

# 2 Solving equations

## 2.1 Equations with fractions

In this exercise you will learn how to:

- solve equations where the unknown occurs in a denominator
- remove the denominators by multiplying each term by the same expression

1 Solve the equation:

(a)  $x^2 = \frac{8}{x}$

(b)  $x^2 = -\frac{243}{x^3}$

(c)  $a = \frac{1}{a}$

(d)  $p^2 = \frac{16}{p^2}$

(e)  $t = -\frac{64}{t^2}$

2 Solve the equation:

(a)  $3x^2 = \frac{81}{x}$

(b)  $\frac{x}{5} = \frac{125}{x}$

(c)  $112w^3 = \frac{7}{w}$

(d)  $\frac{6}{d} = -\frac{d^2}{36}$

3 Solve the equation:

(a)  $\frac{9}{x} - \frac{x^3}{9} = 0$

(b)  $x - \frac{49}{x} = 0$

(c)  $5h^2 + \frac{40}{h} = 0$

(d)  $\frac{49}{2r} - 2r = 0$

(e)  $\frac{2}{5t^2} - \frac{25t}{4} = 0$

## 2.2 Quadratic equations

In this exercise you will learn how to:

- solve quadratic equations by factorising into the form  $(x - a)(x - b)$
- solve quadratic equations not in standard form by rearranging the terms

1 By factorising, solve the quadratic equation:

(a)  $x^2 - x - 6 = 0$

(b)  $x^2 - 6x + 5 = 0$

(c)  $x^2 + 6x + 8 = 0$

(d)  $x^2 - 5x = 0$

(e)  $x^2 - 6x - 27 = 0$

(f)  $x^2 - 9x + 14 = 0$

(g)  $6a - a^2 = 0$

(h)  $b^2 + 16b + 64 = 0$

(i)  $c^2 + 3c - 10 = 0$

(j)  $p^2 - 36 = 0$

(k)  $q^2 + 12q + 27 = 0$

(l)  $r^2 - r - 72 = 0$