

# National 5: Quadratic Equations

Questions 1 to 6 are non-calculator and should be solved algebraically.

**Q1** a)  $x(x - 2) = 0$

b)  $a(a + 3) = 0$

c)  $(t + 5)(t - 4) = 0$

**Q2** a)  $x^2 - 4x = 0$

b)  $x^2 + 5x = 0$

c)  $2x^2 - x = 0$

**Q3** a)  $x^2 - 25 = 0$

b)  $x^2 - 49 = 0$

c)  $2x^2 - 18 = 0$

**Q4** a)  $x^2 - 6x + 5 = 0$

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

c)  $z^2 - 7z + 12 = 0$

d)  $x^2 - 3x - 4 = 0$

e)  $c^2 + 2c - 8 = 0$

f)  $x^2 - 5x - 36 = 0$

g)  $n^2 - 6n + 9 = 0$

h)  $x^2 + 10x + 16 = 0$

i)  $x^2 - 10x + 24 = 0$

**Q5** a)  $2x^2 + 7x - 4 = 0$

b)  $3a^2 - a - 2 = 0$

c)  $4x^2 - 11x - 3 = 0$

d)  $4x^2 - 4x - 3 = 0$

e)  $3x^2 - 29x + 18 = 0$

f)  $6x^2 + 13x + 6 = 0$

g)  $5x^2 + 38x - 16 = 0$

h)  $8x^2 + 2x - 15 = 0$

i)  $24x^2 - 73x + 24 = 0$

**Q6** a)  $x^2 = 4$

b)  $3x^2 = 0$

c)  $16 - x^2 = 0$

d)  $r^2 = 3r$

e)  $x^2 + 4x = -3$

f)  $16t - t^2 = 60$

g)  $12 - p^2 = p$

h)  $x(2x - 5) = x^2 - 6$

i)  $(2x+1)(x-6) = x(x-10)$

You may use a calculator to solve the equations in Question 7.

Use the quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  and give each solution correct to 1 decimal place.

**Q7** a)  $x^2 - 7x - 1 = 0$

b)  $2x^2 - x - 2 = 0$

c)  $3n^2 - 8n + 2 = 0$

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

e)  $-a^2 + a + 5 = 0$

f)  $5x^2 + 8x - 3 = 0$

g)  $x^2 + 7x = 2$

h)  $3x^2 = x + 9$

i)  $1 = x + 4x^2$