

## Solution to JiTT 2:

Q1 No, the expression  $x^2 + 3x + 5$  cannot be factorised. The factors of the constant 5 are 1 and 5, which cannot be combined to give the coefficient of 3 in  $3x$ .

Q2  $x^2 - 4x + 3 = (x - 1)(x - 3)$

For the expression to be prime, either  $(x - 1)$  or  $(x - 3)$  must be 1 or  $-1$

Case 1:  $(x - 1) = 1 \rightarrow x = 2$ , thus  $(x - 3) = -1$   
Result:  $1 \times -1 \rightarrow$  not prime

Case 2:  $(x - 3) = 1 \rightarrow x = 4$ , thus  $(x - 1) = 3$   
Result:  $1 \times 3 \rightarrow$  prime

Case 3:  $(x - 1) = -1 \rightarrow x = 0$ , thus  $(x - 3) = -3$   
Result:  $-1 \times -3 \rightarrow$  prime

Case 4:  $(x - 3) = -1 \rightarrow x = 2$ , thus  $(x - 1) = 1$   
Result:  $-1 \times 1 \rightarrow$  not prime

Conclusion:  $x = 0$  or  $4$