

## Arithmetic Sequences Assignment

Describe the pattern in each sequence given below. Also find the next three terms in the sequence.

1. 3, 5, 7, 9, 11, 13, ...

2. 2. 1, 3, 9, 27, 54, ...

3. -4, -8, -12, -16, -20, ...

4. 4. 80, 40, 20, 10, ...

Tell whether the sequence in each case is arithmetic or not. If it is, identify the common difference.

1. 4, 7, 10, 13, 16, ...

2. -11, 5, 0, 7, ...

3. 1, 3, 9, 27, ...

4.  $0, \frac{1}{3}, \frac{2}{3}, 1, \dots$

Find the  $n^{\text{th}}$  term in the arithmetic sequence given.

1. 6<sup>th</sup> term in 1, 4, 7, 10, ...

2. 9<sup>th</sup> term in -11, -1, 9, 19, ...

3. 5<sup>th</sup> term in  $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \dots$

## Arithmetic Sequences Assignment

Describe the pattern in each sequence given below. Also find the next three terms in the sequence.

1. 3, 5, 7, 9, 11, 13, ...

Pattern: Each term is 2 more than the previous one.

Next three terms:  $13 + 2 = 15$

$$15 + 2 = 17$$

$$17 + 2 = 19$$

2. 1, 3, 9, 27, 54, ...

Pattern: Each term is 3 times the previous one.

Next three terms:  $54 \times 3 = 162$

$$162 \times 3 = 486$$

$$486 \times 3 = 1458$$

3. -4, -8, -12, -16, -20, ...

Pattern: Each term is 4 less than the previous one.

Next three terms:  $-20 - 4 = -24$

$$-24 - 4 = -28$$

$$-28 - 4 = -32$$

4. 80, 40, 20, 10, ...

Pattern: Each term is half the previous one.

Next three terms:  $10 \div 2 = 5$

$$5 \div 2 = 2.5$$

$$2.5 \div 2 = 1.25$$

## Arithmetic Sequences Assignment

Tell whether the sequence in each case is arithmetic or not. If it is, identify the common difference.

1. 4, 7, 10, 13, 16, ...

**Common difference:  $7 - 4 = 3 = 10 - 7$**

**Since the common difference is same, it is an arithmetic sequence.**

2. -11, 5, 0, 7, ...

**Common difference:  $5 - (-11) = 17 \neq 0 - 5$**

**Since the common difference is not the same, it is not an arithmetic sequence.**

3. 1, 3, 9, 27, ...

**Common difference:  $3 - (1) = 2 \neq 9 - 3$**

**Since the common difference is not same, it is not an arithmetic sequence.**

4.  $0, \frac{1}{3}, \frac{2}{3}, 1, \dots$

**Common difference:  $\frac{1}{3} - 0 = \frac{1}{3} = \frac{2}{3} - \frac{1}{3}$**

**Since the common difference is same, it is an arithmetic sequence.**

Find the  $n^{\text{th}}$  term in the arithmetic sequence given.

1. 6<sup>th</sup> term in 1, 4, 7, 10, ...

**Common difference:  $4 - 1 = 3 = 7 - 4$**

**$a_n = a_1 + (n - 1) \cdot d$**

**$a_6 = 1 + (6 - 1) \cdot 3$**

**$a_6 = 1 + 15 = 16$**

## Arithmetic Sequences Assignment

2. 9<sup>th</sup> term in -11, -1, 9, 19, ...

$$\text{Common difference: } -1 - (-11) = 10 = 9 - (-1)$$

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

$$a_9 = -11 + (9 - 1) \cdot 10$$

$$a_9 = -11 + 80 = 69$$

3. 5<sup>th</sup> term in  $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \dots$

$$\text{Common difference: } \frac{1}{2} - \frac{1}{4} = \frac{1}{4} = \frac{3}{4} - \frac{1}{2}$$

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

$$a_5 = \frac{1}{4} + (5 - 1) \cdot \frac{1}{4}$$

$$a_5 = \frac{1}{4} + 1 = \frac{5}{4}$$