

## Solutions to Past Paper Questions – Factorising Quadratics

15) (a)  $2 \times 5 = 10$ , so find two numbers which multiply to 10 and add to 7 – must be 2 and 5

$$\begin{aligned}\text{So } 2x^2 + 7x + 5 &= 2x^2 + 2x + 5x + 5 \\ &= 2x(x + 1) + 5(x + 1) \\ &= (2x + 5)(x + 1)\end{aligned}$$

17) (a)  $(3x - 1)(3x - 1)$

(b)  $x^2 - x - 56 = 0$   
 $(x + 7)(x - 8) = 0$   
 $x = -7$  or  $x = 8$

(c)  $3 \times 16 = 48$ , so find two numbers which multiply to 48 and add to -14 – must be -6 and -8

$$\begin{aligned}\text{So } 3x^2 - 6x - 8x + 16 &= 0 \\ 3x(x - 2) - 8(x - 2) &= 0 \\ (3x - 8)(x - 2) &= 0 \\ x &= \frac{8}{3} \text{ or } x = 2\end{aligned}$$

14) (a)  $(2x - 3)(x + 11)$

20)  $(2x - 3)^2 = 100$   
 $2x - 3 = 10$  or  $2x - 3 = -10$   
 $x = 6.5$  or  $x = -3.5$

(c) (i)  $(x - 21)(x - 2)$   
(ii)  $x = 21$  or  $x = 2$

11) (a)  $(x + 4)(x - 3) = 78$

(b) (i)  $x^2 + 4x - 3x - 12 = 78$   
 $x^2 + x - 90 = 0$

(ii)  $x^2 + x - 90 = 0$   
 $(x + 10)(x - 9) = 0$   
 $x + 10 = 0$  or  $x - 9 = 0$   
 $x = -10$  or  $x = 9$

(iii) Since  $x = -10$  would mean that the length and width of the rectangle were negative,  $x = 9$ ,  
and so length = 13cm and width = 6cm