

Nasrin

p 1.20

## #6 Factor GCF

1. Identify  
GCF2. Bring GCF  
outside in  
front of brackets3. Divide each  
term by GCF  
and put result  
in brackets

ex.

$$\frac{1}{2}m^2n + \frac{1}{4}mn^2$$

~~$\frac{1}{2}m^2n$~~       ~~$\frac{1}{4}mn^2$~~

gcf:  $\frac{1}{2}mn$

$$\frac{1}{2}mn \left( m + \frac{1}{2}n \right) \quad \checkmark \text{ ANS}$$

$$\frac{1}{2}mn \left( m + \frac{1}{2}n \right)$$

$$\frac{1}{2}m^2n + \frac{1}{4}mn^2$$

Unit 4: Factoring trinomials  
of the form  $ax^2 + bx + c$

Step 1: Times 'a' and 'c' together

ex.  $2x^2 + 7x + 6$

$2 \times 6 = 12$

Step 2: List the factors of 'ac' and choose the ones that add up to 'b'

$2x^2 + 3x + 4x + 6$

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

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

Factors of 12: 1, 12; 2, 6; 3, 4

1. 2 (3, 4)   
 II. B -1 -12   
 III. D -2 -6   
 -3 -4

Step 3: Rewrite the 'bx' term using the chosen factors

Step 4: Proceed with factoring by grouping

- I. (2x + 3)
- II. B
- III. D

Check

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

$2x^2 + 4x + 3x + 6$

$2x^2 + 7x + 6$

ex.

$$6x^2 - 11x - 10$$

$\underbrace{\hspace{10em}}_{6x-10=-60 \uparrow}$

-60

-1 60

1 -60

-2 30

2 -30

-3 20

3 -20

-4 15

4 -15

$$\underbrace{6x^2}_{2x} + \underbrace{4x}_{2x} - \underbrace{15x}_{5} - \underbrace{10}_{5}$$

$$\frac{2x(3x+2)}{(3x+2)} - \frac{5(3x+2)}{(3x+2)}$$

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

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

ex.  $4x^2 + 20x + 25$

Note: For trinomials in the form

$$ax^2 + bxy + cy^2$$

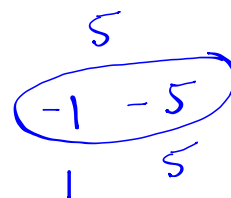
use the same steps as factoring a trinomial

$$ax^2 + bx + c$$

e.x.

$$5x^2 - 6xy + y^2$$

$5 \times 1 = 5$



$$\begin{array}{l}
 5x^2 - 5xy - 1xy + 1y^2 \\
 \hline
 5x(x-y) - y(x-y) \\
 \hline
 (x-y)(5x-y)
 \end{array}$$

1 GCF  
 1) Put GCF  
 out in front  
 of brackets

check!  
 1 1  
 1 1

ex.

$$25x^2 + 70xy + 49y^2$$

tellement  $\checkmark$

P 1.20  
e.x.

Strategy: Before factoring  
look for a  
GCF!

7.  $5ax^5 - 10a^2x^3 - 15a^3x^3$

$5ax^3(x^2 - 2a - 3a^2)$  Done!

e.x  $2x^2 + 20x - 48$

$2(x^2 + 10x - 24)$  -24

-1	24
1	-24
-2	12

$2(x^2 - 2x + 10x - 24)$

$2(x(x-2) + 12(x-2))$

$2(x-2)(x+12)$

$2x^2 + 20x - 48$  -96

$2x^2 - 4x + 24x - 48$  -4 24

$2x(x-2) + 24(x-2)$

$(x-2)(2x+24)$  gcf 2

$(x-2)2(x+12)$

$2(x-2)(x+12)$

## Unit 3 : Factoring Trinomials

of the form  $ax^2 + bx + c$

★ The steps for factoring are exactly the same as unit 4. Just know step ① will seem redundant!

ex.  $x^2 + 4x + 4$

$1 \times 4 = 4$

$x^2 + 2x + 2x + 4$

$x(x+2) + 2(x+2)$

$(x+2)(x+2)$

4  
1 4  
-1 -4  
2 2



ex.  $x^2 - 13x - 30$   
 $\underbrace{1x - 30 = -30}$  ↑

$$\begin{array}{r} x^2 + 2x - 15x - 30 \\ \underline{x \phantom{+ 2x} - 15x - 30} \\ x(x+2) - 15(x+2) \end{array}$$

$$\frac{x(x+2)}{(x+2)} - \frac{15(x+2)}{(x+2)}$$

$$(x+2)(x-15)$$

	-30
1	-30
-1	30
2	-15
-2	15
3	-10
-3	10
5	-6
-5	6

$\overset{-6}{(3-2)}$

Factor

$$3a^2 + a - 2$$

$3x-2=-6$

$$\cancel{3}a^2 - \cancel{2}a + \cancel{3}a - \cancel{2}$$

$$\frac{a(\cancel{3}a + \cancel{2})}{(\cancel{3}a + \cancel{2})} + \frac{1(\cancel{3}a - \cancel{2})}{(\cancel{3}a - \cancel{2})}$$

$$(3a-2)(a+1)$$

Strategy:  
make  
one  
your  
gcf!

$$x^2 + 2x + 1$$

$1 \times 1 = 1$

$$x^2 + x + x + 1$$

$$x(x+1) + 1(x+1)$$

$$(x+1)(x+1)$$

$$\begin{matrix} 1 \\ (1 \ 1) \\ -1 \ -1 \end{matrix}$$