

- 1) Show algebraically that the sum of two consecutive numbers is always odd.

- 2) Show algebraically that the product of two even numbers is always a multiple of four.

- 3) Show algebraically that the square of an odd number is always odd.

- 4) Prove, using algebra, that the difference between the squares of any two consecutive even numbers is always a multiple of four.

- 5) n is an integer.
Prove that $(2n + 1)(n + 3) + (2n + 1)(n - 2)$ is not a multiple of 2.

- 6) Prove that $(4n + 1)^2 - (4n - 1)^2$ is a multiple of eight for all positive integer values of n .

- 7) Prove algebraically that the sum of the squares of any three consecutive even numbers is always a multiple of 4.