3.6a Factoring Complex Trinomials: $ax^2 + bx + c$

I. Factoring a common binomial:

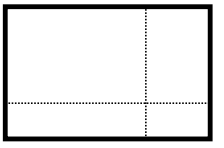
a) $xA + yA$

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

c) $x(x - 1) + y(x - 1) - 3(x-1)$

II. Factoring $ax^2 + bx + c$:

ex. $6x^2 + 7x + 2$ —*One method*→ represent the trinomial by an area model



Another method is called decomposition ↓

$6x^2 + 7x + 2$

* *Find the product of* _____

* Find 2 factors of ____ that have a sum of ___

* _____ the middle term with these two factors

* group the _____ 2 terms and _____ 2 termes

* common factor each group

* factor the common binomial from the two parts and write the expression as the product of 2 binomials

ex. $6x^2 - 13x + 5$

try: $6x^2 - 13x + 5$

III. My favourite: *Factoring by inspection*

ex. $4x^2 - 4x - 15$

** write two parentheses that will eventually contain your two binomial factors*

** place 2 possible factors of* $\boldsymbol{ax^2}$ *at the beginning of each parenthesis*

** place 2 possible factors of* **c** *at the end of each parenthesis*

** execute a mental distribution to determine the value of the resulting middle term; if it matches the original trinomial you're finished, if not, rearrange the factors and try again*

** Inspection works well when the dominant coeficient (**a**) or the constant term (**c**) are prime numbers*

Ex. Try these with methods II and III

a) $2x^2 - 9x - 18$ *b)* $9x^2 - 21x + 10$

Check your understanding: pg. 177 #(5-23)aceg