Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- $3x(2x - 5) = \mathbf{6x^2 - 15x}$

2.2

- $6a + 9ab = \mathbf{3a}(\mathbf{2 + 3b})$

2.3

- $x^2 - 5x + 2x - 10$
- $\mathbf{x^2 - 3x - 10}$

2.4

- common factor 3: $3(4x^2 - 9)$
- difference of two squares: $\mathbf{3}(\mathbf{2x + 3})(\mathbf{2x - 3})$

2.5

- $a(b + 4) + 3(b + 4)$
- $(\mathbf{a + 3})(\mathbf{b + 4})$

3.1

- $x^2 - 49 = (\mathbf{x + 7})(\mathbf{x - 7})$

3.2

- two numbers multiplying to -10 and adding to 3 are 5 and -2
- $(\mathbf{x + 5})(\mathbf{x - 2})$

3.3

- $a \times c = -6$, numbers 6 and -1
- $2x^2 + 6x - x - 3 = 2x(x + 3) - (x + 3) = (\mathbf{2x - 1})(\mathbf{x + 3})$

3.4

(a)

- common factor 2: $2(9x^2 - 4)$
- difference of two squares
- $\mathbf{2}(\mathbf{3x + 2})(\mathbf{3x - 2})$

(b)

- numbers multiplying to 18 and adding to -11 are -9 and -2
- $3x^2 - 9x - 2x + 6 = 3x(x - 3) - 2(x - 3)$

- $(\mathbf{3x-2})(\mathbf{x-3})$

(c)

- numerator $= (x+3)(x-3)$
- denominator $= (x+4)(x-3)$
- cancel $(x-3)$: $\dfrac{\mathbf{x+3}}{\mathbf{x+4}}$

(d)

- $\dfrac{x+3}{x+4} = 2$ so $x+3 = 2(x+4)$
- $x+3 = 2x+8$
- $\mathbf{x = -5}$