



Name: _____ Date: _____ Score: _____ / 26

1 Prove algebraically that the sum of an odd number and an even number is always odd. (2 marks)

Answer _____

2 Sam says, " $n^2 + n + 11$ is a prime number for every positive integer n ."
Show that Sam is wrong. (2 marks)

Answer _____

3 Prove that $n^2 + n$ is even for every integer n . (2 marks)

Answer _____

4 Prove algebraically that the sum of any three consecutive integers is a multiple of 3. (3 marks)

Answer _____

5 Prove algebraically that the sum of the squares of any two consecutive even numbers is a multiple of 4. (3 marks)

Answer _____

6 Prove algebraically that the product of any two consecutive odd numbers is always 1 less than a multiple of 4. (3 marks)

Answer _____

- 7 Prove algebraically that the sum of the squares of any two consecutive integers is an odd number.

(4 marks)

Answer _____

- 8 The n th triangular number is $\frac{n(n+1)}{2}$.

Prove that the sum of the n th and the $(n+1)$ th triangular numbers is always a square number.

(3 marks)

Answer _____

- 9 The n th triangular number is $\frac{n(n+1)}{2}$.

Prove that eight times any triangular number, plus 1, is always the square of an odd number.

(4 marks)

Answer _____

End of questions | Total 26 marks