frac{1}{2} + \frac{1}{2}(n-1)$$

$$a_n = \frac{15}{2}$$

4. For each sequence, write a recursive formula. Then determine the unknown term in the sequence.

a. 0.15, 0.17, 0.19, 0.21, 0.23

$$a_n = a_{n-1} + 0.02$$

b. $\frac{1}{6}, \frac{1}{12}, \frac{1}{24}, \frac{1}{48}, \frac{1}{96}$

$$g_n = g_{n-1} \cdot \frac{1}{2}$$

5. Rewrite each explicit formula in function form.

a. $a_n = 5 + 0.2(n-1)$

$$f(n) = 0.2n + 4.8$$

b. $g_n = 3 \cdot (-2)^{n-1}$

$$f(n) = -1.5 \cdot (-2)^n$$

6. Graph the ordered pairs for the sequence given by the formula $a_n = 2 + 3(n-1)$.

