ST EDWARD'S

OXFORD

14+ ENTRANCE EXAMINATION
2014

MATHEMATICS

1 hour

Name: _____

There are 60 marks available.

Calculators are allowed.

Show all of your working on the paper – answers without working may not get full marks.

1.

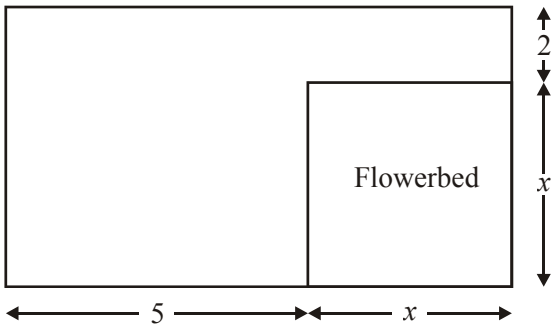


Diagram **NOT** accurately drawn

The diagram represents a garden in the shape of a rectangle.
All measurements are given in metres.
The garden has a flowerbed in one corner.
The flowerbed is a square of side x.

(a) Write down an expression, in terms of x, for the shortest side of the garden.

.....

(1)

(b) Find an expression, in terms of x, for the perimeter of the garden.
Give your answer in its simplest form.

.....

(2)

The perimeter of the garden is 20 metres.

(c) Find the value of x.

.....

(2)

(d) Determine a simplified expression for the area of the entire garden.

.....

(3)

(Total 8 marks)

2. Here are the first four terms of a number sequence

6 10 14 18

(a) Write down the next term in the sequence

(b) Explain why 101 is not a term in the sequence

(Total 2 marks)

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3. (a) Express the following numbers as products of their prime factors.

(i) 60

……

(ii) 126

……

(4)

(Total 4 marks)

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4. A school has **960** pupils. **420** of these pupils are girls.

$\frac{2}{7}$ of the girls have travelled to a foreign country.

$\frac{10}{27}$ of the boys have travelled to a foreign country.

Work out the total number of pupils in the school who have travelled to a foreign country.

……..

(Total 3 marks)

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5. Change 6 km^3 to m^3

…… dam^3

(Total 2 marks)

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6. Afiq bought a car for £5600. Each year the car depreciated by 15%.

Work out its value two years after he bought it.

£ ……

(Total 3 marks)

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7. The two-way table shows some information about the numbers of students on a school trip.

	Year 10	**Year 11**	**Year 12**	**Total**
Girls	15		12	44
Male		22		
Total			28	100

(a) Complete the two-way table.

(2)

One of these students is to be picked at random.

(b) Write down the probability that the student picked is in Year 11.

……

(1)

(Total 3 marks)

---

8. (a) Simplify

(i) $3e + f - 2e + 9f + 7e$

.....

(ii) $8p^2 - 3p^2 + 7p^2$

.....

(2)

(b) Work out the value of $8x - 3$ when $x = -7$

.....

(2)

(Total 4 marks)

---

9. (a) Write 9.78×10^3 as an ordinary number.

.....

(1)

(b) Write the number 0.00679 in standard form.

.....

(1)

(Total 2 marks)

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10. The cost, in pounds, of renting a certain item can be worked out using this rule.

Add 5 to the number of days' rental
Multiply your answer by 8

The cost of renting the item for x days is T pounds.

Write down a formula for T in terms of x.

.....

(Total 3 marks)

---

11. (a) Solve $8p + 3 = 3p + 12$

p = ...

(2)

(b) Solve $14x - 2 = 2(3x - 7)$

x = ...

(2)

(c) Solve $\frac{21 - 4x}{5} = -8$

x = ...

(3)

(d) Factorise $x^2 + 7x + 10$

.....

(2)

(f) Factorise $5(a+b)^2 - 2(a+b)$

.....

(1)

(Total 10 marks)

12.

The diagram shows a 5-sided shape.

All the sides of the shape are equal in length.

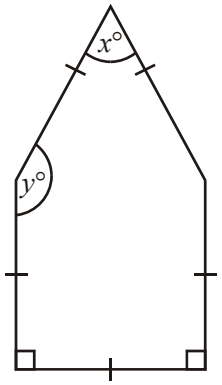


Diagram **NOT** accurately drawn

(a) (i) Find the value of x.

x = ……..

(ii) Give a reason for your answer.

…….

(2)

(b) Work out the value of y.

y = ……..

(2)

(Total 4 marks)

13. In a sale all the prices are reduced by 23%. In the sale Katie pays £17.13 for a purse.

Calculate the original price of the purse.

£.....

(Total 3 marks)

14.

