

## Arithmetic Sequences Practice Worksheet - Answer Key

### 1. Find the next two terms in each sequence:

a) Common difference: +3 -> Next terms: 14, 17

b) Common difference: -5 -> Next terms: 10, 5

### 2. Identify the first term (a) and the common difference (d):

a)  $a = 4$ ,  $d = 6$

b)  $a = 100$ ,  $d = -10$

### 3. Write a formula for the nth term ( $t_n$ ) and find the 10th term:

a)  $t_n = 3n$  ->  $t_{10} = 30$

b)  $t_n = 20 - 3(n - 1)$  ->  $t_{10} = -7$

### 4. Solve: How many terms are in this arithmetic sequence?

Use  $t_n = a + (n - 1)d$

$$55 = 7 + (n - 1) \cdot 4 \rightarrow n = 13$$

### 5. The 4th term of a sequence is 22 and the 9th term is 42.

$$t_4 = a + 3d = 22$$

$$t_9 = a + 8d = 42$$

$$\text{Subtracting} \rightarrow 5d = 20 \rightarrow d = 4$$

$$a = 22 - 3 \cdot 4 = 10$$

$$\text{Formula: } t_n = 10 + (n - 1) \cdot 4$$

### 6. In an arithmetic sequence, the 7th term is 75 and the 12th term is 105.

$$t_7 = a + 6d = 75$$

$$t_{12} = a + 11d = 105$$

Subtracting  $\rightarrow 5d = 30 \rightarrow d = 6$

$$a = 75 - 6 \cdot 6 = 39$$

a) First term: 39

$$b) t_{20} = 39 + 19 \cdot 6 = 153$$

$$c) 180 = 39 + (n - 1) \cdot 6 \rightarrow n = 24.5 \rightarrow 180 \text{ is not in the sequence}$$