

1. Factorise
  - a.  $2x + 1 + x^2$
  - b.  $a^2 - 10 + 3a$
  - c.  $-p + p^2 + 1 - p$
  - d.  $y^2 - 7 + 4y - 5$
  - e.  $4m + m^2 + 4m - 20$
  
2. Simplify and factorise
  - a.  $2a^2 + 5a - 3$
  - b.  $6n^2 - 11n - 10$
  - c.  $10x^2 + 11x - 6$
  - d.  $3g^2 - 4g - 7$
  - e.  $12m^2 - 23m + 10$
  
3. Factorise and solve
  - a.  $6a + 12 = 0$
  - b.  $2x - 10 = 0$
  - c.  $6g + 2 = -2g$
  - d.  $-30m - 5 = 0$
  - e.  $5x - x^2 = 100 - x^2$
  
4. Solve the equations
  - a.  $4n + 5 = -2n - 1$
  - b.  $3 + a = 3(a - 1)$
  - c.  $5x - 3(x - 1) = 0$
  - d.  $3y + 1 = -2(y - 5)$
  - e.  $5(b - 1) + b = 2(2 - 3b)$
  
5. Factorise fully and solve
  - a.  $4x^2 - 36 = 0$
  - b.  $-35y - 7y^2 = 0$
  - c.  $25t^2 - 1 = 0$
  - d.  $5x - 10x^2 = 0$
  - e.  $5a^2 - 3a = 4a^2$
  
6. Factorise then solve
  - a.  $x^2 - x - 2 = 0$
  - b.  $a^2 + 6a + 5 = 0$
  - c.  $m^2 + m - 12 = 0$
  - d.  $t^2 - 17t = -30$
  - e.  $-s^2 + 16s - 28 = 0$
  
7. Factorise in full then solve
  - a.  $-4a^2 - 10a - 4 = 0$
  - b.  $x^2 - 2x + 10 = 6x - 6$
  - c.  $t(t + 7) + 5 = -7$
  - d.  $y^2 + 5y - 20 = -y^2 + 3y + 4$
  - e.  $b(b - 5) = 2(b - 3) - 6$
  
8. Factorise and solve
  - a.  $9x^2 - 12x - 5 = 0$
  - b.  $6y^2 - 31y - 11 = 0$
  - c.  $15p^2 - 14p = -3$
  - d.  $8a^2 - 21 = 22a$
  - e.  $12f^2 = 40f - 25$
  
9. Write in factorised form to solve
  - a.  $2p^2 - 9 = p^2$
  - b.  $3s + 2s^2 = 2 + s(2s - 1)$
  - c.  $a(a - 5) - 6 = 4(a + 1)$
  - d.  $(q - 1)^2 = 2q - 3$
  - e.  $4x^2 + 2 = 1 + 4x$
  
10. Factorise and solve the equation
  - a.  $x^3 - 6x^2 - 16x = 0$
  - b.  $z^4 - 9z^2 = 0$
  - c.  $y^4 - 2y^2 - 3 = 0$
  - d.  $2a^2(2a^2 + 1) = 9 + 2a^2$
  - e.  $(b + 1)(b - 5) = -8$
  
11. Write in factorise form to solve
  - a.  $x - 5 - \frac{24}{x} = 0$
  - b.  $b + \frac{16}{b} - 10 = 0$
  - c.  $\frac{1}{m}(m^2 + 50) = -27$
  - d.  $x - \frac{16}{x} + 2 = 2$
  - e.  $3y + \frac{16}{y} = 4y$
  
12. Factorise completely
  - a.  $\frac{1}{2}x(x + 2x) = 4$
  - b.  $\frac{3}{5}m^2 + 5m = 9$
  - c.  $(a - 1)(a + 1) = -a + 131$
  - d.  $3x^2 - \frac{5}{3} = 4x$