Algebra 1   7.7   Ⓧ r ule

Identify and generate geometric sequences
Relate geometric sequences to exponential
functions
sequence
arithmetic sequence (3.5)
geometric sequence
common ratio $r =$
whiteboards

$64, 32, 16, 8, 4 \ldots$

$r = \frac{1}{2}$

~~$a_n = (2)$~~

$a_{10} = (64)\left(\frac{1}{2}\right)^9$

$= 0.125$

$\downarrow\downarrow$

3, 6, 12, 24, 48...

first term:

common ratio (r): $\times 2$

look for patterns

$$a_n = 3 \left(2\right)^{n-1}$$

27. The first term of a geometric series is 2 and the common ratio is 4. What is the 14th term of the sequence?

$$\longrightarrow a_n = 2(4)^{n-1}$$

$$\longrightarrow a_{14} = 2(4)^{13}$$

$$= 134{,}217{,}728$$

~~ICE WS~~

3. Write an equation for the nth term of the geometric sequence 96, 48, 24, 12, … .
Then find the tenth term of the sequence.

$$a_n = 96 \left(\frac{1}{2}\right)^{n-1}$$

$$a_n = 96 \left(\frac{1}{2}\right)^{9}$$

$$= 0.1875$$

$$\times \frac{1}{2}$$

$$\div 2$$

Write the equation for the geometric sequence:

$\longrightarrow$ 1 3 9 27 54...

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

100 50 25 12.5...

$$a_n = 100\left(\frac{1}{2}\right)^{n-1}$$

2 3 4.5 6.75...

$$y = 2(1.5)^{n-1}$$

$\dfrac{3}{2} = 1.5$

$\dfrac{4.5}{3} = 1.5$

$\dfrac{6.75}{4.5} = 1.5$

What is the 27th term?

3 6 12 24 48...

$$y = 3(2)^{n-1}$$

$$= 3(2)^{26}$$

$$= 201{,}326{,}592$$

P. 441
1 - 8   14 - 25