ST EDWARD'S
OXFORD

13+ ENTRANCE EXAMINATION

For entry in
September 2016

Mathematics

Time: 1 hour

Candidates Name: ……

Instructions to Candidates

- 100 Marks
- Calculators are allowed

1. Richard paid 56p for 7 pencils.
The cost of each pencil was the same.
Work out the cost of 4 of these pencils.

..... p
(Total 2 marks)

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2. (a) Work out the value of $(2 + 3) \times 4 + 5$

……
(1)

(b) Add brackets ( ) to make each statement correct.
You may use more than one pair of brackets in each statement.

(i) $2 + 3 \times 4 + 5 = 29$

(ii) $2 + 3 \times 4 + 5 = 45$

(2)
(Total 3 marks)

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3. A student bought a pair of sunglasses in the USA.
He paid $35.50
In England, an identical pair of sunglasses costs £26.99
The exchange rate is £1 = $1.42

In which country were the sunglasses cheaper, and by how much?
Show all your working.

.....

(Total 3 marks)

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4. Simon spent $\frac{1}{3}$ of his pocket money on a computer game.

He spent $\frac{1}{4}$ of his pocket money on a ticket for a football match.

Work out the fraction of his pocket money that he had left.

.....

(Total 3 marks)

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5. Alistair sells books.

He sells each book for £7.60 plus VAT at 17 $\frac{1}{2}$ %.

He sells 1650 books.
Work out how much money Alistair receives.

£.....

(Total 4 marks)

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6. Write these numbers in order of size.
Start with the smallest number.

(i) 0.56, 0.067, 0.6, 0.65, 0.605

.....

(ii) 5, – 6, – 10, 2, – 4

.....

(iii) $\frac{1}{2}, \frac{2}{3}, \frac{2}{5}, \frac{3}{4}$

.....

(Total 4 marks)

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7. (a) A school has 1200 pupils.
575 of these pupils are girls.

$\frac{2}{5}$ of the girls like sport.

$\frac{3}{5}$ of the boys like sport.

Work out the total number of pupils in the school who like sport.

……..

(3)

(b) Show that $\frac{2}{3} + \frac{3}{5} = 1\frac{4}{15}$

……

(2)

(c) Show that $\frac{4}{5} \times \frac{3}{8} = \frac{3}{10}$

……

(2)

(Total 7 marks)

8. There are 800 students at Prestfield School.

45% of these 800 students are girls.

(a) Work out 45% of 800

.....

(2)

There are 176 students in Year 10.

(b) Write 176 out of 800 as a percentage.

.....%

(2)

(Total 4 marks)

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9. (a) Solve $3x - 2 = 22$

$x =$ .....

(2)

(b) Solve $20y - 16 = 18y - 9$

$y =$ .....

(3)

(Total 5 marks)

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10. (a) Simplify

(i) $3g + 5g$

.....

(ii) $2r \times 5p$

.....

(2)

(b) Expand $5(2y - 3)$

.....

(1)

(c) Expand and simplify

$2(3x + 4) - 3(4x - 5)$

.....

(2)

(Total 5 marks)

11. (a) Simplify

$8x + 5y - 3x + y$

……

(2)

(b) Solve

$2x - 5 = 4$

$x =$ ……

(2)

(c) Factorise

$3m + 15$

……

(1)

(Total 5 marks)

12. Simplify

(i) $p^2 \times p^7$

……

(ii) $x^8 \div x^3$

……

(Total 2 marks)

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13. (a) Work out the value of $3p + 4q$ when $p = 5$ and $q = -2$

……

(2)

(b) Given that $y = 4x - 3$, work out the value of x when $y = 11$

$x =$ ……

(3)

(c) Multiply out $7(n - 3)$

……

(1)

(d) Factorise $t^2 - 5t$

……

(2)

(Total 8 marks)

