UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTER NUMBER

CANDIDATE NUMBER

MATHEMATICS (US) **0444/13**

Paper 1 (Core) **October/November 2012**

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Center number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

CALCULATORS MUST NOT BE USED IN THIS PAPER.

All answers should be given in their simplest form.

If work is needed for any question it must be shown in the space provided.

The number of points is given in parentheses [ ] at the end of each question or part question.

The total of the points for this paper is 56.

This document consists of **12** printed pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

Formula List

Area, A, of triangle, base b, height h.	$A = \dfrac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Lateral surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of sphere of radius r.	$V = \dfrac{4}{3}\pi r^3$

1

NOT TO SCALE

$x°$ \ 196°
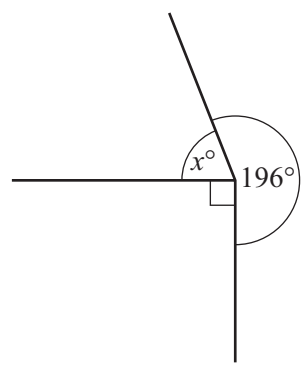
Find the value of *x*.

Answer x = ... [1]

---

2 **(a)** Write down the order of rotational symmetry of this letter.

H

Answer(a) .... [1]

(b) Draw the line of symmetry on this letter.

A

[1]

---

3 Evaluate.

$$4^3 - \sqrt{49}$$

Answer .... [2]

4 Simplify.

(a) $5t - 2t + 4t$

Answer(a) .... [1]

(b) $r^5 \times r^8$

Answer(b) .... [1]

5 Samantha invests $600 at a rate of 2% per year simple interest.

Calculate the interest Samantha earns in 8 years.

Answer $ .... [2]

6 Show that $\left(\dfrac{1}{10}\right)^2 + \left(\dfrac{2}{5}\right)^2 = 0.17$.

Write down all the steps in your work.

Answer

[2]

7 Pens cost p cents and rulers cost r cents.

Write down an expression, in terms of p and r, for the cost of 5 pens and 11 rulers.

Answer .... cents [2]

8 Jamie needs 300 g of flour to make 20 cakes.

How much flour does he need to make 12 cakes?

Answer .... g [2]

9 Expand the parentheses.

$$y(3 - y^3)$$

Answer .... [2]

10 Maria pays $84 rent.
The rent is increased by 5%.

Calculate Maria's new rent.

Answer $ .... [2]

11 (a) The mass of new born babies is an example of **continuous** data.

Explain what is meant by continuous data.

Answer(a) ....

.... [1]

(b) Joel counts the number of $1 bills in his money box at the end of every month for a whole year.
His results are shown below.

| 25 | 7 | 9 | 3 | 6 | 17 | 25 | 22 | 10 | 2 | 20 | 1 |

Work out the median.

Answer(b) .... [2]

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12

$$\frac{4.7^2 + 19.78}{\sqrt{98}}$$

(a) Rewrite this calculation with each number written correct to 1 significant figure.

Answer(a)

[1]

(b) Work out the answer to your calculation in **part (a)**.

Answer(b) .... [1]

---

13 Factor completely.

$$4xy + 12yz$$

Answer .... [2]

---

14 Evaluate.

$$5\frac{3}{8} - 2\frac{1}{5}$$

Give your answer as a fraction in its lowest terms.

Answer .... [3]

15 Calculate the interior angle of a regular pentagon.
You must show your work.

Answer .... [3]

16 14 children played a game.
The age of each child and the number of points they scored are plotted on the scatter diagram.

