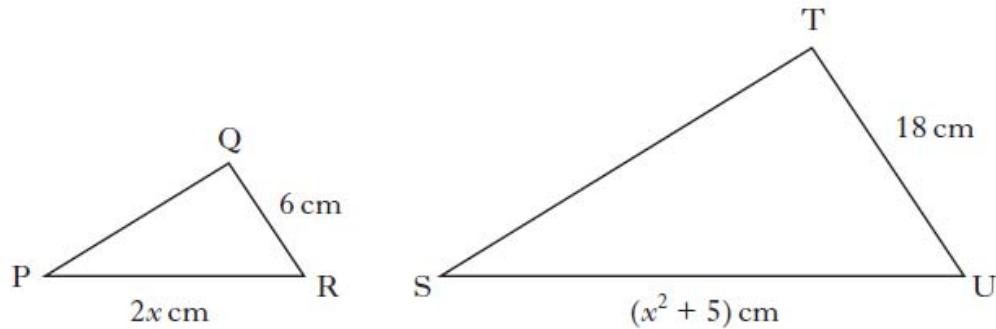# Credit Maths Revision - Factorising and Problem Solving

2012 Paper 2

13. Triangles PQR and STU are mathematically similar.

    The scale factor is 3 and PR corresponds to SU.

    (a) Show that $x^2 - 6x + 5 = 0$.   2RE

    (b) Given QR is the shortest side of triangle PQR, find the value of x.   3RE

2010 Paper 1

4. Two functions are given below.

$$f(x) = x^2 - 4x$$

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

    (a) If $f(x) = g(x)$, show that $x^2 - 6x - 7 = 0$.   2RE

    (b) Hence find **algebraically** the values of x for which $f(x) = g(x)$.   2RE

2009 Paper 1

4. (a) Factorise   1KU

$$x^2 - 4y^2.$$

2009 Paper 2

10. The weight, W kilograms, of a giraffe is related to its age, M months, by the formula   4RE

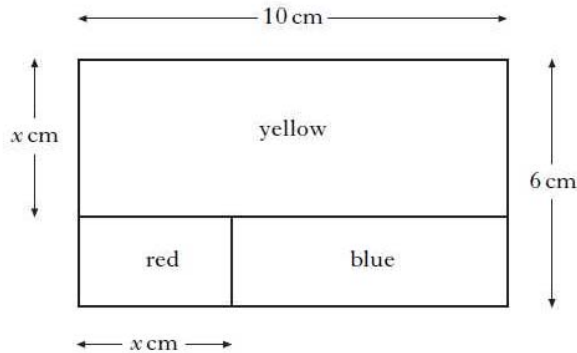$$W = \tfrac{1}{4}\left(M^2 - 4M + 272\right).$$

    At what age will a giraffe weigh 83 kilograms?

2007 Paper 2

11. (a) A decorator's logo is rectangular and measures 10 centimetres by 6 centimetres.

It consists of three rectangles: one red, one yellow and one blue.

The yellow rectangle measures 10 centimetres by x centimetres.

The width of the red rectangle is x centimetres.

Show that the area, A, of the blue rectangle is given by the expression

$$A = x^2 - 16x + 60.$$

2RE

(b) The area of the blue rectangle is equal to $\frac{1}{5}$ of the total area of the logo. Calculate the value of x.

4RE

2006 Paper 1

5. (a) Factorise

$$4x^2 - y^2.$$

1KU

(b) Hence simplify

$$\frac{4x^2 - y^2}{6x + 3y}.$$

2KU

2006 Paper 2

9. The number of diagonals, d, in a polygon of n sides is given by the formula

$$d = \tfrac{1}{2} n (n-3).$$

(a) How many diagonals does a polygon of 7 sides have?
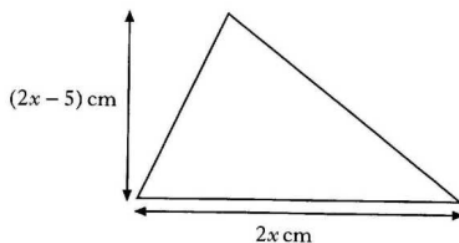
2KU

(b) A polygon has 65 diagonals.

Show that for this polygon, $n^2 - 3n - 130 = 0$.

2RE

(c) Hence find the number of sides in this polygon.

3RE

2005 Paper 1

12. The height of a triangle is $(2x - 5)$ centimetres and the base is $2x$ centimetres.

The area of the triangle is 7 square centimetres.

Calculate the value of x.

5RE