

**REVISION: NUMBER PATTERNS****17 MARCH 2014****Lesson Description**

In this lesson we revise:

- Sequences & Series
- Sigma Notation

**Improve your Skills****Sequences & Series****Question 1**

Given the arithmetic sequence: 23; 27; 31 ..... Determine:

- The 27<sup>th</sup> term.
- Which term equals 243.

**Question 2**Find the sum of the following finite series  $2 + 6 + 10 + 14 + \dots + 122$ **Question 4**The fourth term of an arithmetic series is 55 and the tenth term is 45. Find  $n$  if  $T_n < 0$ **Question 5**Given the geometric sequence:  $\frac{3}{4}; \frac{3}{2}; 3; \dots$  Determine in simplest exponential form

- $T_{11}$
- Which term equals 24 576

**Sigma Notation****Question 1**

Calculate

$$\sum_{k=4}^6 3^{k-2}$$

**Question 2**

Calculate

$$\sum_{k=0}^{15} (10k + 3)$$

**Question 3**

Calculate

$$\sum_{k=2}^{\infty} 8 \cdot \left(\frac{1}{2}\right)^{k+1}$$

**Question 4**

Calculate n

$$\sum_{k=1}^n (6k - 1) = 320$$

**Question 5**Given the geometric series:  $2 \cdot (5)^5 + 2 \cdot (5)^4 + 2 \cdot (5)^3 + \dots$ 

- Show that the series converges.
- Calculate the sum to infinity of the series.
- Calculate the sum of the first 8 terms of the series, correct to two decimal places.
- Use your answers to b and c to determine

$$\sum_{k=9}^{\infty} 2 \cdot (5)^{6-n}$$

correct to two decimal places.