

# SATPREP

## Assignment : Sequence and Series (Easy)

1. The first three terms of an infinite geometric sequence are 32, 16 and 8.
  - (a) Write down the value of  $r$ .
  - (b) Find  $u_6$ .
  - (c) Find the sum to infinity of this sequence.
2. Consider the arithmetic sequence 2, 5, 8, 11, ....
  - (a) Find  $u_{101}$ .
  - (b) Find the value of  $n$  so that  $u_n = 152$ .
3. An arithmetic series has five terms. The first term is 2 and the last term is 32. Find the sum of the series.
4. Consider the infinite geometric sequence 3,  $3(0.9)$ ,  $3(0.9)^2$ ,  $3(0.9)^3$ , ... .
  - (a) Write down the 10<sup>th</sup> term of the sequence. Do not simplify your answer.
  - (b) Find the sum of the infinite sequence.
5. In an arithmetic sequence  $u_{21} = -37$  and  $u_4 = -3$ .
  - (a) Find
    - (i) the common difference;
    - (ii) the first term.
  - (b) Find  $S_{10}$ .
6. Consider the infinite geometric sequence 25, 5, 1, 0.2, ... .
  - (a) Find the common ratio.
  - (b) Find
    - (i) the 10<sup>th</sup> term;
    - (ii) an expression for the  $n^{\text{th}}$  term.
  - (d) Find the sum of the infinite sequence.
7. In an arithmetic sequence,  $S_{40} = 1900$  and  $u_{40} = 106$ . Find the value of  $u_1$  and of  $d$ .

8. In an arithmetic series, the first term is  $-7$  and the sum of the first 20 terms is 620.
- (a) Find the common difference.
  - (b) Find the value of the 78<sup>th</sup> term.
9. A sum of \$ 5000 is invested at a compound interest rate of 6.3 % per annum.
- (a) Write down an expression for the value of the investment after  $n$  full years.
  - (b) What will be the value of the investment at the end of five years?
  - (c) The value of the investment will exceed \$ 10 000 after  $n$  full years.
    - (i) Write down an inequality to represent this information.
    - (ii) Calculate the minimum value of  $n$ .
10. A theatre has 20 rows of seats. There are 15 seats in the first row, 17 seats in the second row, and each successive row of seats has two more seats in it than the previous row.
- (a) Calculate the number of seats in the 20th row.
  - (b) Calculate the **total** number of seats.