Arithmetic Sequences

An _____ is one that has a _____.

In other words, you _____ or _____ the same number to get to the next _____.

Part A: How do identify an Arithmetic Sequence

A **common difference** is the number we add or subtract to get to the next term. The common difference must be **constant** throughout the sequence.

a) 35, 32, 29, 26, . . .

b) 9, 14, 19, 24, ...

There are _____ different ways you can write an arithmetic sequence

Part B: Writing a Recursive Formula for Arithmetic Sequences

A recursive formula finds the next term in the sequence by using the **previous term**.

Formula:

$a_1 =$_____	$a_n =$_____	$a_{n-1} =$_____	$n =$_____	$d =$_____

a) 35, 32, 29, 26, . . .

b) 9, 14, 19, 24, . . .

Part C: Writing an Explicit Formula for Arithmetic Sequences

An explicit formula uses an **equation/function/formula** to that will **calculate/find** each term.

Formula: ☐

$a_1 =$_____ | $a_n =$_____ | $a_{n-1} =$_____ | $n =$_____ | $d =$_____

a) 35, 32, 29, 26, . . .

b) 9, 14, 19, 24, ...

Part D: Using the Explicit Formula to find a specific term in our sequence.

a) 35, 32, 29, 26, . . .

Find a_{20}.

b) 9, 14, 19, 24, ...

Find a_{30}.

Arithmetic Sequences Practice Worksheet

Find the nth term for each arithmetic sequence.

1) $a_1 = -5,\ d = 4,\ n = 9$

2) $a_1 = 13, d = -\frac{5}{2}, n = 29$

3) $a_1 = 3, d = -4, n = 6$

4) $a_1 = -5,\ d = \frac{1}{2},\ n = 10$

Complete each statement.

5) 97 is the _____th term of $-3, 1, 5, 9$.

6) -10 is the _____th term of $14, 12.5, 11, 9.5$.

Find the indicated term(s) in each arithmetic sequence.

7) a_{15} for $-3, 3, 9, \ldots$

8) a_{19} for $17, 12, 7, \ldots$

9) The first term is -7 and the common difference is 3. Find the next 3 terms.

10) The first term is 6 and the common difference is -4. Find the next 3 terms.

11) The first term is 9 and the common difference is -4. Find the next 3 terms and the 100th term.

12) The first term is -6 and the common difference is 5. Find the next 3 terms and the 100th term.

13) Find the 43rd term of $-124. -122, -120, \ldots$

14) Find the 38th terms of $182, 176, 170, \ldots$

15) Find the 51st term of $-67, -164, -161, \ldots$

16) Find the 29th term of $182, 176, 170, \ldots$

Write the recursive rule and explicit formula for each arithmetic sequence.

17) $5, 7, 9, 11, 13, \ldots$

18) $-4, -5, -6, -7, -8, \ldots$

19) $10, 15, 20, 25, \ldots$

20) $-9, -2, 5, 12, 19, \ldots$

21) $23, 20, 17, 14, \ldots$

22) $3, 7, 11, 15, 19, \ldots$

23) $8, 6.5, 5, 3.5, 2, \ldots$

24) $9, 11.5, 14, 16.5, \ldots$

25) $-8, -3, 2, 7, 12, \ldots$

26) $3, 10, 17, 24, 31, \ldots$