

24 FEBRUARY 2014

## NUMBER PATTERNS



### Lesson Description

In this lesson we:

- Examine arithmetic sequences



### Summary

**A sequence is a set of numbers with a definite order**

Example: 2; 4; 6; 8... is the sequence of even numbers

2 is the first term written as T1

$T_n = 2n$  is called the general term or nth term of the sequence. We can work out a general formula for each number pattern and use it to determine any term in the pattern.

### Arithmetic Sequences

$$T_n = a + (n - 1)d$$

There is a constant first difference between consecutive terms in the sequence. This is denoted by d in the formula.

Example:  $T_n = 4n - 1$  Find the first three terms of the sequence



### Test Yourself

#### Question 1

Consider the sequence 5; 9; 13... T1 is equal to:

- A 13
- B 5
- C 9
- D 1

#### Question 2

Consider the sequence 5; 9; 13... The common difference d is:

- A 1
- B 4
- C 8
- D 5

#### Question 3

Consider the sequence 5; 9; 13... The next three terms are:

- A 17; 21; 25
- B 13; 17; 21
- C 5; 9; 13
- D 21; 25; 29

**Question 4**

If  $T_n = 4n - 1$  term 10 is equal to:

- A 10
- B 3
- C 39
- D 11

**Question 5**

If  $T_n = 4n - 1$ , which term has a value of 59?

- A 10
- B 20
- C 58
- D 15

**Question 6**

How many integers between 26 and 65 are divisible by 3?

- A 10
- B 13
- C 39
- D 36



**Improve your Skills**

**Question 1**

Determine the general term of the following sequence and term twenty five.

6; 12; 18

**Question 2**

You would like to start saving money in your piggy bank, but because you have never tried to save money before, you decide to start slowly. At the end of the first week you save R 5. Then at the end of the second week you save R 10 and at the end of the third week, R 15. In which week will you save R 50?

**Question 3**

Look at this pattern of hexagons and determine how many hexagons there will be in the tenth pattern.

