Mock Grade 6

Maths Booklet 5

Paper 1H
Non-Calculator

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

Shafiq takes at random 50 counters from the bag.
10 of these 50 counters are yellow.

Work out an estimate for the value of p.

.....

(Total for Question 1 is 2 marks)

2 $T = \frac{q}{3} + 5$

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

$3 \times T = q + 5$

$q = 3T - 5$

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

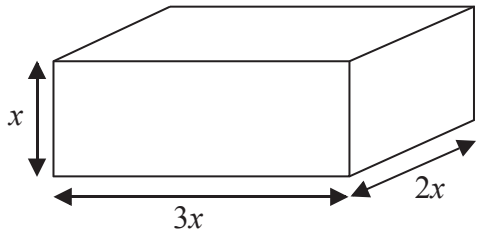
.....

.....

.....

(Total for Question 2 is 1 mark)

3 Here is a cuboid.



All measurements are in centimetres.
x is an integer.
The total surface area of the cuboid is less than 600 cm^2

Show that $x \leqslant 5$

(Total for Question 3 is 4 marks)

4 y is inversely proportional to x
When $x = 2.5$, $y = 24$

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 £480

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

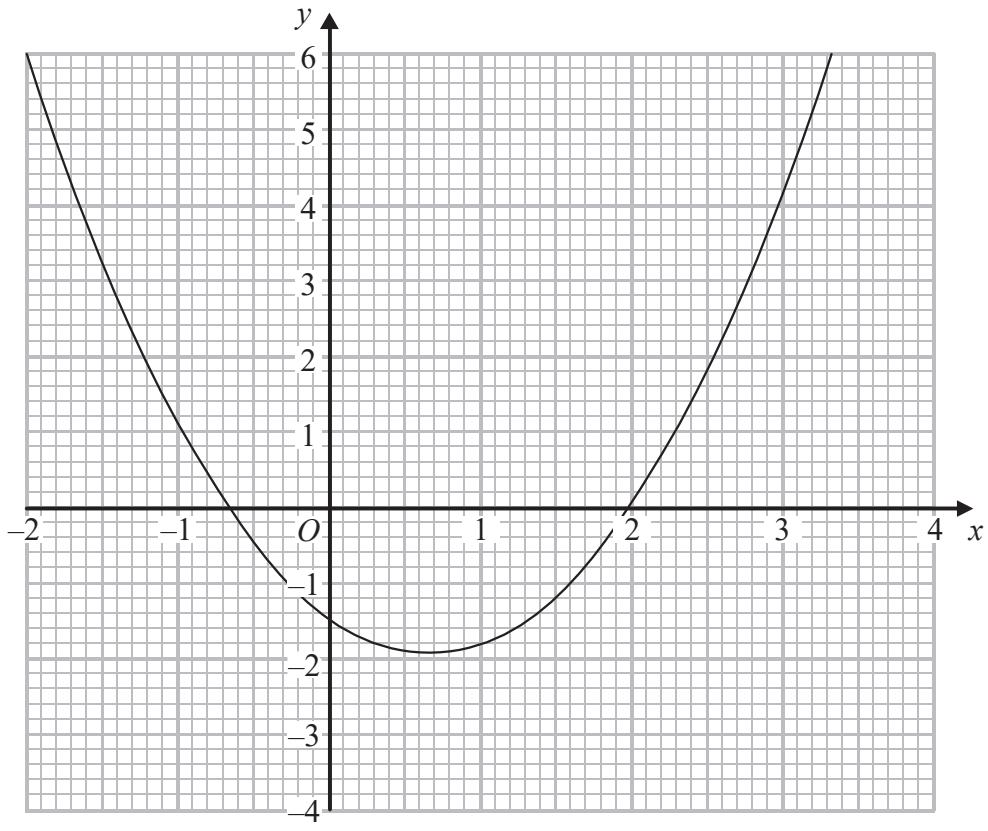
£.....

(Total for Question 5 is 2 marks)

6 Show that $(x + 2)(x + 2)(x + 4)$ 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 $f(0.5)$

.....

(1)

(Total for Question 7 is 3 marks)

8 (a) Find the value of $64^{-\frac{2}{3}}$

.....

(2)

(b) Find the value of $\left(\frac{27}{8}\right)^{\frac{2}{3}}$

.....

(2)

(Total for Question 8 is 4 marks)

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

x	1	2	3	4
y	12	$\frac{3}{2}$	$\frac{4}{9}$	$\frac{3}{16}$

y is inversely proportional to the cube of x.

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

.....

(2)

(b) Find the value of x when $y = 1.5$

.....

(2)

(Total for Question 9 is 4 marks)