

1 Like terms and brackets ☐

- a) Simplify $3x^2y - 5xy^2 + 7xy^2 - x^2y$
 b) Expand and simplify
 $3a(2a - 5) - 2(a^2 - 4a)$

$$\begin{aligned} \text{a) } & 2x^2y + 2xy^2 \\ \text{b) } & 6a^2 - 15a - 2a^2 + 8a \\ & \hline & = 4a^2 - 7a \end{aligned}$$

2 Double and triple brackets ☐

- Expand and simplify
 a) $(2x - 5)(3x + 4)$
 b) $(x - 3)^3$

$$\begin{aligned} \text{a) } & 6x^2 - 7x - 20 \\ \text{b) } & (x^2 - 6x + 9)(x - 3) \\ & \hline & x^3 - 9x^2 + 27x - 27 \end{aligned}$$

3 Factorising: one bracket ☐

- Factorise fully
 a) $12m^3n^2 - 18m^2n$
 b) $4(x + 1)^2 - 6(x + 1)$

$$\begin{aligned} \text{a) } & 6m^2n(2mn - 3) \\ \text{b) } & 2(x + 1)[2(x + 1) - 3] \\ & \hline & 2(x + 1)(2x - 1) \end{aligned}$$

4 Factorising quadratics ☐

- Factorise fully
 a) $x^2 - 11x + 24$
 b) $2x^2 + 14x + 20$

$$\begin{aligned} \text{a) } & (x - 3)(x - 8) \\ \text{b) } & 2(x^2 + 7x + 10) \\ & \hline & 2(x + 2)(x + 5) \end{aligned}$$

5 Harder factorising ☐

- Factorise
 a) $4x^2 - 4x - 15$
 b) $49 - 16y^2$

$$\begin{aligned} \text{a) } & 4x^2 - 10x + 6x - 15 \\ & = (2x - 5)(2x + 3) \\ \text{b) } & (7 - 4y)(7 + 4y) \end{aligned}$$

Expanding brackets, factorising and solving quadratics

revision mat answers

**6 Algebraic fractions** ☐

- a) Simplify $\frac{2x^2 + 6x}{x^2 - 9}$
 b) Write $\frac{5}{x-1} - \frac{2}{x}$ as a single fraction.

$$\begin{aligned} \text{a) } & \frac{2x(x+3)}{(x+3)(x-3)} = \frac{2x}{x-3} \\ \text{b) } & \frac{5x - 2(x-1)}{x(x-1)} = \frac{3x+2}{x(x-1)} \end{aligned}$$

7 Solving by factorising ☐

- Solve
 a) $x^2 = 4x + 21$
 b) $3x^2 + 5x - 2 = 0$

$$\begin{aligned} \text{a) } & (x - 7)(x + 3) = 0, x = 7 \text{ or } -3 \\ \text{b) } & (3x - 1)(x + 2) = 0 \\ & \hline & x = \frac{1}{3} \text{ or } -2 \end{aligned}$$

8 The quadratic formula ☐

- Solve, giving your answers to 2 decimal places.
 a) $2x^2 + 3x - 7 = 0$
 b) $(x + 1)^2 = 3x + 8$

$$\begin{aligned} \text{a) } & x = \frac{-3 \pm \sqrt{65}}{4} = 1.27 \text{ or } -2.77 \\ \text{b) } & x^2 - x - 7 = 0 \\ & \hline & x = \frac{1 \pm \sqrt{29}}{2} = 3.19 \text{ or } -2.19 \end{aligned}$$

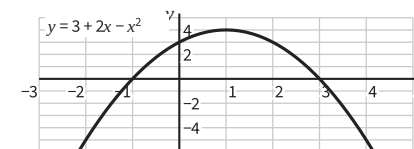
9 Completing the square ☐

- a) Write $x^2 - 10x + 18$ in the form $(x + p)^2 + q$
 b) Hence write down the minimum value of $x^2 - 10x + 18$ and the value of x that gives it.

$$\begin{aligned} \text{a) } & (x - 5)^2 - 25 + 18 = (x - 5)^2 - 7 \\ \text{b) } & \text{minimum } -7 \text{ when } x = 5 \end{aligned}$$

10 Quadratic graphs ☐

- a) Write down the y intercept and the turning point.
 b) Use the graph to solve $3 + 2x - x^2 = -5$.



$$\begin{aligned} \text{a) } & (0, 3) \text{ and } (1, 4) \\ \text{b) } & x = -2 \text{ or } 4 \end{aligned}$$