

# ARITHMETIC SEQUENCES

An arithmetic sequence has a common

difference.

Example: 10, 15, 20, 25, 30, 35 ...

General Term

~~Explicit Formula:~~

$$a_n = a_1 + (n-1)d$$

For each arithmetic sequence below, find the common difference, then write the next two terms of the sequence.

1 -7, -3, 1, 5, 9, ... 13, 17  
 $+4 +4 +4$   
 $d = +4$

2 19, 12, 5, -2, -9, ... -16, -23  
 $d = -7$

Write a rule for each arithmetic sequence. Then, use the rule to find the 10<sup>th</sup> term in the sequence.

3 -11, -6, -1, 4, 9, ...  $a_n = -11 + (n-1)(5)$   
 $a_1 = -11$   
 $d = +5$   
 $t_{10} = -11 + (10-1)(5)$   
 $t_{10} = 34$

4 4, 13, 22, 31, 40, ...

$$t_{10} = 85$$

# GEOMETRIC SEQUENCES

A geometric sequence has a common

ratio.

Example: 1, 5, 25, 125, 625, ...

$$r = 5$$

General Term

~~Explicit Formula:~~

$(n-1)$

$$a_n = a_1 \cdot r^{n-1}$$

For each geometric sequence below, find the common ratio, then write the next term of the sequence.

1 2, 8, 32, 128, ... 512  
 $r = 4$

2 -5, 15, -45, 135, -405, ... 1215  
 $r = -3$

Write a rule for each geometric sequence. Then, use the rule to find the 7<sup>th</sup> term in the sequence.

3 2, 12, 72, 432, ...  $a_n = 2(6)^{n-1}$   
 $a_1 = 2$   
 $r = 6$   
 $a_7 = 2 \cdot 6^{7-1}$   
 $a_7 = 93312$

4 -3, -6, -12, -24, ...

$$a_7 = -192$$

