The Haberdashers' Aske's Boys' School

Elstree, Herts

13+ Entrance Examination 2012

MATHEMATICS Paper 2

Time : 30 minutes

Full Name .....

Exam Number .....

Please follow these instructions

- Do not open this paper until you are told to do so.
- Calculators are allowed

1. You are given that

$a = 3.2$ $b = 9.6$ c = 8.3

Calculate the value of each of the following. For each part write down **all** of the digits on the calculator display.

(i) $\sqrt{a+b+c}$

Answer:…….

(ii) $\frac{a+b}{c}$

Answer:…….

(iii) a^{b+c}

Answer:…….

(iv) $\frac{a^2+b^2}{c^2}$

Answer:…….

2. Round your answer to question 1 part (i) to 4 significant figures

Answer:…….

3. (a) Find 45 as a percentage of 95, giving your answer to 1 decimal place.

Answer:…….%

(b) Find 46% of 87

Answer:…….

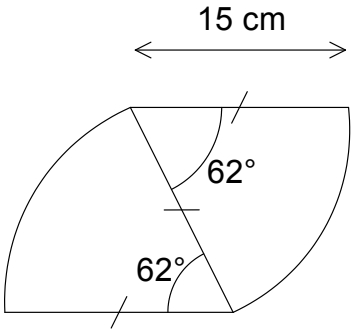
(c) Sarah finds 36% of a number and then 21% of the result. Her final answer is 9.6768.

What was the original number that Sarah started with?

Answer:…….

4. For each of the following shapes calculate (i) the area and (ii) the perimeter. Give your answers to 1 decimal place.

(a)

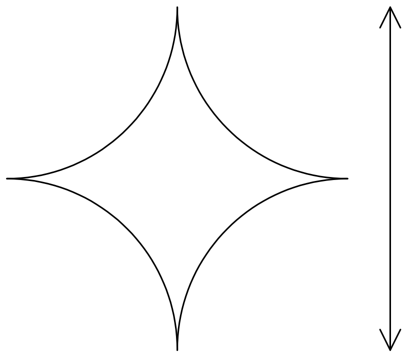


Area:…….

Perimeter:…….

TURN OVER FOR PART (b)

(b)



Area:…………………………………………………….

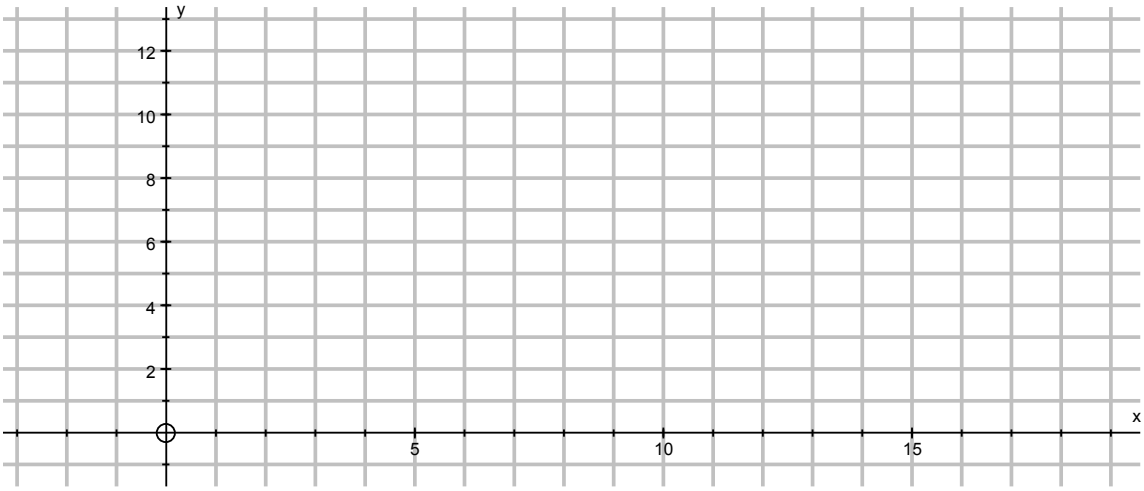
Perimeter:…………………………………………………….

5. (a) On the grid shown below draw the lines with equations

$x = 3$, $y = 6$ and $x + y = 12$.

You may find it helpful to use the table below for the line with equation $x + y = 12$

x	3					
y	9					



(b) Find the area of the triangle enclosed by the three lines.

Answer:…….. units^2

(c) The region is now reflected in the y axis. What are the co-ordinates of the vertices (corners) of the region?

Answers: (,) (,) (,)

TURN OVER

6. Find the equation of a line that is parallel to the line $y = 5x - 3$, but passes through the point (3, 9).

y = …….

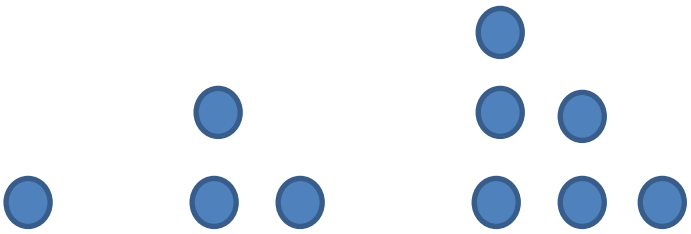
7. Solve the following equation, showing working clearly and leaving fractions in your answer.

$$\frac{3(x-1)}{5} - 6 = \frac{1}{2}$$

Answer: *x* = …….

8. Answer the questions about the two sequences of shapes shown below

(a) Triangles



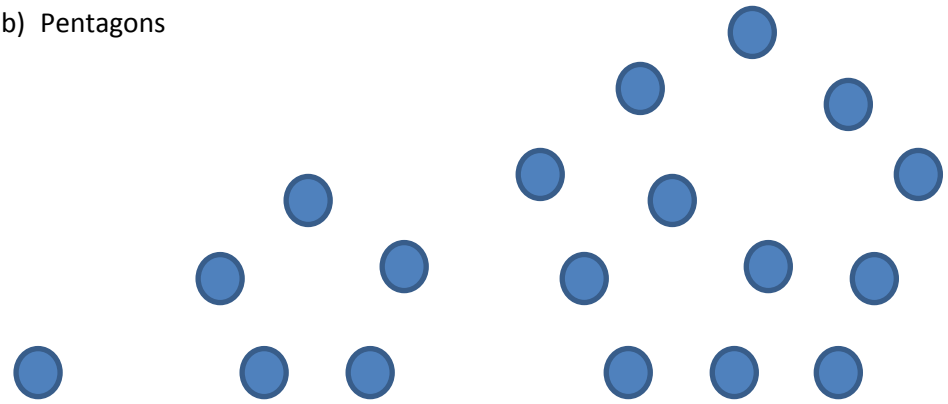
(i) How many dots will there be in the 4th diagram?

Answer:…….Dots

(ii) How many dots will there be in the 20^{th} diagram?

Answer:……..Dots

(b) Pentagons



How many dots will there be in the 4^{th} shape?

Answer:……..Dots

END OF EXAMINATION