Factorisation - Lesson 8

Factorising Quadratic Trinomials (+, +, +)

LI

- Factorise expressions of the form $ax^2 + bx + c$.

SC

- Factorise, + and − numbers.

Jan 10-12:11

A Quadratic Trinomial is an expression of the form :

$$ax^2 + bx + c$$

quadratic (x^2) term x term constant term

with none of a, b and c equal to 0

Want to write this as :

$$(\quad + \quad)(\quad + \quad)$$

Example 1

Factorise $x^2 + 3x + 2$.

Find two numbers that :

- multiply to give $+2$.
- add to give $+3$.

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

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Example 2

Factorise $x^2 + 6x + 8$.

Find two numbers that :

- multiply to give $+8$.
- add to give $+6$.

$$\boxed{x^2 + 6x + 8 = (x + 2)(x + 4)}$$

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Example 3

Factorise $2x^2 + 11x + 12$.

$12 = 1 \times 12$

$12 = 2 \times 6$

$12 = 3 \times 4$

Try possibilities :

$(2x + \quad)(x + \quad)$

$(2x + \quad)(x + \quad)$

$(2x + \quad)(x + \quad)$

$(2x + \quad)(x + \quad)$

$(2x + \quad)(x + \quad)$

$(2x + \quad)(x + \quad)$

$$\boxed{2x^2 + 11x + 12 = (2x + 3)(x + 4)}$$

Factorise these quadratic trinomials :

1) $x^2 + 7x + 12$

2) $x^2 + 11x + 30$

3) $x^2 + 15x + 50$

4) $x^2 + 12x + 32$

5) $2x^2 + 19x + 9$

6) $3x^2 + 10x + 8$

7) $4x^2 + 21x + 20$

8) $4x^2 + 20x + 21$

Answers

1) $x^2 + 7x + 12$ $(x + 3)(x + 4)$

2) $x^2 + 11x + 30$ $(x + 5)(x + 6)$

3) $x^2 + 15x + 50$ $(x + 5)(x + 10)$

4) $x^2 + 12x + 32$ $(x + 4)(x + 8)$

5) $2x^2 + 19x + 9$ $(2x + 1)(x + 9)$

6) $3x^2 + 10x + 8$ $(3x + 4)(x + 2)$

7) $4x^2 + 21x + 20$ $(4x + 5)(x + 4)$

8) $4x^2 + 20x + 21$ $(2x + 3)(2x + 7)$