

Quadratic Eqns With A Multiple x Squared Term

Ex 1

$$2x^2 + 11x + 12 = 0$$

$$\begin{array}{l} 2 \times 12 \\ 24 \end{array}$$

$$\begin{array}{ll} +1 & +24 \\ +2 & +12 \\ +3 & +8 \checkmark \end{array}$$

$$2x^2 + 3x + 8x + 12 = 0$$

$$x(2x + 3) + 4(2x + 3) = 0$$

$$(x + 4)(2x + 3) = 0$$

Either $x + 4 = 0$

$$x = -4$$

or

$$2x + 3 = 0$$

$$2x = -3$$

$$x = -\frac{3}{2}$$

Factorise

Ex 2

$$2x^2 + 9x + 4$$

$$2 \times 4 = 8$$

$$\begin{array}{l} 1 \times 8 \checkmark \\ 2 \times 4 \end{array}$$

$$2x^2 + x + 8x + 4$$

$$x(2x + 1) + 4(2x + 1)$$

$$(x + 4)(2x + 1)$$

Factorise

Ex 3

$$3x^2 + 11x + 10$$

$$3 \times 10 = 30$$

$$5 \times 6 \checkmark$$

$$3x^2 + 5x + 6x + 10$$

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

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

6x5 or

$$3x^2 + 6x + 5x + 10$$

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

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

Ex 4 Solve

$$2x^2 + 3x + 1 = 0$$

$$2x \cdot 1 = 2$$

$$+1 + 2 \checkmark$$

$$2x^2 + x + 2x + 1 = 0$$

$$x(2x+1) + 1(2x+1) = 0$$

$$(x+1)(2x+1) = 0$$

Either $x+1=0$ or $2x+1=0$

$$\underline{x = -1}$$

$$2x = -1$$

$$\underline{x = -\frac{1}{2}}$$

Exercise

1)

$$2x^2 + 9x + 10$$

$$2x \cdot 5 = 10$$

$$+4 + 5$$

$$2x^2 + 4x + 5x + 10$$

$$2x(x+2) + 5(x+2)$$

$$(2x+5)(x+2)$$

Ex 6

$$2x^2 + 5x - 12$$

$$2x - 12 \\ = -24$$

$$+3 - 8 \\ -3 + 8 \checkmark$$

$$2x^2 - 3x + 8x - 12$$

$$x(2x - 3) + 4(2x - 3) \\ (x + 4)(2x - 3)$$

Ex 7

Solve

$$8x^2 - 14x + 3 = 0$$

$$8 \times 3 = 24$$

$$-2 \quad -12$$

$$8x^2 - 2x - 12x + 3 = 0$$

$$2x(4x - 1) - 3(4x - 1) = 0$$

$$(2x - 3)(4x - 1) = 0$$

Entweder $2x - 3 = 0$ or $4x - 1 = 0$

$$2x = 3$$

$$4x = 1$$

$$x = \frac{3}{2}$$

$$x = \frac{1}{4}$$

Solve

$$2x^2 - 5x - 12 = 0$$

$$2x^2 + 3x - 8x + 12 = 0$$

$$x(2x + 3) - 4(2x + 3) = 0$$

$$(x - 4)(2x + 3) = 0$$

$$2x - 12 \\ = -24$$

$$+3 - 8 \checkmark \\ -3 + 8$$

$$\text{E,th} \quad x - 4 = 0 \quad \text{or} \quad 2x + 3 = 0$$

$$\underline{x = 4}$$

$$2x = -3$$

$$\underline{x = -\frac{3}{2}}$$