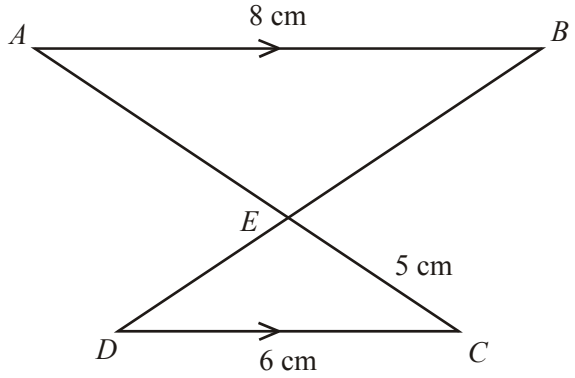


Diagram **NOT** accurately drawn

AB is parallel to *DC*.
The lines *AC* and *BD* intersect at *E*.
AB = 8 cm *EC* = 5 cm *DC* = 6 cm

(a) Explain why triangle *ABE* and triangle *CDE* are similar.

……..

……..

……..

(2)

(b) Calculate the length of *AC*.

…….. cm

(3)

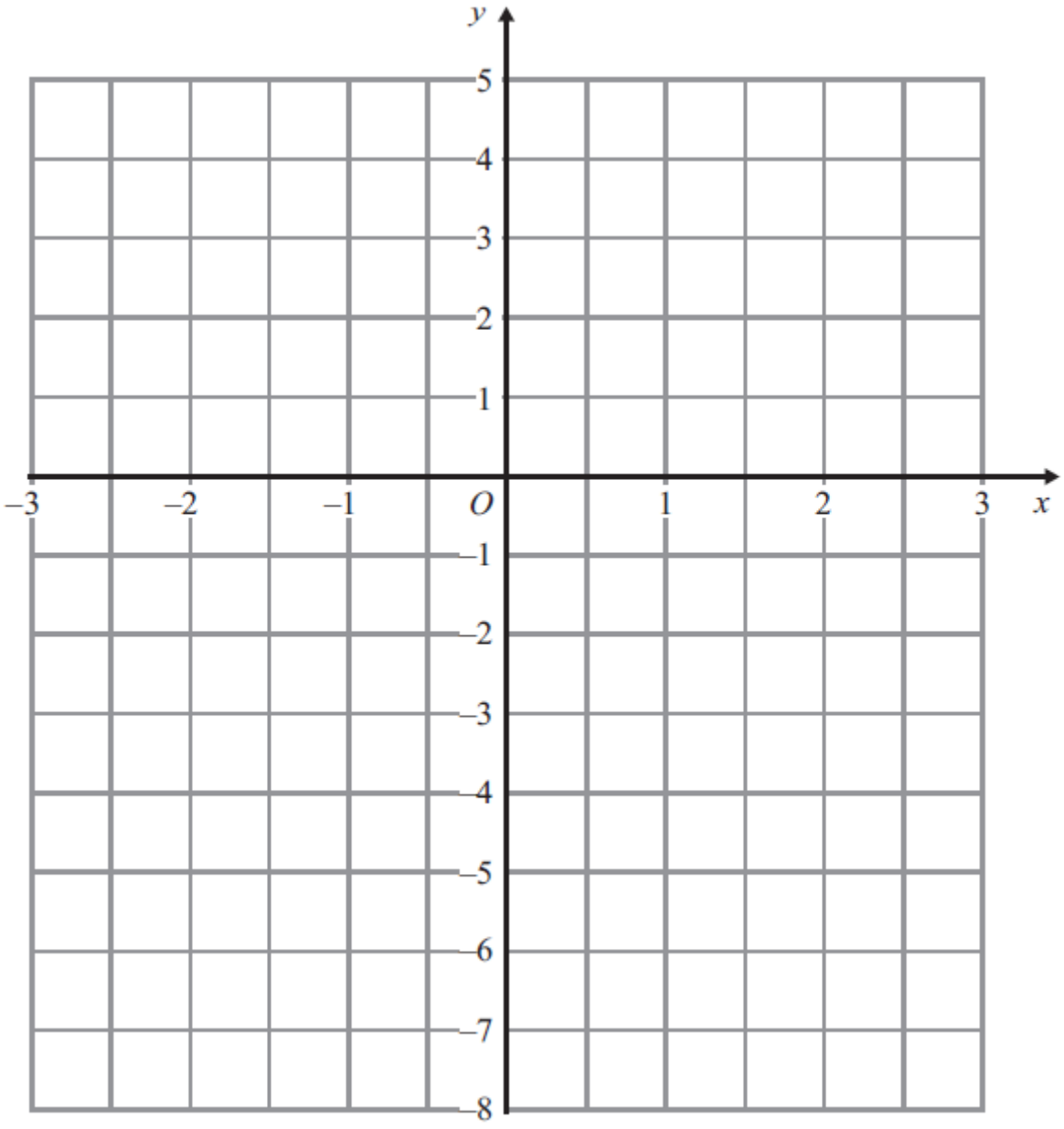
(Total 5 marks)

15. (a) Complete the table of values for $y = 3x + 1$

x	–2	–1	0	1	2
y			1		

(2)

(b) On the grid, draw the graph of $y = 3x + 1$ over the interval $-2 \leq x \leq 1$



(2)
(Total 4 marks)

END OF TEST