

1 Solve these quadratic equations by factors.

(a)  $2a^2 - 5a + 3 = 0$

(b)  $5v^2 = v + 4$

(c)  $12 - 19x + 4x^2 = 0$

2 Solve by completing the square.

(a)  $x^2 + 2x = 8$

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

(c)  $2x^2 + 3x = 14$

3 Use the quadratic formula to find the roots of the following, correct to 2 decimal places.

(a)  $10u^2 + 11u - 6 = 0$

(b)  $3t^2 - 19t + 5 = 0$

(c)  $4x^2 = 3(4x + 5)$

4 Show that the roots of the equation  $(k - 2)x^2 - (3k - 2)x + 2k = 0$  are always real.

5 For what values of  $q$  does the equation  $x^2 = q(x - 1)$  have equal roots?

6 The sum of two numbers is 10 and their product is **more than 21**.

(a) Construct an inequation for this information.

(b) Use the inequation to determine the possible interval for the numbers.

7 Calculate the least positive integer value of  $k$  so that the graph of  $y = kx^2 - 8x + k$  does not cut or touch the  $x$ -axis.

