Name: ______________________________ Date: ______________________________

4.6 Arithmetic Sequences

Essential Question: ____

____

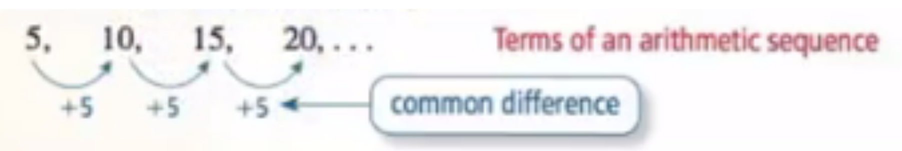
*A _______________ is an ordered list of ___________. Each number in the sequence is called a

_______. Each term _____ has a specific position ____ in the sequence.

*In an ________________ sequence, the ______________ between each pair of consecutive terms is

the same. This difference is called the ________________ difference. Each term is found by

__________ the common difference to the previous _______.



*An ______________ is a series of _______ that indicates an intentional omission of ______________.

In mathematics, the …. notation means "________ ____ _________." The ellipsis indicates that there

are ________ terms in the sequence that are not _________.

EXAMPLE 1 Extending an Arithmetic Sequence

Write the next three terms of the arithmetic sequence.

$-7, -14, -21, -28, \ldots$

Graphing Arithmetic Sequences

To graph a sequence, let a term's position number ___ in the sequence be the ___ value. The term _____ is the corresponding ______. Plot the ordered pairs ______.

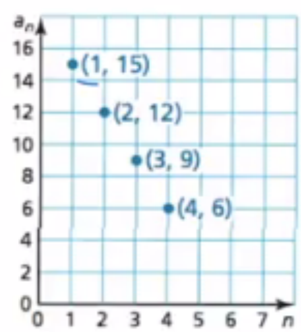
EXAMPLE 2 Graphing an Arithmetic Sequence

Graph the arithmetic sequence 4, 8, 12, 16, ... What do you notice?

MAKE SURE TO CREATE THE GRAPH

EXAMPLE 3 Identifying an Arithmetic Sequence from a Graph

Does the graph represent an arithmetic sequence? Explain.



Writing Arithmetic Sequences as Functions

Because consecutive terms of an arithmetic sequence have a common difference, the sequence has a ___________ ______ of ___________. So, the points represented by any arithmetic sequence lie on a _________. You can use the first term and the common difference to write a linear function that describes an arithmetic sequence. Let ____ = 4 and __=3.

Position, n	Term, a_n	Written using a_1 and d	Numbers
1	first term, a_1	a_1	4
2	second term, a_2	$a_1 + d$	$4 + 3 = 7$
3	third term, a_3	$a_1 + 2d$	$4 + 2(3) = 10$
4	fourth term, a_4	$a_1 + 3d$	$4 + 3(3) = 13$
⋮	⋮	⋮	⋮
n	nth term, a_n	$a_1 + (n - 1)d$	$4 + (n - 1)(3)$

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Core Concept

Equation for an Arithmetic Sequence

Let a_n be the nth term of an arithmetic sequence with first term a_1 and common difference d. The nth term is given by

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

EXAMPLE 4 Finding the nth Term of an Arithmetic Sequence

Write an equation for the nth term of the arithmetic sequence 14, 11, 8, 5, ... Then find a_{50}.

*You can rewrite the equation for an arithmetic sequence with the first term _____ and the common difference __ in _____________ _______________ by replacing ____ with ____.

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

The domain of the function is the set of positive integers.

EXAMPLE 5 Writing Real-Life Functions

Online bidding for a purse increases by $5 for each bid after the $60 initial bid.

Bid number	1	2	3	4
Bid amount	$60	$65	$70	$75

a. Write a function that represents the arithmetic sequence.

b. Graph the function.

c. The winning bid is $105. How many bids were there?