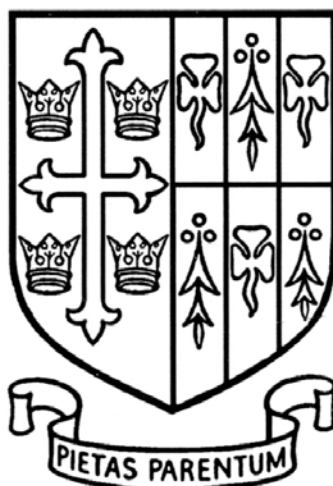


# ST EDWARD'S OXFORD



## 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.

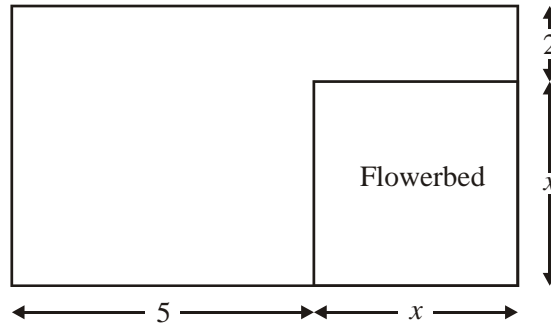


Diagram **NOT** accurately drawn

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

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**(Total 2 marks)**

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  $6 \text{ km}^3$  to  $\text{m}^3$

.....  $\text{dam}^3$

**(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)**

---

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  $9.78 \times 10^3$  as an ordinary number.

.....

(1)

(b) Write the number 0.00679 in standard form.

.....

(1)

(Total 2 marks)

---

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  $8p + 3 = 3p + 12$

$p = \dots\dots\dots$  (2)

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

$x = \dots\dots\dots$  (2)

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

$x = \dots\dots\dots$  (3)

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

$\dots\dots\dots$  (2)

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

$\dots\dots\dots$  (1)

(Total 10 marks)

12.

The diagram shows a 5-sided shape.

All the sides of the shape are equal in length.

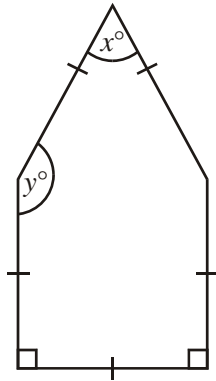


Diagram **NOT**  
accurately drawn

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

$$x = \dots\dots\dots$$

(ii) Give a reason for your answer.

.....

(2)

(b) Work out the value of  $y$ .

$$y = \dots\dots\dots$$

(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.

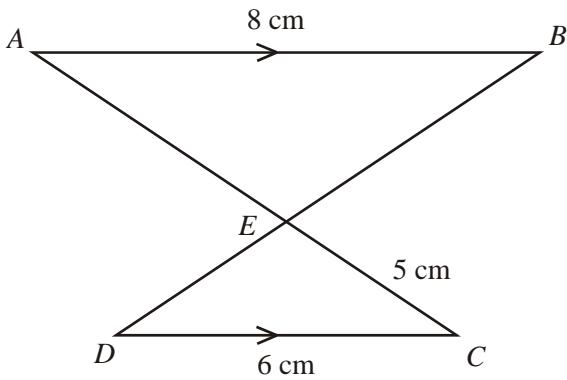


Diagram **NOT** accurately drawn

$AB$  is parallel to  $DC$ .  
The lines  $AC$  and  $BD$  intersect at  $E$ .  
 $AB = 8 \text{ cm}$     $EC = 5 \text{ cm}$     $DC = 6 \text{ cm}$

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

.....  
.....  
.....

(2)

- (b) Calculate the length of  $AC$ .

..... cm

(3)

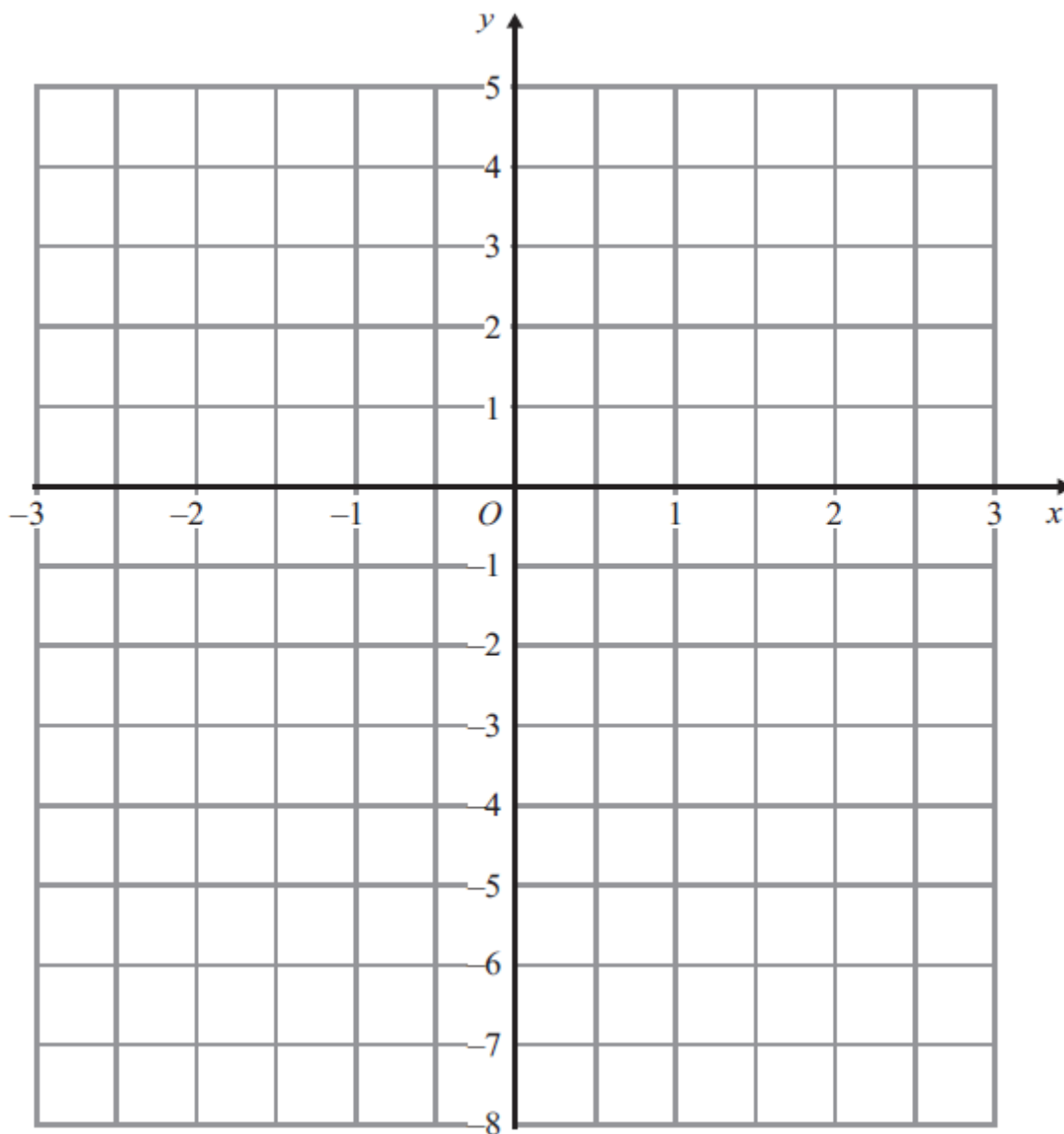
(Total 5 marks)

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