Factorising With Multiple x^2

Ex1

$2 \times 7 = 14$

$+1 \times +14$
-1×-14
$+2 \times +7$ ✓
-2×-7

$$2x^2 + 9x + 7 = 0$$

$$2x^2 + 2x + 7x + 7 = 0$$

$$2x(x+1) + 7(x+1) = 0$$

$$(x+1)(2x+7) = 0$$

Either $x + 1 = 0$ or $2x + 7 = 0$

$x = -1$ $\qquad$ $2x = -7$

$x = -\frac{7}{2}$

Ex2

$3 \times 6 = 18$

$+1 \quad +18$
$+2 \quad +9$ ✓

$$3x^2 + 11x + 6$$

$$3x^2 + 2x + 9x + 6$$

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

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

Exercise

Factorise

1)

$5 \times 3 = 15$

$+1 \quad +15$
$+3 \quad +5$

$$5x^2 + 8x + 3$$

$$5x^2 + 3x + 5x + 3$$

$$x(5x+3) + 1(5x+3)$$

$$(5x+3)(x+1)$$

OR

$$5x^2 + 5x + 3x + 3$$

$$5x(x+1) + 3(x+1)$$

$$(x+1)(5x+3)$$

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2)

$$4x^2 + 8x + 3$$

$4 \times 3 = 12$

$+1 \quad +12$

$+2 \quad +6$ ✓

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

$$2x(2x+1) + 3(2x+1)$$

$$(2x+1)(2x+3)$$
