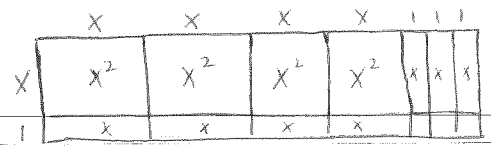
Math 10 Name: _____

3.6 Polynomials of the Form ax^2+bx+c

Ex.1) Factor:

a) $4x^2+7x+3$

using algebra tiles:



$$\boxed{(x+1)(4x+3)}$$

using the method of decomposition:

step 1: find 2 numbers with a product of 4x3=12 and a sum of 7

$$\underline{4} \times \underline{3} = 12$$
$$\underline{4} + \underline{3} = 7$$

step 2: write the middle term as two separate terms, using the numbers you found in step 1 as the coefficients

$$4x^2+\overset{7x}{\boxed{4x+3x}}+3$$

step 3: factor by grouping the first 2 terms and last 2 terms, then removing the GCF

$$(4x^2+4x)(+3x+3) = 4x\underbrace{(x+1)}+3\underbrace{(x+1)}$$

these must be the same!

step 4: write the factors

$$(x+1)(4x+3)$$

Ex. 2) Factor by decomposition:

a) $4x^2 + 11x + 6$

$\underline{8} \times \underline{3} = 24$

$\underline{8} + \underline{3} = 11$

$= (4x^2 + \overbrace{8x + 3x}^{11x} + 6)$

$= 4x(x+2) + 3(x+2)$

$= \boxed{(x+2)(4x+3)}$

b) $6x^2 - 7x - 10$

$\underline{-12} \times \underline{5} = -60$

$\underline{-12} + \underline{5} = -7$

$= (6x^2 - 12x + 5x - 10)$

$= 6x(x-2) + 5(x-2)$

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

c) $8x^2 - 18x - 5$

$\underline{-20} \times \underline{2} = -40$

$\underline{-20} + \underline{2} = -18$

$= (8x^2 - 20x + 2x - 5)$

$= 4x(2x-5) + 1(2x-5)$

$= \boxed{(2x-5)(4x+1)}$

d) $24x^2 - 20x - 24$

$= 4(6x^2 - 5x - 6)$

$\underline{-9} \times \underline{4} = -36$

$\underline{-9} + \underline{4} = -5$

* Factor out a GCF first to make it easier!

$= 4[(6x^2 - 9x + 4x - 6)]$

$= 4[3x(2x-3) + 2(2x-3)]$

$= \boxed{4(2x-3)(3x+2)}$

Assignment: p177 #9, 10, 14, 15, 17-19, 21 (odd letters except 14)