GCSE Grade 6

Maths Booklet 5

Paper 1H
Non-Calculator

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1 There are p counters in a bag.
12 of the counters are yellow.

Shafiq takes at random 30 counters from the bag.
5 of these 30 counters are yellow.

Work out an estimate for the value of p.

.....

(Total for Question 1 is 2 marks)

2 $T = \frac{q}{2} + 5$

Here is Spencer's method to make q the subject of the formula.

$2 \times T = q + 5$

$q = 2T - 5$

What mistake did Spencer make in the first line of his method?

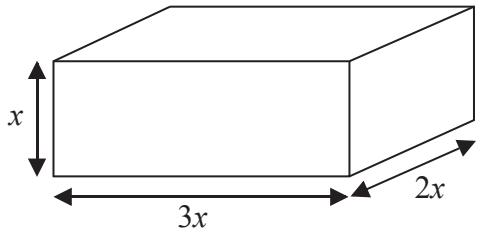
.....

.....

.....

(Total for Question 2 is 1 mark)

3 Here is a cuboid.



All measurements are in centimetres.
x is an integer.
The total volume of the cuboid is less than 900 cm^3

Show that $x \leqslant 5$

(Total for Question 3 is 3 marks)

4 y is inversely proportional to x
When $x = 1.5$, $y = 36$

Find the value of y when $x = 6$

(Total for Question 4 is 3 marks)

5 Jules buys a washing machine.

20% VAT is added to the price of the washing machine.
Jules then has to pay a total of £600

What is the price of the washing machine with **no** VAT added?

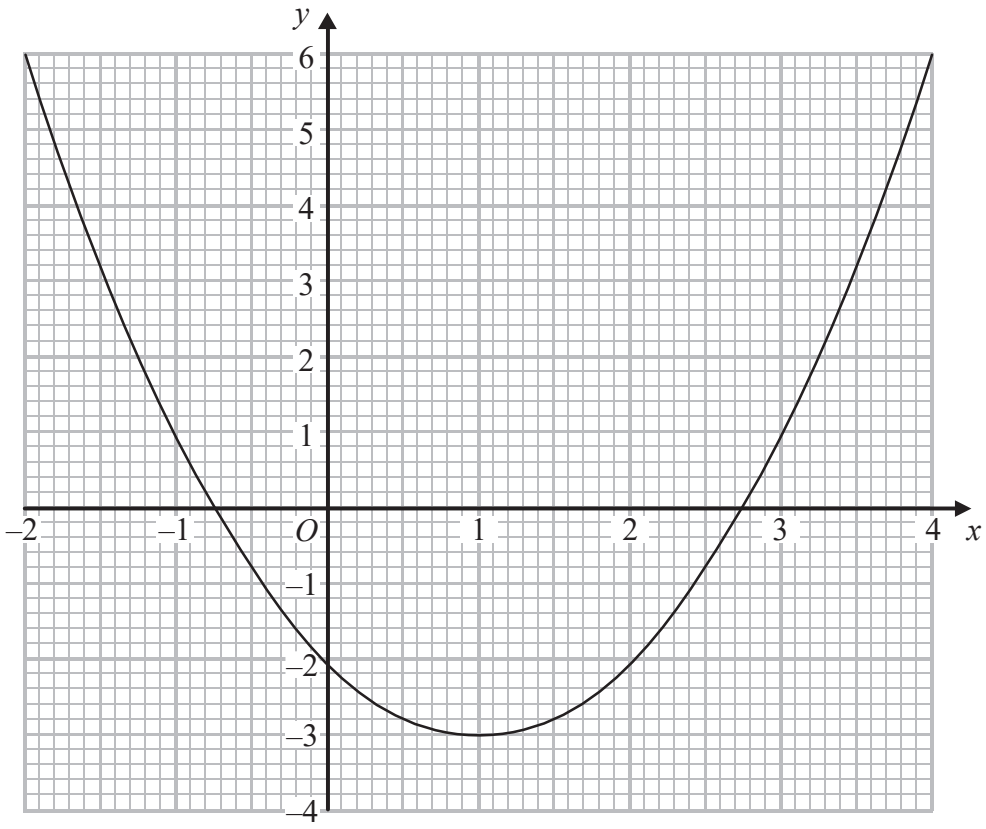
£.....

(Total for Question 5 is 2 marks)

6 Show that $(x + 1)(x + 2)(x + 3)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are positive integers.

(Total for Question 6 is 3 marks)

7 The graph of $y = f(x)$ is drawn on the grid.



(a) Write down the coordinates of the turning point of the graph.

(..... , ...)

(1)

(b) Write down estimates for the roots of $f(x) = 0$

.....

(1)

(c) Use the graph to find an estimate for $f(1.5)$

.....

(1)

(Total for Question 7 is 3 marks)

8 (a) Find the value of $81^{-\frac{1}{2}}$

.....

(2)

(b) Find the value of $\left(\frac{64}{125}\right)^{\frac{2}{3}}$

.....

(2)

(Total for Question 8 is 4 marks)

9 The table shows a set of values for x and y.

x	1	2	3	4
y	9	$2\frac{1}{4}$	1	$\frac{9}{16}$

y is inversely proportional to the square of x.

(a) Find an equation for y in terms of x.

.....

(2)

(b) Find the positive value of x when $y = 16$

.....

(2)

(Total for Question 9 is 4 marks)