Unit 5 Day 9
5-7 Factoring Trinomials

Distribute $(x+2)(x+3)$ Hmm. $2+3=5$
$$= x^2 + 3x + 2x + 6$$ $2 \cdot 3 = 6$
$$= x^2 + 5x + 6$$
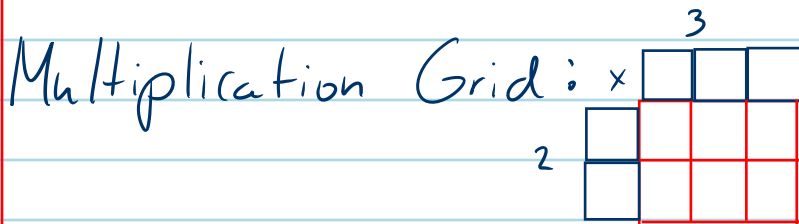
Multiplication Grid: $2 \cdot 3 = 6$!
            $3 \cdot 2 = 6$

Multiply $(x+2)(x+3)$ using a multiplication grid. $x = $ _____ | ☐
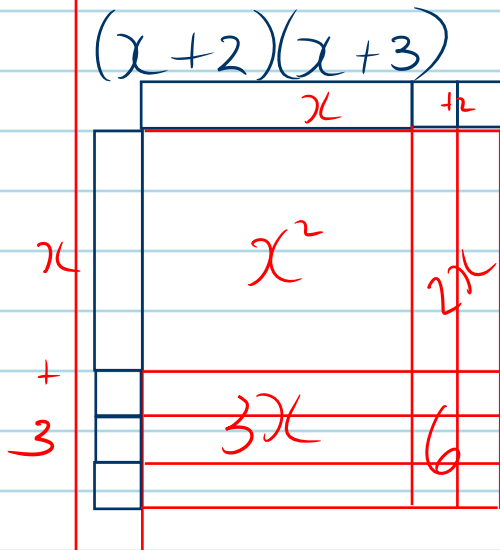
$(x+2)(x+3)$

$x + 2$ $2+3=5$ $2 \cdot 3 = 6$

$$= x^2 + 2x + 3x + 6$$

$$\boxed{= x^2 + 5x + 6}$$

Factor $x^2 + 5x + 6$ What 2 #s multiply to give
+6, add to give +5.

$$= (x+2)(x+3)$$ or $$(x+3)(x+2)$$

Factor $x^2 + bx + c$ Algebraically.
   a) Make a set of empty binomials. ( )( )
   b) Put an x in 1st term of each.
      $(x \quad)(x \quad)$
   c) The last two terms multiply to give c, add to give b. $(x+2)(x+3)$

$x^2 + bx + c$ $c = 12$

1) $x^2 + 7x + 12$ $b = 7$
   $= (x+3)(x+4)$

2) $x^2 + 12x + 32$
   $= (x+4)(x+8)$

$x^2 + bx + c$

3) $x^2 - 15x + 50$
   $c = 50, \; b = -15$
   multiply to $+50$ ∴ same sign
   add to give $-$ ∴ both $-$.
   $= (x-5)(x-10)$

4) $x^2 - 2x - 24$
   $= (x-6)(x+4)$

5) $x^2 + x - 30$ $-30 \checkmark$
   $= (x+6)(x-5)$ $-6+5 =$

6) $x^2 - 14x + 45$
   $= (x-9)(x-5)$

Practice 5-9