Age of child
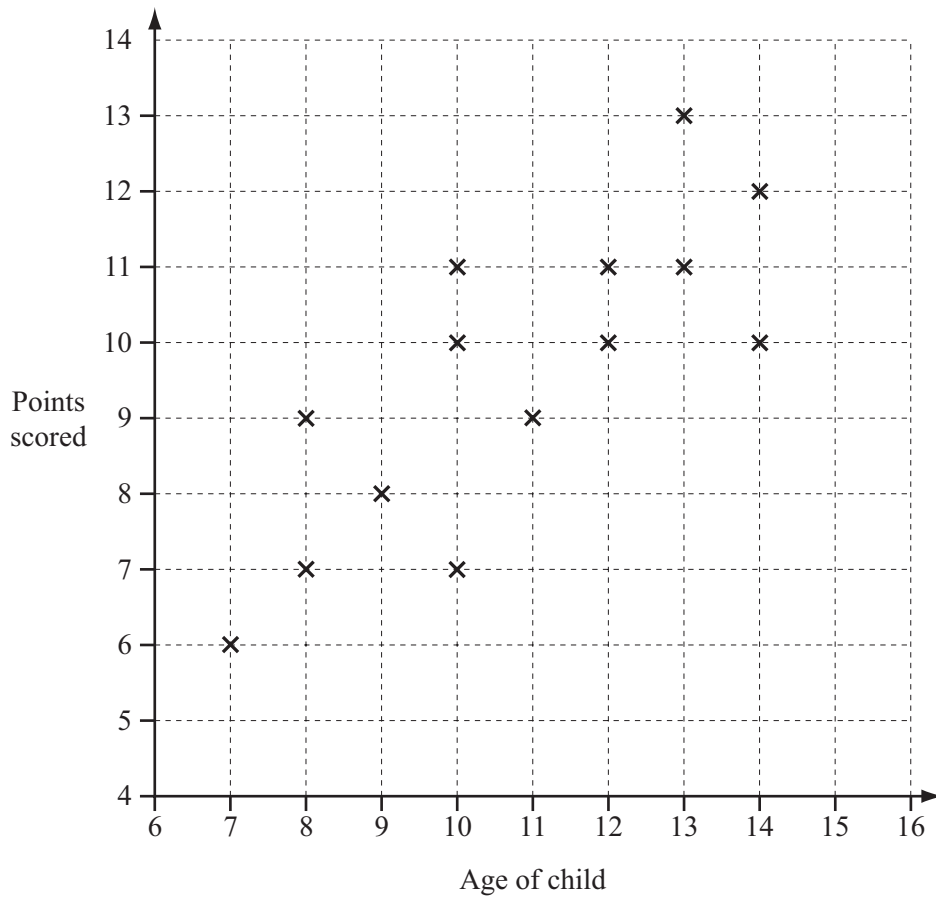
(a) Write down the number of points the child aged 11 scored.

Answer(a) .... [1]

(b) Draw a line of best fit on the scatter diagram. [1]

(c) What type of correlation is shown?

Answer(c) .... [1]

17 Evaluate $\dfrac{7.2}{12.75 - 10.95}$.

Answer .... [2]

18 (a)

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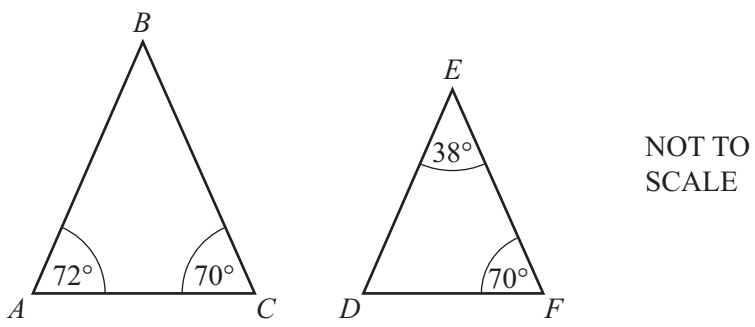
Ben says

"Triangle *ABC* is similar to triangle *DEF*"

Explain why Ben is correct.

Answer(a) ....

.... [1]

(b)

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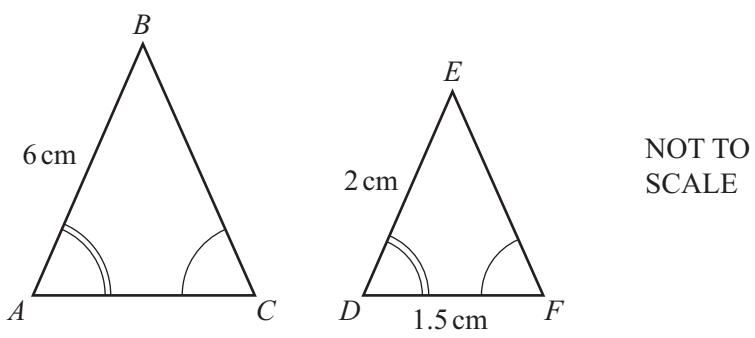
Triangle *ABC* is similar to triangle *DEF*.
AB = 6 cm, *DE* = 2 cm and *DF* = 1.5 cm.

Find

(i)   the scale factor of the enlargement,

Answer(b)(i) .... [1]

(ii) the length of *AC*.

Answer(b)(ii) .... cm [1]

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19 (a) The probability that the school bus is late is 0.29 .

Write down the probability that the school bus is **not** late.

Answer(a) .... [1]

(b) A refrigerator contains 12 beef pies, 3 vegetable pies and 5 chicken pies.
One pie is taken at random from the refrigerator.

