

Chapter 14



Factorisation

Example:

Resolve the $x^2 + 10x + 24$ into factors by splitting the middle term.

Sol:

Compare $x^2 + 10x + 24$ with $x^2 + Ax + B$.

Here $A = a + b = 10$ and $B = ab = 24$.

Since B is positive, both 'a' and 'b' are either positive or negative.

But as A is positive, both 'a' and 'b' must be positive.

The factors of 24 are (1 and 24) or (2 and 12) or (4 and 6) or (8 and 3)

With factors (1 and 24), A is $1 + 24 = 25 \neq$ the middle term.

With factors (2 and 12), A is $2 + 12 = 14 \neq$ the middle term.

With factors (4 and 6), A is $4 + 6 = 10$, which is the middle term.

Therefore, $a = 4$ and $b = 6$

Thus, $x^2 + 10x + 24 = x^2 + (4 + 6)x + (4 \times 6)$

$$= x^2 + 4x + 6x + 24$$



$$= x(x+4) + 6(x+4)$$

$$= (x+4)(x+6)$$

\therefore The factors of $x^2 + 10x + 24$ are $(x+4)$ and $(x+6)$.

