



CHELtenham
COLLEGE

13+ Entrance Examination Paper
2014 - 2015

Mathematics

Time allowed: - 45 minutes

Calculators **MAY NOT** be used

Instructions

- Write your name in the space at the bottom of the page
- Answer questions on the paper, showing all necessary working. If you need extra paper make sure that it is named and included with this paper when you hand it in.
- Do not spend too long on any one question. You may not be able to answer every question.
- **ONLY ANSWER QUESTION 13 AFTER YOU HAVE COMPLETED AND CHECKED ALL THE OTHER QUESTIONS.**

Advice

- Marks will be earned for showing the correct method as well as the answers.
- All questions are worth 1 mark unless stated otherwise.

Candidate's name: _____



1) Calculate the following:

a) $194 + 36 =$ (1 mark)

b) $6 - 54 =$ (1 mark)

c) $-32 - 9 =$ (1 mark)

d) $95.7 \times 1000 =$ (1 mark)

e) $7.3 + 2.49 =$ (1 mark)

f) $6.8 \div 0.5 =$ (1 mark)

g) $8.8 - 0.07 =$ (1 mark)

h) $24 \div 2(5 - 3)^2 + 6 \times 3 - 12 =$ (3 marks)

2a) Write to 2 decimal places 5931.486 (1 mark)

b) Write 5931.486 correct to 2 significant figures (1 mark)

c) Write 5931.486 correct to 4 significant figures (1 mark)

3) Give full workings to show that:

a) $\frac{1}{2} - \frac{1}{6} = \frac{1}{3}$ (2 marks)

b) $1\frac{3}{4} + 2\frac{3}{5} = 4\frac{7}{20}$ (3 marks)

c) $\frac{4}{7} \div \frac{6}{35} = \frac{10}{3}$ (2 marks)

4) Simplify the following as fully as possible:

a) $x + 2x + 5x =$

b) $3x + 2y - 5x - 6y + 4x =$ (2 marks)

c) $4x^5 \times 3x^7 =$ (2 marks)

d) $5(x + 2) - 4(3x - 8) =$ (3 marks)

e) $\frac{x^6}{y^2} \div \frac{x^3}{y} =$ (3 marks)

5) Solve the following:

a) $x + 5 = 9$ (1 mark)

b) $4x - 3 = 33$ (2 marks)

c) $7x + 2 = 9 - 3(2x - 2)$ (2 marks)

d) $x^2 - 4 = 32$ (2 marks)

6) A number x is multiplied by 3 and then 7 is taken away, giving a final answer of 44.

a) Form an equation in terms of x . (1 mark)

b) Solve this equation to find x (the original number) (1 mark)

7) If $A = B^2 - 4C$

a) Calculate the value of A when $B = 5$ and $C = 2$ (2 marks)

b) Calculate the value of C when $A = 4$ and $B = 6$ (2 marks)

8a) Write $\frac{2}{5}$ as a percentage (1 mark)

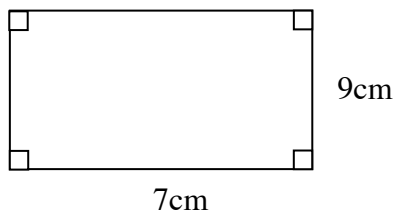
b) Calculate 20% of 440 (1 mark)

c) Decrease £330 by 45% (2 marks)

d) A number was decreased by 10% to give an answer of 378. What was the original number? (2 marks)

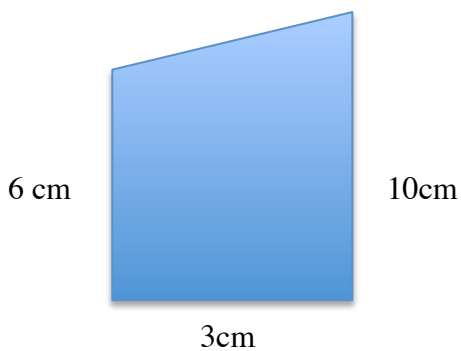
9) Find the area of the following shapes

a)



(1 mark)

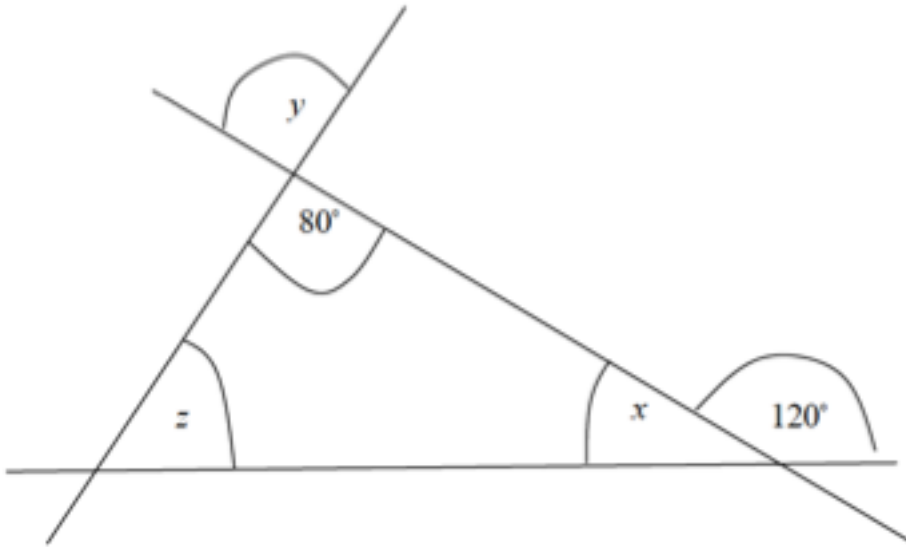
b)



(2 marks)

10a)

Find x , y and z in the following:



(3 Marks)

b) An isosceles triangle has one angle that is 40° .
State all the possible sizes of the remaining angles.

(2 Marks)

11a) State the next term in the sequence 3,7,11,15,....

(1 mark)

b) State the n th term for the above sequence

(1 mark)

c) State the next term in the sequence $\frac{1}{4}, \frac{1}{3}, \frac{3}{8}, \frac{2}{5}, \dots$

(1 mark)

12) If the operation @ means that $A @ B = A+B-AB$, then calculate:

a) $4 @ 3$

(1 mark)

b) $3 @ \frac{1}{2}$

(1 mark)

Simplify:

c) $x @ (x @ 1)$

(1 mark)

13) BONUS QUESTION

a) A very slow snail leaves on Monday to go and visit its Granny, 90m away. The snail travels 1m per day (24-hour period) at a constant rate and without pausing. The snail stops for a 24 hour rest every tenth day, that is, after 9 days' travelling. On which day of the week does the snail arrive at Granny's?

b) The points S, T, U lie on the sides of the triangle PQR , as shown, so that $QS=QU$ and $RS=RT$. Angle $TSU=40^\circ$. What is the size of angle TPU ?

