National 5 Maths Practice Paper E

Paper 1   You may NOT use a calculator

1.   Evaluate
$$2\frac{1}{3}+\frac{5}{6} \text{ of } 1\frac{2}{5}$$
3

2.   Multiply out the brackets and collect like terms.
$$(4x + 2)(x - 5) + 3x$$
3

3.   In an experiment involving two variables, the following values for x and y were recorded.

x	1	2	3	4
y	4	2	0	-2

The results were plotted and a straight line was drawn through the points.

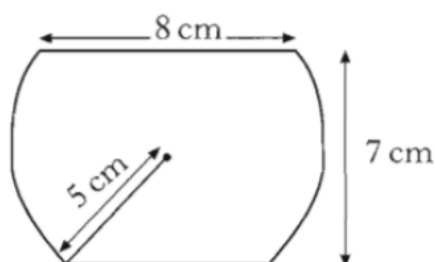Find the gradient of the line **and** write down its equation.
3

4.   Solve the equation
$$\frac{2}{x}+9 = 16$$
3

7.   A badge is made from a circle of radius 5 centimetres.
Segments are taken off the top and bottom of the circle as shown.

The straight edges are parallel.

The badge measures 7 centimetres from the top to the bottom.
The top is 8 centimetres wide.

Calculate the width of the base.
5

8.   Sketch the graph of $y = \sin 2x°$, $0 \le x \le 360$.
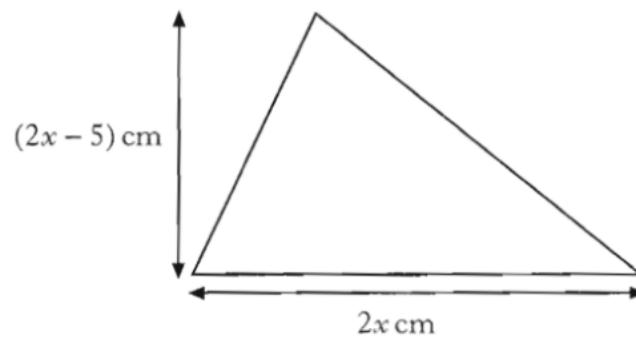3

9. $$f(x) = 4\sqrt{x} + \sqrt{2}$$

(a) Find the value of $f(72)$ as a surd in its simplest form.   3

(b) Find the value of t, given that $f(t) = 3\sqrt{2}$.   3

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

$(2x - 5)\,\text{cm}$

$2x\,\text{cm}$

The area of the triangle is 7 square centimetres.

Calculate the value of x.   5