



**Arithmetic
Sequences
Foldable**

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Instructions

Print or copy page 3 and 4 so you have a double sided foldable.

Put page 3 (the side that says Arithmetic Sequences) in half hamburger style.

Cut the foldable on the dotted gray lines. Do not cut all the way to the middle.

Open and fold the foldable one portion at a time.

Fill in the information for the foldable from page 5.

The foldable can be glued in a notebook or a piece of construction paper.

Arithmetic Sequences

What is an Arithmetic Sequence?

How to find the difference

How to write an n th term explicit arithmetic formula

How to find the 10th term using an explicit formula

How to write an n th term recursive arithmetic formula

How to find the first 3 terms using a recursive formula

An arithmetic sequence is a sequence of numbers such that the difference between the consecutive terms is constant.

Example
 $-12, -5, 2, 9, \dots$
 $+7 \quad +7 \quad +7$

To find the common difference subtract the first term from the second term. The difference between any two consecutive is constant.

Example
 $32, 22, 12, 2, \dots$

$$d = 22 - 32 = -10$$

$$d = 12 - 22 = -10$$

$$d = 2 - 12 = -10$$

The explicit rule for the n th term of an arithmetic sequence is
 $a_n = a_1 + (n - 1)d$ where a_1 is the first term and d is the common difference

Example
 $25, 30, 35, 40, \dots$

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

$$a_n = 25 + (n - 1)5$$

$$a_n = 25 + 5n - 5$$

$$a_n = 5n + 20$$

To find the 10th term of a sequence, substitute the value of n into the explicit formula

Example
 Find the 10th term
 given $a_n = 2n - 5$

$$a_{10} = 2(10) - 5$$

$$a_{10} = 20 - 5$$

$$a_{10} = 15$$

The recursive rule for the n th term of an arithmetic sequence is
 $a_1 = a_1, a_n = a_{n-1} + d$ where a_1 is the first term and d is the common difference.

Example
 $10, 6, 2, -2 \dots$

$$d = 6 - 10 = -4$$

$$a_1 = 10$$

$$a_n = a_{n-1} - 4$$

Use the recursive formula to find the first 4 terms of the arithmetic sequence.

Example
 $a_1 = -3, a_n = a_{n-1} + 5$

$$a_2 = a_1 + 5 = -3 + 5 = 2$$

$$a_3 = a_2 + 5 = 2 + 5 = 7$$

$$a_4 = a_3 + 5 = 7 + 5 = 12$$