N5 Mathematics

Relationships

Practice Assessment 2

Relationships Assessment Standard 1.1

1 A straight line with gradient -4 passes through the point $(-2, 11)$.

Determine the equation of this straight line in its simplest form. **(2)**

2 Solve the inequation $5p - 16 < p - 3$. **(3)**

3 The Kaiser family visit a new attraction in Dundee.
They paid £ 29·04 for 4 adult tickets and 2 child tickets.

Write an equation to represent this information. **(#2.1)**

4 Solve the following system of equations algebraically :

$$2a + 5b = 15$$
$$a - b = 4$$

(3)

5 This formula is used to convert temperature from degrees Celsius (^{o}C)
to degrees Rømer (^{o}Rø) :

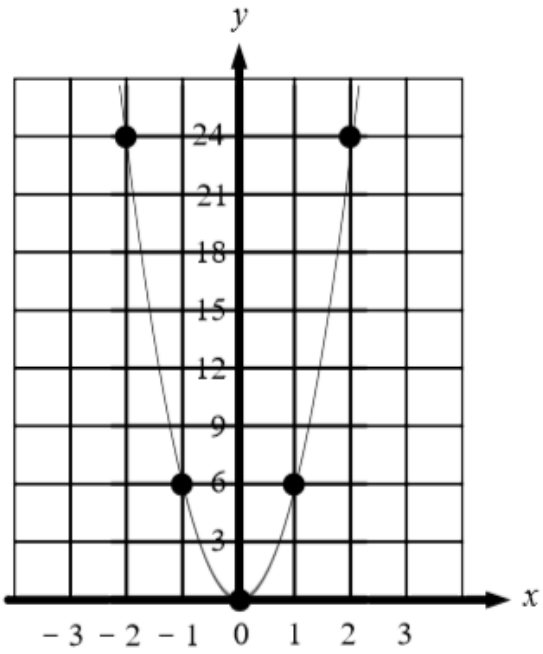
$$\text{Rø} = \frac{21\text{C}}{40} + 7{\cdot}5$$

Change the subject of the formula to C. **(3)**

Relationships Assessment Standard 1.2

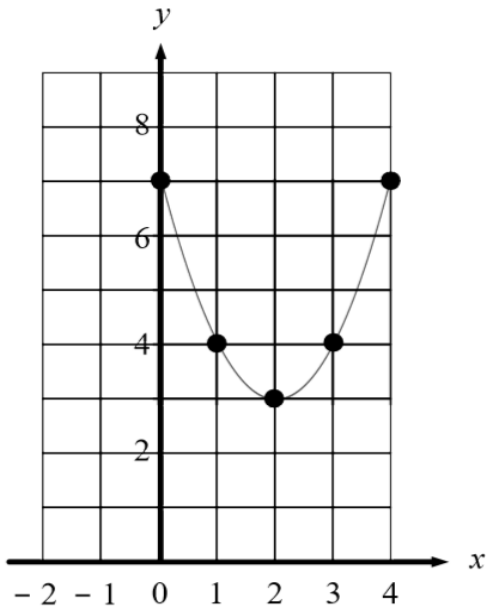
6 The diagram shows the parabola with equation $y = k x^2$.

What is the value of k ? **(1)**



7 The equation of the quadratic function whose graph is shown below is of the form $y = (x + a)^2 + b$, where a and b are integers.

Write down the values of a and b. **(2)**



8 Sketch the graph $y = (x + 7)(x - 3)$ on plain paper.

Mark clearly where the graph crosses the axes and state the coordinates of the turning point. **(3)**

9 A parabola has equation $y = (x - 4)^2 - 1$.

(a) Write down the equation of its axis of symmetry. **(1)**

(b) Write down the coordinates of the turning point on the parabola and state whether it is a maximum or minimum. **(2)**

Relationships Assessment Standard 1.3

10 Solve the equation $(x - 6)(x + 11) = 0$. **(1)**

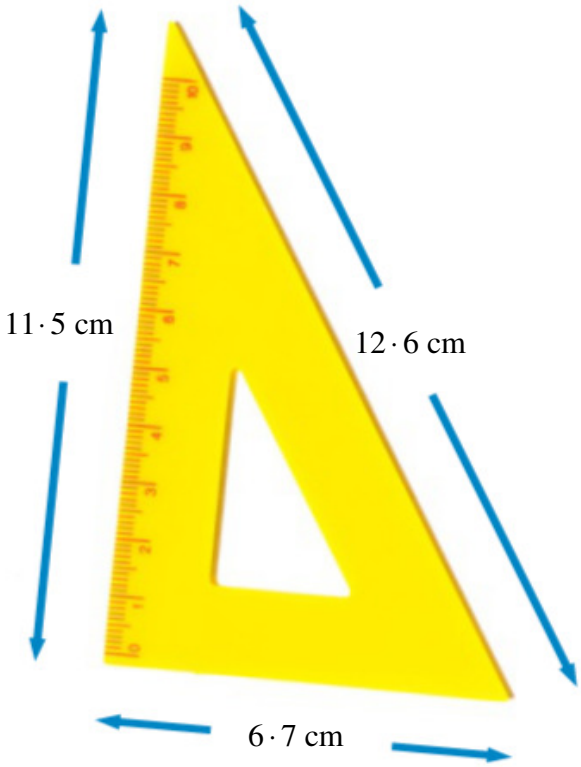
11 Solve the equation $x^2 + 3x - 2 = 0$, giving the roots correct to one decimal place. **(4)**

12 Determine the number of roots of the equation $2x^2 - 4x + 2 = 0$. **(2)**

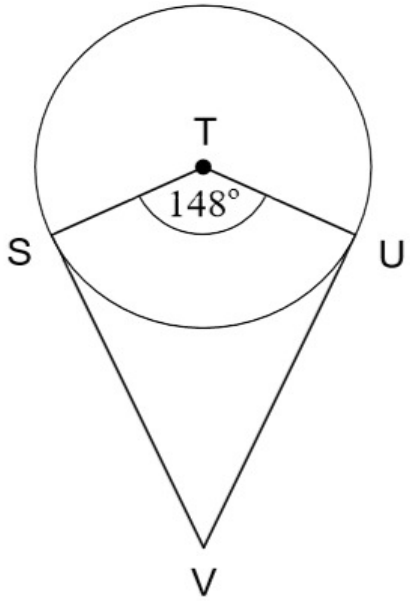
Relationships Assessment Standard 1.4

13 To pass quality control inspections, this set-square must have a perfect right-angle. All necessary measurements are given in the diagram.

Use the Converse of Pythagoras' Theorem to determine whether this set-square passes quality control inspections. **(2 and #$^{2.2}$)**



14 The diagram below shows the design stages of a kite. Kite STUV and a circle with centre T are detailed in the diagram.



SV is the tangent to the circle at S and UV is the tangent to the circle at U.

Given that angle STU is 148^{o}, calculate angle SVU. **(3)**

15 An Olympic torch used in 2004 is 1 000 mm long. The volume of fuel stored in the tank of an Olympic torch is 25 600 cm^3.

A similar version is 125 mm long.

Calculate how much fuel is needed for a miniature Olympic torch. **(3)**

Relationships Assessment Standard 1.5

16 Sketch the graph of $y = 2\sin x^{\circ}$ for $0 \leq x \leq 360$. **(2)**

17 Write down the period of the graph with equation $y = \sin 4x^{\circ}$. **(1)**

18 Solve the equation $6\cos x^{\circ} - 1 = 0$ for $0 \leq x \leq 360$. **(3)**