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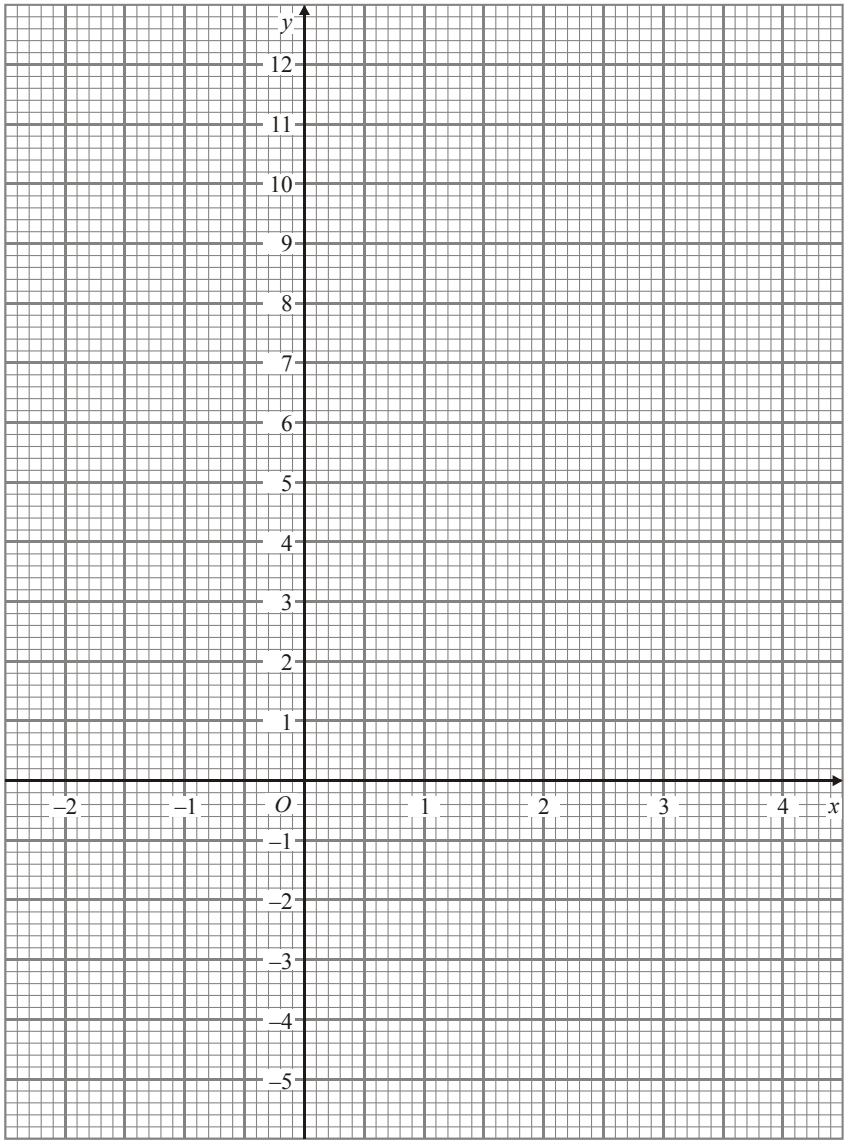
14. (a) Complete the table for $y = x^2 - 3x + 1$

x	–2	–1	0	1	2	3	4
y	11		1	–1		1	5

(2)

(b) On the grid below, draw the graph of $y = x^2 - 3x + 1$

(2)



(c) Use your graph to find an estimate for the minimum value of y.

$y =$ .....

(1)

(Total 5 marks)

15.

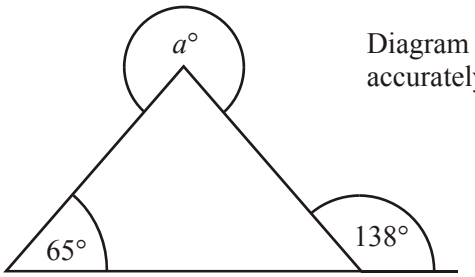


Diagram **NOT** accurately drawn

Work out the value of a.

a = ...

(Total 3 marks)

16.

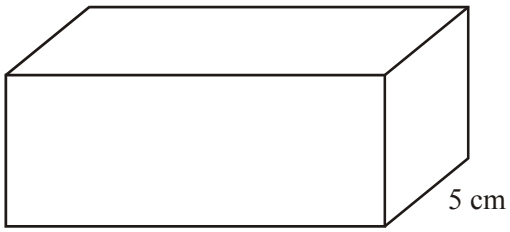


Diagram **NOT** accurately drawn

The volume of a solid cuboid is 140 cm^3.
The length of the cuboid is 8 cm.
The width of the cuboid is 5 cm.

(a) Work out the height of the cuboid.

..... cm

(Total 2 marks)

17.

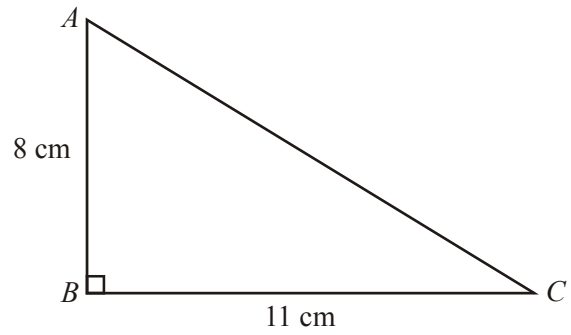


Diagram **NOT** accurately drawn

ABC is a right-angled triangle.

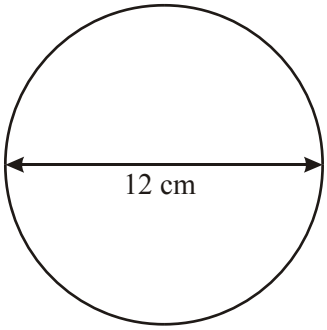
AB = 8 cm,
BC = 11 cm.

Calculate the length of *AC*.
Give your answer correct to 3 significant figures.

…… cm

(Total 3 marks)

18.



