1. In the arithmetic series with n^{th} term u_n, it is given that $u_4 = 7$ and $u_9 = 22$.
Find the minimum value of n so that $u_1 + u_2 + u_3 + ... + u_n > 10\ 000$.

(Total 5 marks)

2. Consider the arithmetic sequence 8, 26, 44, ...

(a) Find an expression for the nth term.

(1)

(b) Write down the sum of the first n terms using sigma notation.

(1)

(c) Calculate the sum of the first 15 terms.

(2)
(Total 4 marks)

3. The mean of the first ten terms of an arithmetic sequence is 6. The mean of the first twenty terms of the arithmetic sequence is 16. Find the value of the 15th term of the sequence.

(Total 6 marks)

4. A circular disc is cut into twelve sectors whose areas are in an arithmetic sequence.
The angle of the largest sector is twice the angle of the smallest sector.

Find the size of the angle of the smallest sector.

(Total 5 marks)