Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTER NUMBER

CANDIDATE NUMBER

2749798396

MATHEMATICS (US) **0444/13**

Paper 1 (Core) **October/November 2014**

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, 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.

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[Turn over

Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
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.	$V = \frac{4}{3}\pi r^3$

1 Write 0.13 as a fraction.

Answer .....

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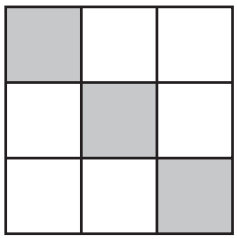
2 **(a)** Write in figures the number three hundred and four thousand six hundred and twenty.

Answer(a) ..... [1]

(b) Write your answer to **part (a)** correct to 3 significant figures.

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

3



(a) Write down the order of rotational symmetry of the diagram.

Answer(a) ..... [1]

(b) Draw the lines of symmetry on the diagram. [1]

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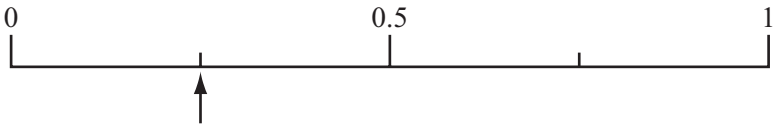
4 A bag contains 20 counters.
One counter is taken from the bag at random.
The arrow on the probability scale shows the probability that this counter is blue.



(a) Work out the number of blue counters in the bag.

Answer(a) ..... [1]

(b) Find the probability that the counter is **not** blue.

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

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5 The temperature in a freezer is –20.5 °C.

(a) The temperature in a fridge is 2.5 °C.

Find the difference between the temperature in the fridge and the temperature in the freezer.

Answer(a) ..... °C [1]

(b) The temperature in the freezer rises by 5 °C.

Find the temperature in the freezer now.

Answer(b) ..... °C [1]

---

6 Find the value of

(a) $\sqrt[3]{-8}$,

Answer(a) ..... [1]

(b) $(-1)^4$.

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

---

7 Work out $\frac{4}{5} - \frac{2}{3}$.
Give your answer as a fraction in its simplest form.

Answer ..... [2]

---

8 Solve for x.

$$y = 6x - 1.$$

Answer $x =$ ..... [2]

---

9 Write the following in order of size, smallest first.

$$0.0155 \qquad \frac{1}{5} \qquad 15\% \qquad \frac{1}{10} \qquad 0.1055$$

Answer ..... < ..... < ..... < ..... < ..... [2]
smallest

---

10 Work out $4 \times 10^{-5} \times 6 \times 10^{12}$.
Give your answer in scientific notation.

Answer ..... [2]

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11 The four sector angles in a pie chart are $2x°$, $3x°$, $4x°$ and $90°$.

Find the value of x.

Answer x = ... [2]

---

12 A train takes 0.8 hours to travel 56 km.

Work out the average speed of the train in kilometers per hour.

Answer ..... km/h [2]

---

13 **(a)** A parcel is in the shape of a cuboid of length 18 cm, width 10 cm and height 8 cm.

Calculate the volume of the parcel.

Answer(a) ..... cm^3 [2]

(b) The mass of the parcel is 1.7 kilograms.

Change 1.7 kilograms to grams.

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

---

14 **(a)** Simplify.

$5j + 2k + j - 3k$

Answer(a) ..... [2]

(b) Factor.

$5p + 10$

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

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15 **(a)** Paolo thinks of a number.
It has two digits.
It is a common factor of 36 and 48.

Write down Paolo's number.

Answer(a) ..... [1]

(b) Maria thinks of a number.
It has two digits.
It is a common multiple of 15 and 20.

Write down Maria's number.

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

(c) Kemar thinks of a number.
It is between 1 and 2.
It is an irrational number.

Write down a number he could be thinking of.

Answer(c) ..... [1]

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16 Solve the equation.

$$\frac{2x + 5}{3} = 8$$

Answer $x =$ ..... [3]

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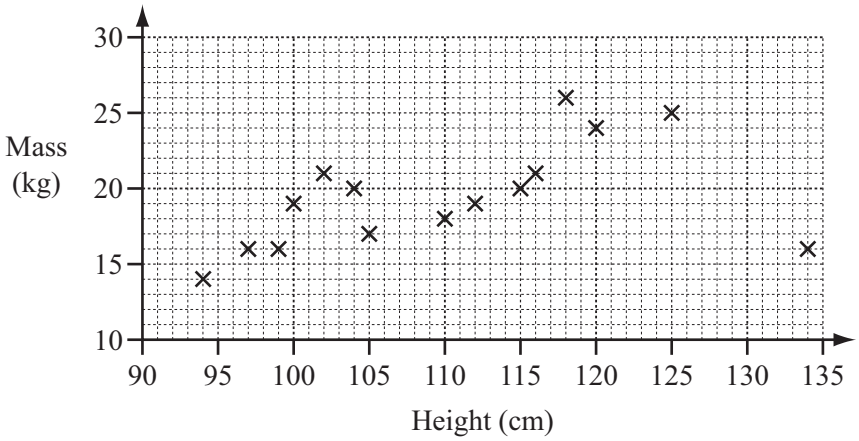
17 The scatter diagram shows the heights and masses of some five-year-old boys.



(a) The height of one of the boys is likely to have been recorded incorrectly.

Write down the mass of this boy.

Answer(a) ..... kg [1]

(b) What type of correlation does the scatter diagram show?