Find the probability that it is

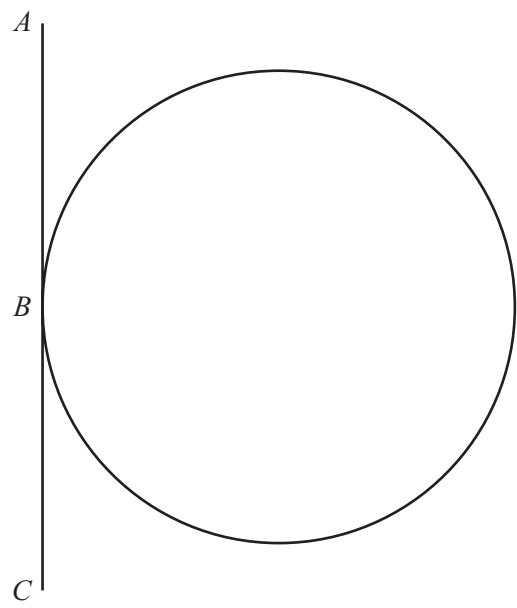**(i)** a vegetable pie,

Answer(b)(i) .... [1]

(ii) a beef pie or a vegetable pie,

Answer(b)(ii) .... [1]

(iii) a lamb pie.

Answer(b)(iii) .... [1]

20 In the diagram, the line *AC* touches the circle at *B*.

(a) Measure the length of the line *AC*.

Answer(a) AC = ... cm [1]

(b) Write down the mathematical name for the line *AC*.

Answer(b) .... [1]

(c) Mark a point *D* on the circumference of the circle. [1]

10

21

9 cm 8 cm

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A 12 cm *B*
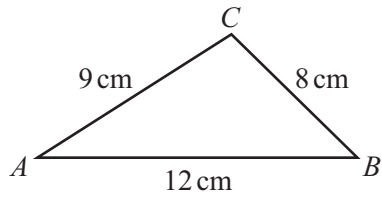
(a) (i) Construct an accurate drawing of triangle *ABC*.

[2]

(ii) On your drawing, mark accurately the midpoint of the side *AB*.
Label it *M*. [1]

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(b) (i) Sketch the quadrilateral that has
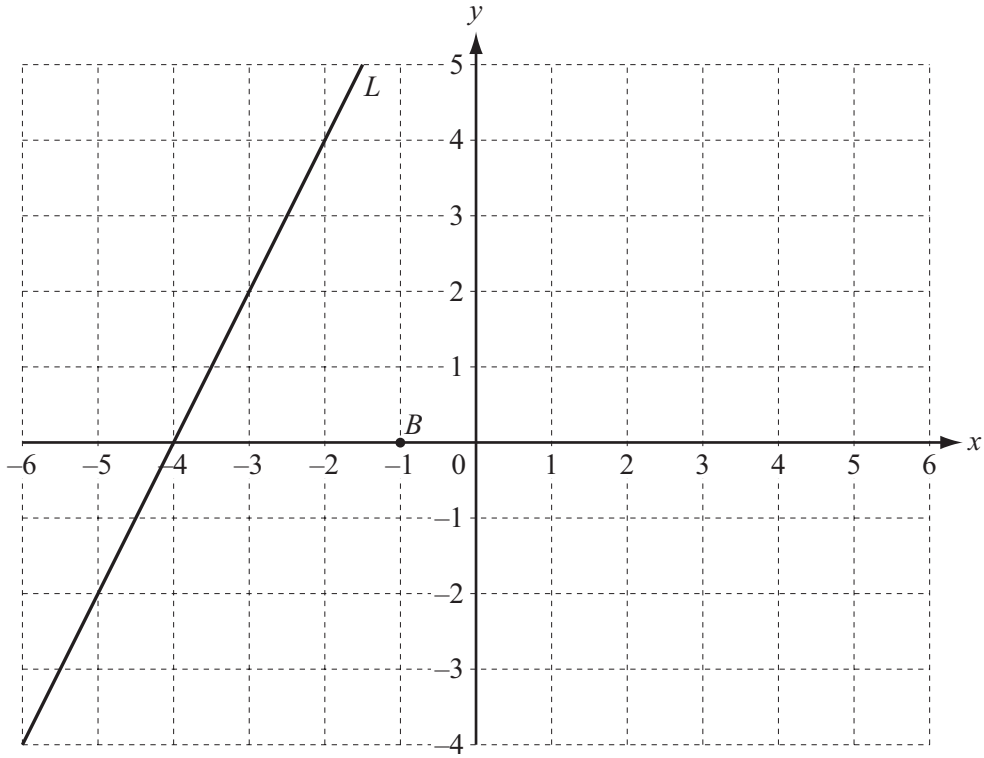
and

and

- opposite sides which are equal in length and parallel

- opposite angles which are equal

- diagonals which bisect each other at 90°.

[1]

(ii) Write down the mathematical name of this quadrilateral.

Answer(b)(ii) .... [1]

Question 22 is printed on the next page.

22

(a) On the grid mark the point $(5, 1)$. Label it *A*. [1]

(b) Write down the co-ordinates of the point *B*.

Answer(b) (.............. , ...) [1]

(c) Find the slope of the line *L*.

Answer(c) .... [2]