

What is the next term?

5, 10, 20, 40,...

80

Geometric Sequence: A sequence that has a common ratio

Recursive Form

$$a_1 = \underline{\hspace{2cm}}$$

$$a_n = a_{n-1} (r)$$

Explicit Form

$$a_n = a_1 (r)^{n-1}$$

Symbols:

a_1 = first term

a_{n-1} = previous term

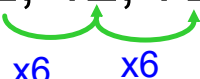
n = term (usually the number you are looking for)

r = common ratio

How do you find the common ratio?

$$\frac{a_2}{a_1}$$

Examples:

$$2, 12, 72, \dots$$


$\times 6$ $\times 6$

Recursive Form:

$$a_1 = 2$$
$$a_n = a_{n-1}(6)$$

Explicit Form

$$a_1 = 2$$
$$a_n = 2(6)^{n-1}$$

Recursive Form

$$a_1 = \underline{\quad}$$
$$a_n = a_{n-1}(r)$$

Explicit Form

$$a_n = a_1(r)^{n-1}$$

Example:

$$80, 40, 20, \dots$$

$\underbrace{\quad\quad}_{\div 2} \quad \underbrace{\quad\quad}_{\div 2}$

Recursive Form

$$a_1 = \underline{\quad}$$

$$a_n = a_{n-1}(r)$$

Explicit Form

$$a_n = a_1(r)^{n-1}$$

What is the next term?

Next term: 10

Recursive Form:

$$a_1 = 80$$


$$a_n = a_{n-1}\left(\frac{1}{2}\right)$$

Explicit Form:

$$a_1 = 80$$

$$a_n = 80\left(\frac{1}{2}\right)^{n-1}$$

Example:

-5, -15, -45, ...


What is the next term?

Next term: -135

Recursive Form

$$a_1 = \underline{\quad}$$

$$a_n = a_{n-1}(r)$$

Explicit Form

$$a_n = a_1(r)^{n-1}$$

Recursive Form:

$$a_1 = -5$$

$$a_n = a_{n-1}(3)$$

Explicit Form:

$$a_1 = -5$$

$$a_n = -5(3)^{n-1}$$