

**C1** ALGEBRA

## Worksheet E

**1** Factorise

**a**  $x^2 + 4x + 3$

**e**  $y^2 - y - 2$

**i**  $x^2 - 2x - 15$

**m**  $r^2 - 16$

**q**  $26 - 15x + x^2$

**b**  $x^2 + 7x + 10$

**f**  $a^2 + 2a - 8$

**j**  $16 - 10m + m^2$

**n**  $y^2 - 2y - 63$

**r**  $s^2 + 23s + 120$

**c**  $y^2 - 3y + 2$

**g**  $x^2 - 1$

**k**  $t^2 + 3t - 18$

**o**  $121 + 22a + a^2$

**s**  $p^2 + 14p - 51$

**d**  $x^2 - 6x + 9$

**h**  $p^2 + 9p + 14$

**l**  $y^2 - 13y + 40$

**p**  $x^2 + 6x - 72$

**t**  $m^2 - m - 90$

**2** Factorise

**a**  $2x^2 + 3x + 1$

**e**  $3r^2 - 2r - 1$

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

**m**  $4u^2 + 17u + 4$

**b**  $2 + 7p + 3p^2$

**f**  $5 - 19y - 4y^2$

**j**  $9s^2 - 6s + 1$

**n**  $6p^2 + 5p - 4$

**c**  $2y^2 - 5y + 3$

**g**  $4 - 13a + 3a^2$

**k**  $4m^2 - 25$

**o**  $8x^2 + 19x + 6$

**d**  $2 - m - m^2$

**h**  $5x^2 - 8x - 4$

**l**  $2 - y - 6y^2$

**p**  $12r^2 + 8r - 15$

**3** Using factorisation, solve each equation.

**a**  $x^2 - 4x + 3 = 0$

**e**  $x^2 - 25 = 0$

**i**  $60 - 4x - x^2 = 0$

**m**  $3x^2 + 11x = 4$

**q**  $4x^2 + 4x + 1 = 0$

**b**  $x^2 + 6x + 8 = 0$

**f**  $x(x - 1) = 42$

**j**  $5x + 14 = x^2$

**n**  $x(2x - 3) = 5$

**r**  $3(x^2 + 4) = 13x$

**c**  $x^2 + 4x - 5 = 0$

**g**  $x^2 = 3x$

**k**  $2x^2 - 3x + 1 = 0$

**o**  $6 + 23x - 4x^2 = 0$

**s**  $(2x + 5)^2 = 5 - x$

**d**  $x^2 - 7x = 8$

**h**  $27 + 12x + x^2 = 0$

**l**  $x(x - 1) = 6(x - 2)$

**p**  $6x^2 + 10 = 19x$

**t**  $3x(2x - 7) = 2(7x + 3)$

**4** Factorise fully

**a**  $2y^2 - 10y + 12$

**e**  $a^4 + 4a^2 + 3$

**i**  $6x^3 - 26x^2 + 8x$

**b**  $x^3 + x^2 - 2x$

**f**  $t^4 + 3t^2 - 10$

**j**  $y^4 + 3y^3 - 18y^2$

**c**  $p^3 - 4p$

**g**  $12 + 20x - 8x^2$

**k**  $m^4 - 1$

**d**  $3m^3 + 21m^2 + 18m$

**h**  $6r^2 - 9r - 42$

**l**  $p^5 - 4p^3 + 4p$

**5** Sketch each curve showing the coordinates of any points of intersection with the coordinate axes.

**a**  $y = x^2 - 3x + 2$

**d**  $y = x^2 - 2x$

**g**  $y = -x^2 + 5x - 4$

**j**  $y = 2x^2 + 13x + 6$

**m**  $y = 5x^2 - 17x + 6$

**b**  $y = x^2 + 5x + 6$

**e**  $y = x^2 - 10x + 25$

**h**  $y = 2 + x - x^2$

**k**  $y = 3 - 8x + 4x^2$

**n**  $y = -6x^2 + 7x - 2$

**c**  $y = x^2 - 9$

**f**  $y = 2x^2 - 14x + 20$

**i**  $y = 2x^2 - 3x + 1$

**l**  $y = 2 + 7x - 4x^2$

**o**  $y = 6x^2 + x - 5$

**6** Solve each of the following equations.

**a**  $x - 5 + \frac{4}{x} = 0$

**b**  $x - \frac{10}{x} = 3$

**c**  $2x^3 - x^2 - 3x = 0$

**d**  $x^2(10 - x^2) = 9$

**e**  $\frac{5}{x^2} + \frac{4}{x} - 1 = 0$

**f**  $\frac{x-6}{x-4} = x$

**g**  $x+5 = \frac{3}{x+3}$

**h**  $x^2 - \frac{4}{x^2} = 3$

**i**  $4x^4 + 7x^2 = 2$

**j**  $\frac{2x}{3-x} = \frac{1}{x+2}$

**k**  $\frac{2x+1}{x+3} = \frac{2}{x}$

**l**  $\frac{7}{x+2} - 3x = 2$