

Arithmetic Sequences Worksheet

An **Arithmetic Sequence** is a sequence of numbers in which the **difference between consecutive terms is always the same**. This constant difference is called the **common difference (d)**.

Formula for the nth Term

Where:

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

- a_n = nth term
 - a_1 = first term
 - d = common difference
 - n = term number
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Example – Find the Next Three Terms

Find the next three terms in the sequence: 5, 8, 11, 14, ...

Step 1. Find the common difference. $8 - 5 = 3$

The common difference is 3.

Step 2. Add 3 to each term.

$$14 + 3 = 17$$

$$17 + 3 = 20$$

Answer: 17, 20, 23

$$20 + 3 = 23$$

Example 2 – Find the Common Difference

Find the common difference of the sequence: 20, 15, 10, 5, ...

Subtract consecutive terms. $15 - 20 = -5$

The common difference is $d = -5$

Example 3 – Find the 10th Term

Find the 10th term of the sequence: 4, 7, 10, 13, ...

Step 1. Identify the values.

- $a_1 = 4$
- $d = 3$
- $n = 10$

Step 2. Use the formula. $a_n = a_1 + (n - 1)d$

Substitute the values. $a_{10} = 4 + (10 - 1)(3)$

Step 3. Simplify. $a_{10} = 4 + 27$

$$a_{10} = 31$$

Answer: The 10th term is 31.

Part A – Find the Next Three Terms

1. 2, 5, 8, 11, _____, _____, _____

2. 12, 18, 24, 30, _____, _____, _____

3. 40, 35, 30, 25, _____, _____, _____

4. -6, -2, 2, 6, _____, _____, _____

5. 100, 90, 80, 70, _____, _____, _____

Part B – Find the Common Difference

Find the common difference.

6. 7, 11, 15, 19

$d =$ _____

9. 18, 25, 32, 39

$d =$ _____

7. 45, 40, 35, 30

$d =$ _____

10. 80, 72, 64, 56

$d =$ _____

8. -3, 2, 7, 12

$d =$ _____

Part C – Find the Missing Term

11. 4, 9, _____, 19, 24

Missing term = _____

14. 13, 20, _____, 34

Missing term = _____

12. 60, 55, _____, 45, 40

Missing term = _____

15. 100, 85, _____, 55

Missing term = _____

13. -8, -3, _____, 7, 12

Missing term = _____

Part D – Find the nth Term

Use the formula: $a_n = a_1 + (n - 1)d$

16. Find the 12th term. $a_{12} = \underline{\hspace{1cm}} + (\quad) (4) = \underline{\hspace{1cm}}$

Sequence: 3, 7, 11, 15, ...

Answer: _____

17. Find the 15th term.

$$a_{15} = \underline{\hspace{1cm}} + (14) (\underline{\hspace{1cm}}) = \underline{\hspace{2cm}}$$

Sequence: 8, 12, 16, 20, ...

Answer:

18. Find the 20th term.

$$a_{20} = \underline{\hspace{1cm}} + (19) (-3) = \underline{\hspace{1cm}} - 57 = \underline{\hspace{2cm}}$$

Sequence: 25, 22, 19, 16, ...

Answer:

19. Find the 25th term.

$$a_{25} = \underline{\hspace{1cm}} + (24) (\underline{\hspace{1cm}}) = \underline{\hspace{2cm}}$$

Sequence: 5, 10, 15, 20, ...

Answer:
