

# ARITHMETIC SERIES

## Task 1

- 1) Find the sum of the first 10 terms of the sequence:  
2, 5, 8, 11, 14 ...
- 2) Find the sum of the first 20 terms of the sequence:  
7, 10, 13, 16, 19 ...
- 3) Find the sum of the first 15 terms of the sequence:  
4, 9, 14, 19, 24 ...
- 4) Find the sum of the first 12 terms of the sequence:  
3, 5, 7, 9, 11 ...
- 5) Find the sum of the first 25 terms of the sequence:  
1, 4, 7, 10, 13 ...
- 6) Find the sum of the first 18 terms of the sequence:  
5, 9, 13, 17, 21 ...
- 7) Find the sum of the first 30 terms of the sequence:  
2, 6, 10, 14, 18 ...
- 8) Find the sum of the first 16 terms of the sequence:  
8, 12, 16, 20, 24 ...
- 9) Find the sum of the first 100 terms of the sequence:  
6, 5, 4, 3, 2 ...
- 10) Find the sum of the first 22 terms of the sequence:  
9, 7, 5, 3, 1 ...

## Task 2

- 11) The sum of the first 6 terms of an arithmetic sequence is 87. The first term is 2. Work out the common difference.
- 12) The sum of the first 20 terms of an arithmetic sequence is 600. The common difference is 2. Work out the first term.

- 13) The sum of the first 11 terms of an arithmetic sequence is 264. The first term is 4. Work out the common difference.
- 14) The sum of the first  $n$  terms of an arithmetic sequence is 220. Given that the first term of the sequence is 10 and the common difference is 5, work out the value of  $n$ .
- 15) The sum of the first  $n$  terms of an arithmetic sequence is 234. Given that the first term of the sequence is 3 and the common difference is 3, work out the value of  $n$ .

## Task 3

- 16) In an arithmetic sequence, the 5<sup>th</sup> term is 18 and the 8<sup>th</sup> term is 27. Work out the sum of the first 100 terms of the sequence.
- 17) The 10<sup>th</sup> term of an arithmetic sequence is 29 and the sum of the first 10 terms of the sequence is 155. Work out the sum of the first 20 terms of the sequence.
- 18) The 8<sup>th</sup> term of an arithmetic sequence is three times the 2<sup>nd</sup> term.  
The sum of the first 10 terms of the sequence is 260.  
Work out the value of the 20<sup>th</sup> term in the sequence.

## Challenge

- 19) The first three terms of an arithmetic sequence are:  
 $2x + 1$ ,  $5x - 2$ ,  $7x + 4$   
Work out the sum of the first 100 terms of the sequence.
- 20) An arithmetic sequence has a first term  $a$  and common difference  $d$ .  
The sum of the first  $n$  terms is  $3n^2 + 5n$ .  
Find expressions for:
  - $a$  and  $d$
  - The  $n^{\text{th}}$  term
 Hence, find the first value of  $n$  for which the term exceeds 500.