ST EDWARD'S
OXFORD

SES ENTRANCE EXAM 2013-14

Maths 13+

1 hour

Maximum 60 marks

NO CALCULATOR

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 ÷ 9

.....

1 mark

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2. Work out 561 × 34

.....

2 marks

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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.

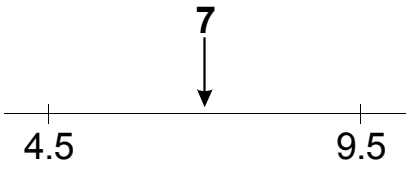
£

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

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5. Write each expression in its simplest form.

$8 + 5a + 6a$

.....

1 mark

$k + 12 + 3k + 9$

.....

1 mark

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6. Fill in the missing numbers.

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

1 mark

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

1 mark

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

1 mark

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7. Solve these equations.

$6k + 3 = 27$

k = ...

1 mark

$8 + 3x = 2x - 5$

x = ...

2 marks

$3(4n + 2) = 36$

n = ...

2 marks

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

y = ...

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.

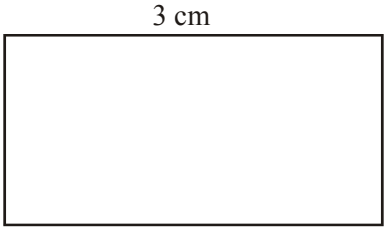


Diagram **NOT** accurately drawn

(a) Work out the area of the rectangle

…… cm^2

1 mark

The rectangle is enlarged by a scale factor 2.

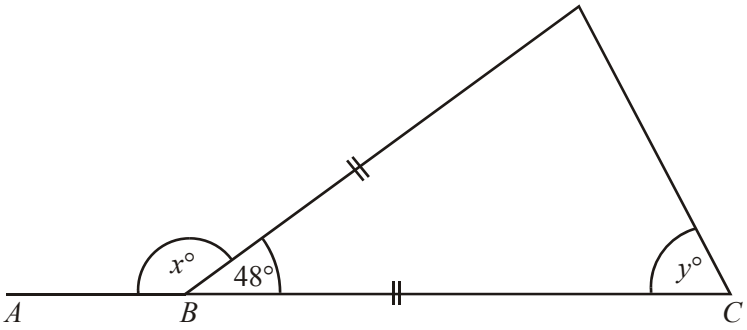
(b) Work out the area of the enlarged rectangle.

…… cm^2

1 mark

10.

Diagram **NOT** accurately drawn



ABC is a straight line.

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

……°

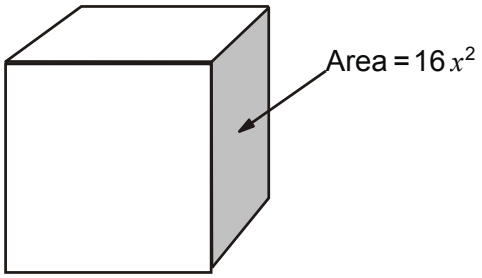
1 mark

(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

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

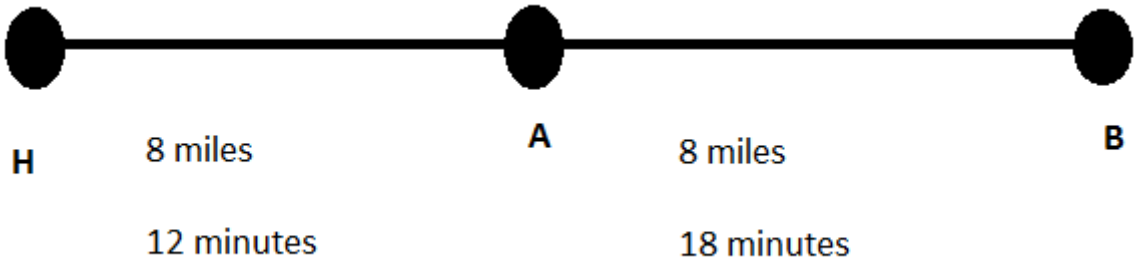
.....

2 marks

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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.

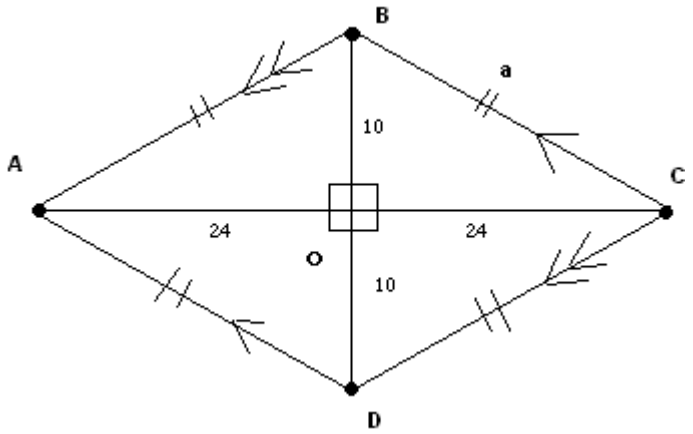
odd		even		not possible to tell	

Explain your answer.

1 mark

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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 = ...

2 marks

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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

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17. (a) Circle the **best** estimate of the answer to **96.18 ÷ 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 $\frac{46.27\times56.19}{7.93\times8.11}$

.....

1 mark

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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.

0.8	4	20	0.5	0.01	5

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

☐ × ☐ = ...

2 marks

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

☐ ÷ ☐ = 40

1 mark

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20. Work out

$$\frac{6\times7\times8\times9\times10}{6\times7\times8} =$$ .....

1 mark

$$\frac{(6\times7\times8\times9\times10)^2}{(6\times7\times8)^2} =$$ .....

1 mark

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

.....

1 mark

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

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

a = ...

1 mark

b = ...

1 mark

b) Simplify this expression as fully as possible:

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

1 mark

END OF TEST