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

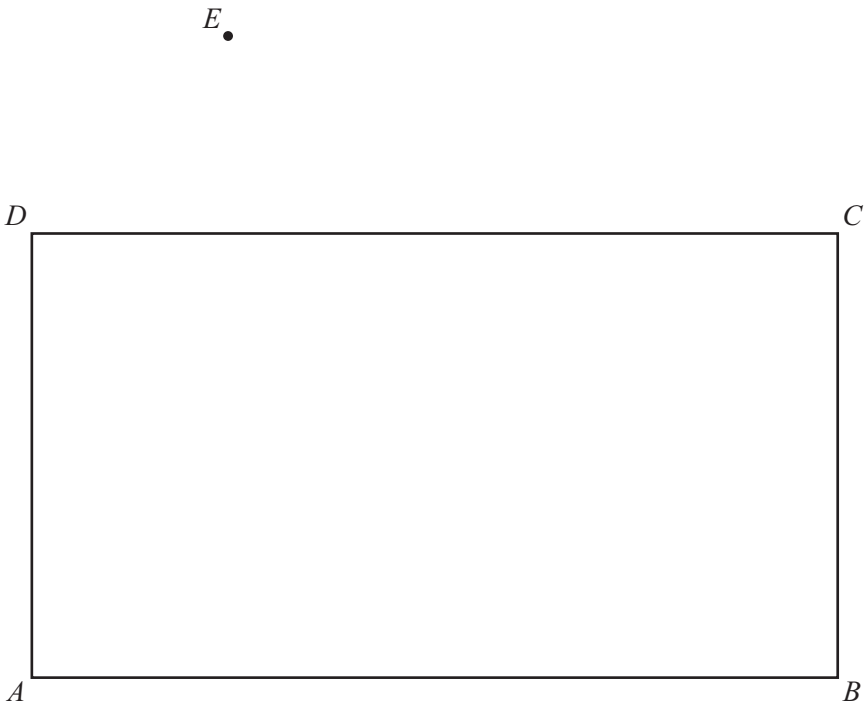
(c) **(i)** Draw a line of best fit on the scatter diagram. [1]

(ii) Another boy had a height of 108 cm.
His mass was not recorded.

Use your line of best fit to estimate the boy's mass.

Answer(c)(ii) ..... kg [1]

18

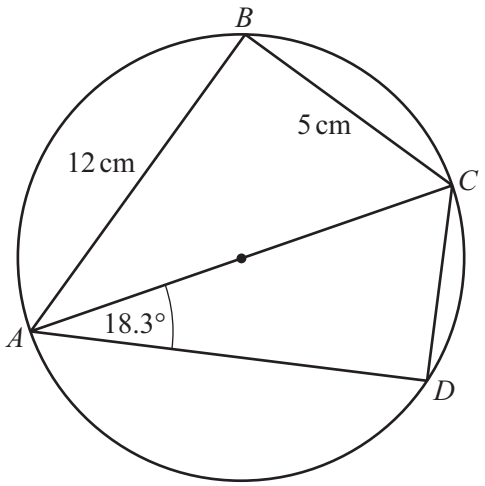


Using a straight edge and compass only, construct

(a) the bisector of angle *DCB*, [2]

(b) the perpendicular from the point *E* to the line *DC*. [2]

19



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A, B, C and D lie on a circle with diameter AC.
Angle $CAD = 18.3°$, $AB = 12$ cm and $BC = 5$ cm.

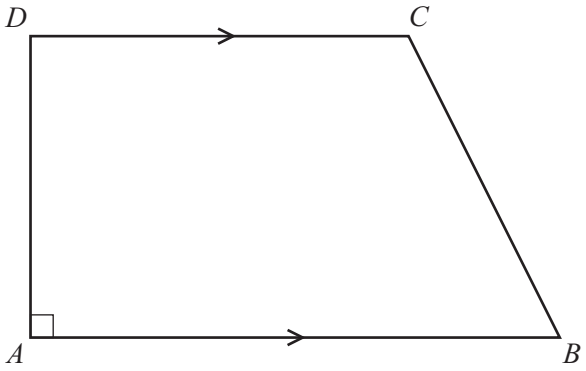
(a) Work out the size of angle ACD.

Answer(a) Angle ACD = ... [2]

(b) Work out the length of AC.

Answer(b) AC = ... cm [2]

20 This is an accurate drawing of quadrilateral *ABCD*.



(a) Write down the mathematical name for quadrilateral *ABCD*.

Answer(a) ..... [1]

(b) Measure the size of the acute angle.

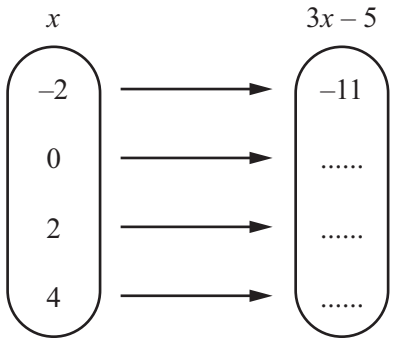
Answer(b) ..... [1]

(c) By taking suitable measurements from the diagram, work out the area of *ABCD*.

Answer(c) ..... cm^2 [3]

Question 21 is printed on the next page.

21 (a)



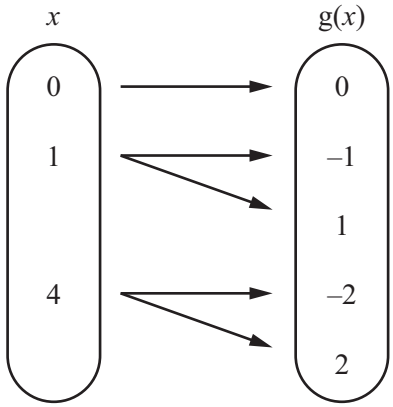
(i) Complete the mapping diagram for the function $f: x \rightarrow 3x - 5$. [2]

(ii) The mapping diagram represents the complete set of input and output values for this function.

Write down the domain for this function.

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

(b)



Explain why the mapping shown in this diagram is not a function.

Answer(b) .....

..... [1]