ST EDWARD'S OXFORD

Maths

14+ ENTRY INTO YEAR 10 ENTRANCE EXAM

2012

Name: _____

There are 60 marks available.

Calculators are NOT allowed.

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

Time allowed: 1 hour

1. Put these numbers in order, smallest first: $\frac{1}{4}$ 0.8 $\frac{3}{20}$

....

[2]

2. Work out the following.

a) $\frac{3}{10} \times \frac{5}{7}$

.....

b) $\frac{5}{8} + \frac{3}{4}$

.....

c) $1\frac{1}{3} - \frac{1}{5}$

.....

d) $\frac{b}{a} \div \frac{c}{2a}$

.....

[8]

3 In her first IGCSE mathematics test, Lina was given 17 marks out of 25.
In her second test she gained 71%. In which test did she do better (you must show workings).

.....

[2]

3 Put these numbers in order, smallest first:

5^2 3^2 3^3 2^4

....

[2]

(b) 5^5 is 3125. What is 5^7?

..... [2]

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4. Solve these equations.

a) $7k - 1 = 20$

k = ...

[1]

b) $3(m + 1) = 60$

m = ...

[2]

c) $2t - 3 = t - 5$

t = ...

[2]

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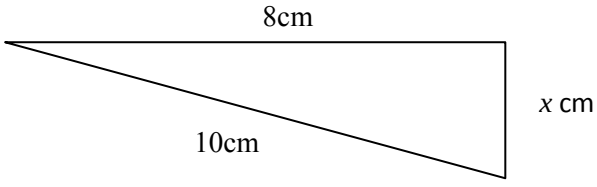
5. Find the length marked x.



x = ...cm.

[2]

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6. Evaluate the following expressions with a = 3 and b = - 2

a) a + b

…… [1]

b) ab

…… [1]

c) $(a - b)^2$

…… [1]

d) b^a

…… [2]

7. A car travels at 24 km/hour. How far does it travel in 25 minutes? Give your answer in km.

…….

[3]

8. Anna, Bertie and Chris split £240 between them in the ratio 1:2:3. How much does each get?

Anna: …… Bertie: ……..…… Chris: …….

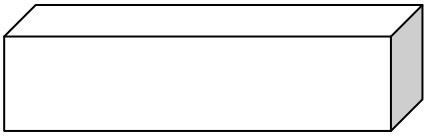
Explain why they cannot split the money exactly if they use the ratios 2:2:3?

[3]

9. a) What is the volume of a cube with side length 5cm?

…….[1]

b) This cube has a square cross-sectional area and is three times as long as it is wide. The volume is 192 cm^3. What is the surface area?



…… [3]

10. Simplify the following expressions:

a) $\frac{a^3b^2}{a^2b^2}$

[1]

b) $\frac{a^3b^2 - a^2b^3}{a^2b^2}$

[2]

11. (a) Multiply out and simplify these expressions:

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

.....

[1]

$(x + 2)(x + 3)$

.....

[1]

$(x + 4)(x - 1)$

.....

[1]

$(x - 2)^2$

.....

[1]

12. I have two fair 4-sided dice.

One dice is numbered **2**, **4**, **6** and **8**

The other is numbered **2**, **3**, **4** and **5**

I throw both dice and add the scores.

What is the probability that the total is even?

You must show working to explain your answer.

[2]

13. Solve these simultaneous equations using an algebraic method.

$4x + 3y = 21$

$2x + y = 8$

You must show your working.

x = ... y = ...

[3]

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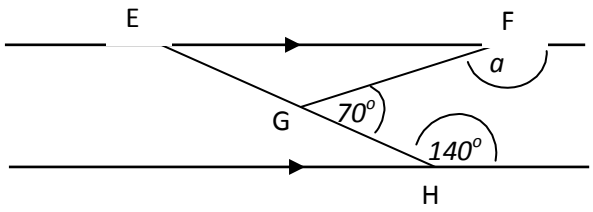
14. Find angle a, explaining each step of your working:



a = ...

[2]

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15. a) What is the gradient of the line $y = 4x - 5$?

……[1]

b) Where does the line $y + 4x = 7$ cross the y-axis?

……[1]

c) Give the equation of a line which is perpendicular to the line $2y + 4x = 7$?

……[2]

16. a) The value of a house has increased by 20% since 2005. It is now worth £360 000.

How much was it worth in 2005?

……[2]

b) Mr Smith's salary goes up by £270 per month. He now earns £2070 per month.

What is the percentage increase?

.....[2] END

OF TEST