COVID 19 WEEKLY SCHOOL – GRADE 9
4th WEEK –FEBRUARY
Unit 6 –Factors of Algebraic Expressions

Factors of trinomial quadratic expressions of the form x^2+bx+c

- **This is how to write a trinomial quadratic expression as a product of two binomial expressions.**
  Ex:- $x^2 + 6x + 8$

- x^2 **is the first term**
  $6x$ **is the mid term**
  8 **is the last term**

- **Let's take the product of the first term and the last term.**
  $x^2 \times 8 = 8x^2$

- **Using the knowledge of multiplication table, let's write** $8x^2$ **as a product of two terms as the below table .(Hint: The sum of two terms should be the 6x)**

Pair linear terms		product	sum
1x	8x	$8x^2$	9x
2x	4x	$8x^2$	6x √

- **According to the table, we clear that** $6x$ **is obtained from** $2x + 4x$
  $2x + 4x = 6x$

- **Therefore we can factorize** $x^2 + 6x + 8$ **as given below**
  $x^2 + 6x + 8$
  $x^2 + 2x + 4x + 8$
  $x (x+2)+ 4 (x+2)$
  $(x+2)(x+4)$

❖ **More examples**

- $x^2 - 5x + 6$
  $x^2 - 2x - 3x + 6$
  $x(x-2) - 3(x-2)$
  $(x-2)(x-3)$

  $6 \times x^2 = 6x^2$
  $6x^2 = (-2x) \times (-3x)$ √
  $(-2x) + (-3x) = -5x$

- $x^2 - 2x - 15$
  $x^2 - 5x + 3x - 15$
  $x(x-5) + 3(x-5)$
  $(x-5)(x+3)$

  $-15 \times x^2 = -15x^2$
  $-15x^2 = (-5x) \times (3x)$ √
  $(-5x + 3x = -2x)$

- $6 - x - x^2$
  $6 - 3x + 2x - x^2$
  $3(2-x) + x(2-x)$
  $(2-x)(3+x)$

  $6 \times (-x^2) = -6x^2$
  $-6x^2 = (2x) \times (-3x)$ √
  $(-3x + 2x = -x)$

Do the exercise 6.2

Factors of an expression written as a difference of two squares

Let's consider the product of two binomial expressions (x – y) and (x + y)

- $(x - y)(x + y)$
  $= x(x + y) - y(x + y)$
  $= x^2 + \cancel{xy} - \cancel{xy} - y^2$
  $= x^2 - y^2$
  Therefore ,
  $(x - y)(x + y) = x^2 - y^2 \iff x^2 - y^2 = (x - y)(x + y)$

  Ex:- $x^2 - 9 = x^2 - 3^2 = (x + 3)(x - 3)$
  $81 - 4m^2 = 9^2 - 2^2m^2 = (9 + 2m)(9 - 2m)$

Do the exercise 6.3