

Section 2: Arithmetic sequences and series**Exercise level 2**

- The 7th term of an arithmetic sequence is -2 and the 12th term is 8.
 - Find the first term and the common difference.
 - The sum of the terms of the sequence is 364.
Find the number of terms in the sequence.
- The k th term of an arithmetic sequence is given by $5k - 3$.
 - Write down the first three terms of the sequence, and find the common difference.
 - Find the sum of the first 20 terms of the sequence.
- The sum of the first n terms of an arithmetic sequence is given by $S_n = 4n + 2n^2$.
 - Write down the first term.
 - Find the second term and hence the common difference.
 - Find an expression for the k th term of the sequence.
- The first term of an arithmetic sequence is 120 and the common difference is -7.
 - For what value of k is the k th term first negative?
 - For what value of n is the sum of the first n terms first negative?
- Salim uses an exercise bike each time he goes to the gym. The first time he goes he uses the bike for 10 minutes. Each time he uses the bike he increases his time by 2 minutes. He aims to eventually use the bike for 30 minutes.
 - After how many sessions does Salim use the bike for 30 minutes?
 - How many minutes in total has Salim used the bike by this time?
- The sum of the first 20 terms of an arithmetic sequence is 1080, and the sum of the first 30 terms is 2220. Write down the first 5 terms.
- Series A is $6 + 10 + 14 + 18 + \dots$
Series B is $25 + 27 + 29 + 31 + \dots$
After how many terms is the sum of series A greater than the sum of series B?