

**ST EDWARD'S
OXFORD**



**13+ ENTRANCE EXAMINATION
2013**

MATHEMATICS

1 hour

Name: _____

There are 60 marks available.

Calculators are not allowed.

Write all answers, including your workings, in this booklet.

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

1. Work out the following.

3.6×9

.....

1 mark

$3.6 \div 9$

.....

1 mark

2. Work out 561×34

.....

2 marks

3. (a) John spends **£12.30** each day on taxis. In a cycle of **56** working days, how much

does he spend? Show your working.

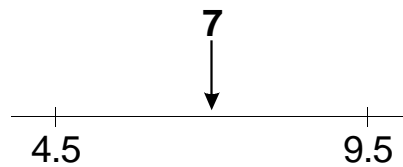
£

2 marks

(b) Karen calculates how much she spends on clothes after **36 weeks**. It comes to a total of **£540**. How much is that per week?

£

1 mark



4. The number 7 is halfway between 4.5 and 9.5

The number 7 is halfway between **5.8** and

1 mark

The number 7 is halfway between **-18** and

1 mark

5. Write each expression in its simplest form.

$$8 + 5a + 6a$$

.....

1 mark

$$k + 12 + 3k + 9$$

.....

1 mark

6. Fill in the missing numbers.

$$\frac{1}{2} \text{ of } 30 = \frac{1}{4} \text{ of }$$

1 mark

$$\frac{3}{4} \text{ of } 240 = \frac{1}{2} \text{ of }$$

1 mark

$$\frac{1}{3} \text{ of } 36 = \frac{2}{3} \text{ of }$$

1 mark

7. Solve these equations.

$$6k + 3 = 27$$

$$k = \dots\dots\dots$$

1 mark

$$8 + 3x = 2x - 5$$

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

2 marks

$$3(4n + 2) = 36$$

$$n = \dots\dots\dots$$

2 marks

$$\frac{4(3y - 4)}{25} = 2$$

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

2 marks

8. (a) A cake is cut by three friends: Sam, Adam, and Kate.

Sam cuts $\frac{1}{3}$ of the cake

Adam cuts $\frac{1}{6}$ of the cake

Kate cuts $\frac{1}{12}$ of the cake

In total, what **fraction** of the cake do the three friends cut?
Show your working.

2 marks

(b) Cost of $\frac{1}{32}$ cake = £1.50

Carl buys $\frac{5}{16}$ of a cake. How much does he pay?

£

1 mark

9.

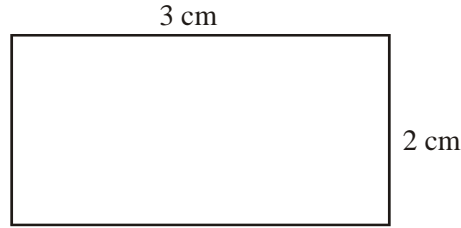


Diagram **NOT** accurately drawn

(a) Work out the area of the rectangle

..... cm²

1 mark

The rectangle is enlarged by a scale factor 2.

(b) Work out the area of the enlarged rectangle.

..... cm²

1 mark

10.

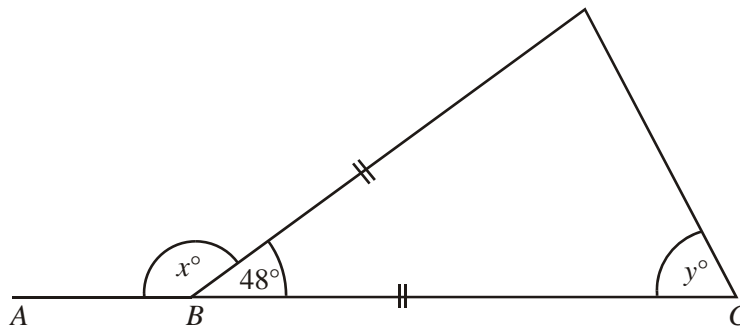


Diagram **NOT** accurately drawn

ABC is a straight line.

(a) Work out the size of the angle marked x° .

.....°

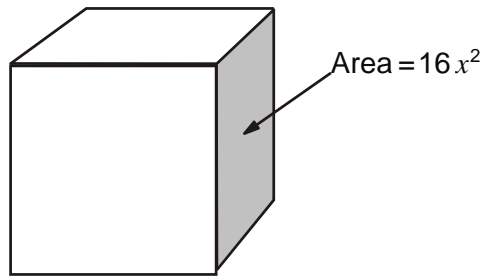
1 mark

(b) (i) Work out the size of the angle marked y° .

.....°

1 mark

11. The area of a **face** of this cube is $16x^2$



Write an expression for the **total surface area** of the cube. Write your answer as simply as possible.

.....

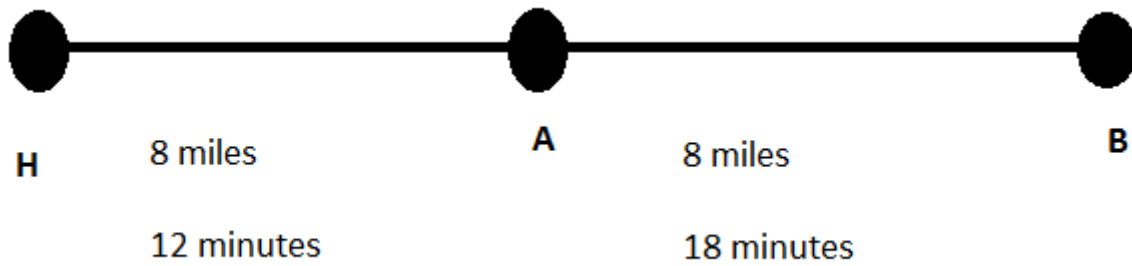
2 mark

12. Work out the **number** that is halfway between 35×46 and 41×46 . Show your working.

.....