Calculate the area of a circle with diameter 12 cm.

……..

(Total 3 marks)

19.

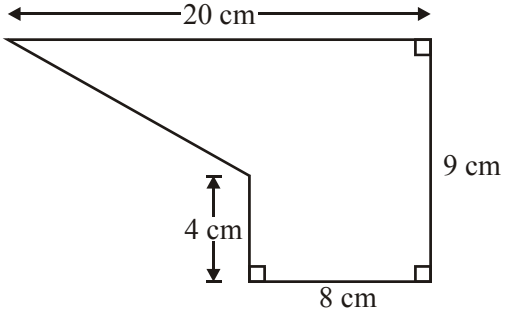


Diagram **NOT** accurately drawn

The diagram shows a shape.
Work out the area of the shape.

…… cm^2

(Total 4 marks)

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20. Here are the test marks of 6 girls and 4 boys.

Girls:	5	3	10	2	7	3
Boys:	2	5	9	3		

(a) Write down the mode of the 10 marks.

……

(1)

(b) Work out the range of the **girls'** marks.

……

(1)

(c) Work out the mean mark of all 10 students.

……

(2)

(Total 4 marks)

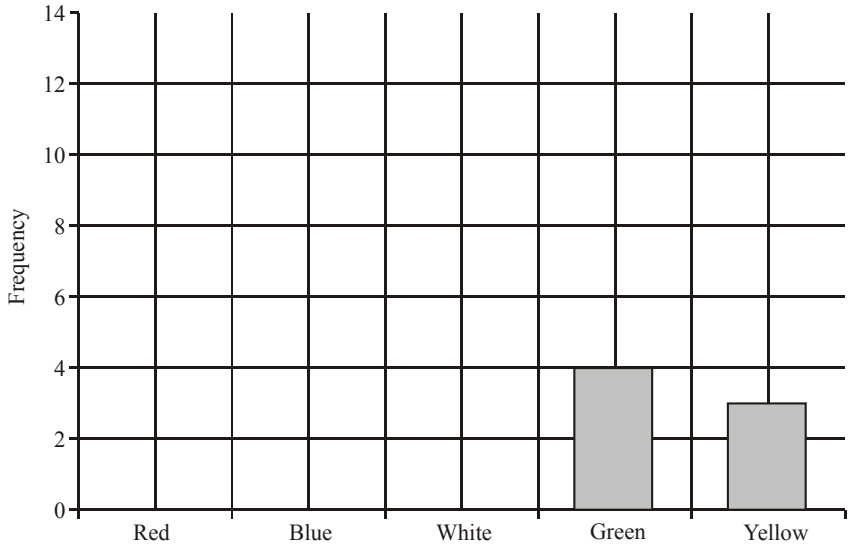
21. Simon did an investigation into the colours of shirts worn by some football teams.
He recorded the colour of the shirts for each team.
There were only five different colours.
Simon then drew a frequency table and a bar chart.
Part of Simon's frequency table is shown below.

Colour	Tally	Frequency
Red	𝍸 𝍸 ||	…….
Blue	𝍸 |||	…….
White	𝍸	……..

(a) Complete the frequency column for the three colours in Simon's frequency table.

(2)

Part of Simon's bar chart is shown below.



(b) Complete the bar chart for the colours Red, Blue and White.

(2)

(c) Which colour was the mode for the shirts of the football teams in Simon's investigation?

……

(1)

(d) Work out the number of football teams in Simon's investigation.

……...

(1)
(Total 6 marks)

22. Mary recorded the heights, in centimetres, of the girls in her class.

She put the heights in order.

132	144	150	152	160	162	162	167
167	170	172	177	181	182	182	

(a) Find

(i) the lower quartile,

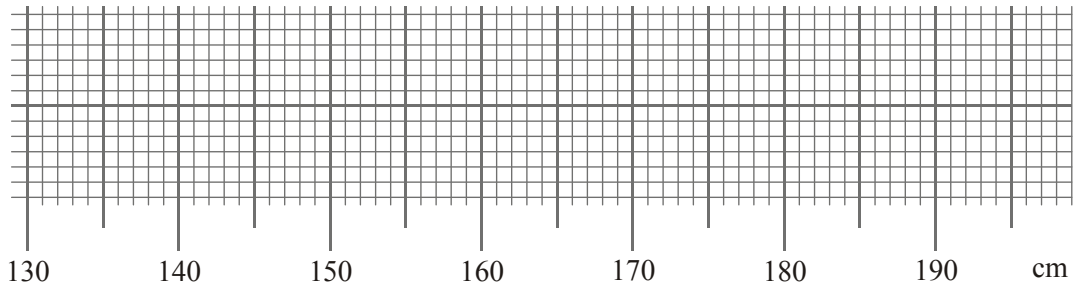
..... cm

(ii) the upper quartile.

..... cm

(2)

(b) On the grid, draw a box plot for this data.



(3)

(Total 5 marks)

End of Paper