

## Solving Quadratics Requiring Rearranging

### Starter

1. (Review of last lesson) Solve  $3x^2 - 11x + 6 = 0$ .

2. Solve  $x^2 + 2x = 3$ .

### Notes

Before solving a quadratic, the *expression must equal zero*.

It is a good idea to *make sure the coefficient of  $x^2$  is positive*.

**E.g. 1** Solve  $x^2 = 6x - 8$ .

**Working:**

$$\begin{aligned}x^2 &= 6x - 8 \\x^2 - 6x + 8 &= 0 && \text{make sure the equation} = 0 \text{ and } x^2 \text{ is positive} \\ \text{M: } 8 &= -4 \times -2 \\ \text{A: } -6 &= -4 + -2 \\x^2 - 4x - 2x + 8 &= 0 && \text{split } -6x \text{ into } -4x - 2x \\x(x - 4) - 2(x - 4) &= 0 && \text{factorise by grouping (same brackets)} \\(x - 4)(x - 2) &= 0 \\ \therefore x - 4 &= 0 \quad \text{or} \quad x - 2 = 0 \\ \text{So } x &= 4 \quad \text{or} \quad x = 2\end{aligned}$$

**E.g. 2** Solve  $12 - x^2 = x$ .

**E.g. 3** Solve  $x^2 + 21x = 11 - x^2$ .

**E.g. 4** Solve  $(x + 3)(x + 9) + 9 = 0$ .

**E.g. 5** Solve  $x + 1 = \frac{6}{x}$ .

**Video:** [Solving quadratics by factorising](#)

[Solutions to Starter and E.g.s](#)

### Exercise

9-1 class textbook:	p114 M4.10 Qu 25-33, p116 E4.4 Qu 16-25
A*-G class textbook:	p105 E4.4 Qu 25-33, 48-56
9-1 homework book:	p42 M4.10 Qu 15-22, p42 E4.4 Qu 8, 11, 13, 17
A*-G homework book:	p30 E4.4 Qu 15-21, 26, 29, 32

### Summary

Before solving a quadratic, the *expression must equal zero*.

It is a good idea to *make sure the coefficient of  $x^2$  is positive*.

[Homework book answers \(only available during a lockdown\)](#)