2 marks

13. The diagram shows the distance between my home, **H**, and two towns, **A** and **B**.
It also shows information about journey times.



- (a) What is the average speed of the journey from my home to **town A**?

..... miles per hour

1 mark

- (b) What is the average speed of the journey from my home to **town B**?

..... miles per hour

1 mark

- (c) I drive from town A to my home and then to town B. If the total journey time is now 45 minutes. What is my average speed? Show your working.

..... miles per hour

2 marks

14. (a) m is an **even** number. Which of the numbers below must be even, and which must be odd? Write 'odd' or 'even' under each one.

$2m-1$

$(m+1)^2$

$5m+1$

$(2m-1)(m+1)$

2 marks

- (b) m is a prime number. Is the number $\frac{m+1}{2}$ odd, or even, or is it not possible to tell?

Tick (✓) the correct box.

odd	
-----	--

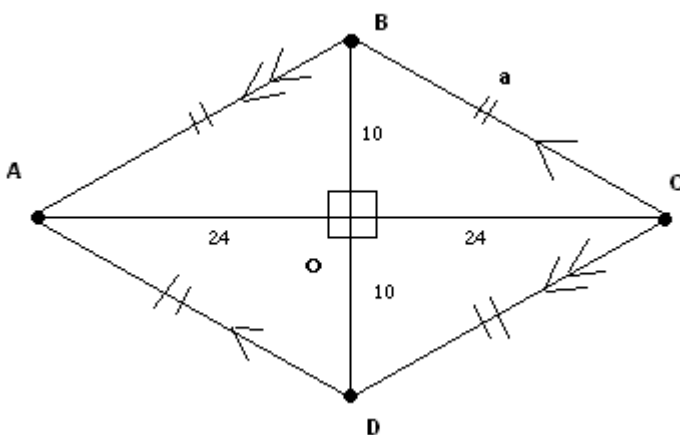
even	
------	--

not possible to tell	
----------------------	--

Explain your answer.

1 mark

15. The diagram shows a **rhombus ABCD**. Show how the length of BC is calculated. You do not need to evaluate the final answer.



$BC = \dots\dots\dots$

16. To make 6 cups of cooked rice takes

2 cups of rice grains

4 cups of water

0.25 cups of butter

How much cooked rice would be made if you used 3.5 cups of rice grains?

2 marks

17. (a) Circle the **best** estimate of the answer to $96.18 \div 7.94$

8 9 10 11 12 13

1 mark

(b) Circle the **best** estimate of the answer to 45.8×0.54

4.7 9.4 23 46 230 460

1 mark

(c) **Estimate** the answer to $\frac{7.64 + 27.8}{6.41}$. Give your answer to **1 significant figure**.

.....

1 mark

(d) **Estimate** the answer to $\frac{46.27 \times 56.19}{7.93 \times 8.11}$

.....

1 mark

18. (a) Draw lines to match each n th term rule to its number sequence.

nth term	Number Sequence
$6n$	6, 22, 46, 78, ...
$(2n+1)^2 - 3$	6, 12, 22, 36, ...
$n(n+5)$	6, 12, 18, 24, ...
$2n^2 + 4$	6, 14, 24, 36, ...

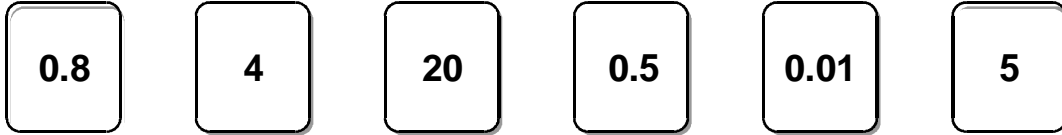
2 marks

(b) Write the **first three** terms of the number sequence using the n th term rule below.

$n^3 - 6$ _____ _____ _____

2 marks

19. Look at these number cards.



(a) Choose two of the cards to give the **lowest possible answer**.

$$\square \times \square = \dots\dots\dots$$

2 marks

(b) Choose two of the cards to give the answer **40**

$$\square \div \square = 40$$

1 mark

20. Work out

$$\frac{6 \times 7 \times 8 \times 9 \times 10}{6 \times 7 \times 8} = \dots\dots\dots$$

1 mark

$$\frac{(6 \times 7 \times 8 \times 9 \times 10)^2}{(6 \times 7 \times 8)^2} = \dots\dots\dots$$

1 mark

21. What is $\frac{1}{4}$ of 6^3 :

.....

1 mark

22. a) Find the values of a and b when $p = 4$.

$$a = \frac{5p^3}{2} \qquad b = \frac{3p^2(p-3)}{8p}$$

$a = \dots\dots\dots$

1 mark

$b = \dots\dots\dots$

1 mark

b) Simplify this expression as fully as possible:

$$\frac{4c^2d^3}{12cd^4}$$

1 mark

END OF TEST