Math 10 Name: _____

3.5 Polynomials of the Form $x^2 + bx + c$ (Part 2)

Ex.1) Expand using the distributive property: * Double distributive property

a) $(x+2)(x+3)$

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

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

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

b) $(2x-1)(x-3)$

$= 2x(x-3) - 1(x-3)$

$= 2x^2 - 6x - 1x + 3$

$= \boxed{2x^2 - 7x + 3}$

Note: When using the distributive property to multiply two binomials together, we multiply the first terms, the outside terms, the inside terms and then the last terms. This is sometimes referred to as FOIL (First, Outside, Inside, Last).

Ex.2) Expand:

a) $(x+5)(x-6)$

F O I L

$= x^2 - 6x + 5x - 30$

$= \boxed{x^2 - x - 30}$

b) $(2x+7)(x-3)$

$= 2x^2 - 6x + 7x - 21$

$= \boxed{2x^2 + x - 21}$

c) $(7x-5)(2x+3)$

$= 14x^2 + 21x - 10x - 15$

$= \boxed{14x^2 + 11x - 15}$

d) $(2y-3x)(4y+3x)$

write letters in alpha. order

$= 8y^2 + 6xy - 12xy - 9x^2$

$= \boxed{8y^2 - 6xy - 9x^2}$

Ex.3) Factor using the product and sum.

a) x^2+5x+6

$2 + 3 = 5$

$2 \times 3 = 6$

$= \boxed{(x+2)(x+3)}$

b) $x^2+7x+12$

$3 + 4 = 7$

$3 \times 4 = 12$

$= \boxed{(x+3)(x+4)}$

c) $x^2-8x+12$

$-6 + -2 = -8$

$-6 \times -2 = 12$

$= \boxed{(x-6)(x-2)}$

d) $x^2-3x-10$

$-5 + 2 = -3$

$-5 \times 2 = -10$

$= \boxed{(x-5)(x+2)}$

e) $x^2-2x-24$

$-6 + 4 = -2$

$-6 \times 4 = -24$

$= \boxed{(x-6)(x+4)}$

f) $10-11x+x^2$ ★ re-arrange!

$\Rightarrow x^2-11x+10$

$-10 + -1 = -11$

$-10 \times -1 = 10$

$= \boxed{(x-10)(x-1)}$

Note: You can always check your answer by expanding!

$(x-6)(x+4)$

$= x^2+4x-6x-24 = x^2-2x-12$ ✓

Ex.4) Factor completely: $-5x^2+20x+60$ ★ Factor out a GCF first!

GCF = 5 $\quad 5(-x^2+4x+12)$

$\Rightarrow -5(x^2-4x-12)$ Now factor into 2 binomials

$= \boxed{-5(x-6)(x+2)}$

$-6 + 2 = -4$

$-6 \times 2 = -12$

Assignment: p.166 #7(all), 9-15 and 21 (odd letters)