Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTER NUMBER	
CANDIDATE NUMBER	

5565225521

MATHEMATICS (US) **0444/13**

Paper 1 (Core) **October/November 2016**

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 **11** printed pages and **1** blank page.

CAMBRIDGE International Examinations

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 in figures the number five thousand and thirty four.

.....[1]

2 Work out.

$-2 + 7 - 8$

.....[1]

3 $V = 4p^2$

Find V when $p = 3$.

$V =$ .....[1]

4 Simplify.

$n^2 \times n^5$

.....[1]

5 Write in scientific notation.

(a) 2 470 000

.....[1]

(b) 0.0079

.....[1]

6 Write these in order of size, smallest first.

$\left(\frac{1}{2}\right)^2$ 0.22 $\sqrt{0.09}$ 0.4^2

..... < ..... < ..... < .....[2]

smallest

7 The table shows the vehicles available for hire from Speedy Motors.

Vehicle	Color	Engine size (liter)	Cost per day ($)	Minimum number of days hire
Saloon	white	2	30	1
Station wagon	black	2.5	35	1
Hatch	white or black	1.8	40	2
MPV	black	2	45	1
Van	black	2.5	50	2

Walt hires a black vehicle, with an engine size greater than 2 liters, for 1 day.

(a) Which vehicle does Walt hire?

..... [1]

(b) How much does this vehicle cost Walt for the day?

$ ..... [1]

8 Work out $\frac{3}{5}+\frac{1}{6}$.

Give your answer as a fraction in its simplest form.

..... [2]

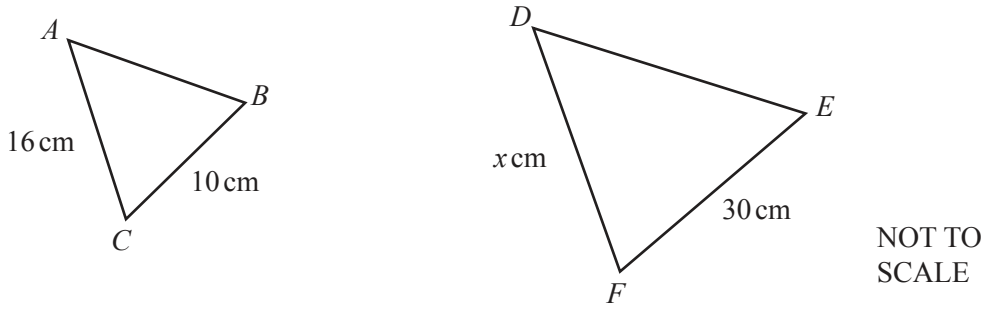
9 **(a)** Change 0.183 meters to centimeters.

..... cm [1]

(b) Change 12 800 square millimeters to square centimeters.

..... cm^2 [1]

10 Triangles *ABC* and *DEF* are similar.



Find the value of x.

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

11 Here are the heights, in centimeters, of 8 people.

153 175 168 158 161 172 164 172

(a) Write down the mode.

..... cm [1]

(b) Find the median.

..... cm [2]

12 **(a)** Write $\frac{3}{5}$ as a decimal.

..... [1]

(b) Write 48% as a fraction in its simplest form.

..... [2]

13 The exchange rate between the dollar and the Thai Baht is \$1 = 32 Baht.

(a) Andy buys a watch in New York for \$30.

How much is this in Baht?

..... Baht [1]

(b) Ning buys a watch in Bangkok for 6400 Baht.

How much is this in dollars?

\$ ..... [2]

14 **(a)** A bag contains 3 red, 5 blue and 4 green counters.
A counter is picked at random.

Work out the probability that the counter is

(i) blue,

..... [1]

(ii) yellow.

..... [1]

(b) The probability of picking a brown counter from another bag is 0.35 .

Work out the probability of not picking a brown counter.

..... [1]

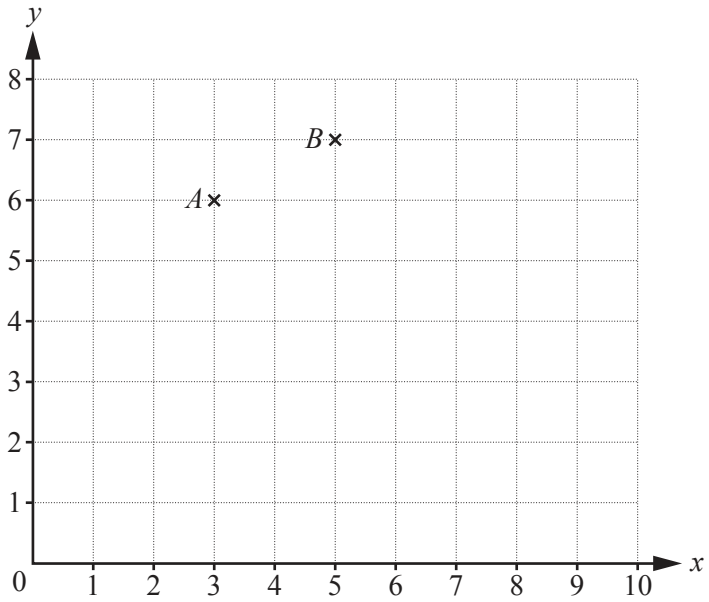
15 The table shows the opening hours of a doctor's office.

Day	Opening hours
Monday	09 00 – 14 00
Tuesday	09 00 – 14 00
Wednesday	09 00 – 16 30
Thursday	09 00 – 14 00
Friday	09 00 – 18 30
Saturday	08 30 – 12 30
Sunday	CLOSED

Work out the total number of hours the office is open during a week.

..... hours [3]

16



(a) A is the point (3, 6) and B is the point (5, 7).

Work out $\overrightarrow{AB}$.

$\overrightarrow{AB} = \begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) C is the point (7, 4) and $\overrightarrow{CD} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$.

Find the co-ordinates of the point D.

(..... , ...) [1]

17 Joel works out that the circumference of a circle with radius 10 cm is 628 cm.

(a) Using the approximation $\pi = 3$, estimate the circumference of this circle.

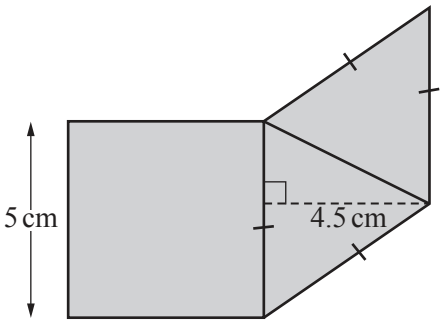
..... cm [2]

(b) Using your answer to **part (a)**, explain whether or not Joel's answer is reasonable.

Joel's answer is ..... because .....

..... [1]

18 The shaded shape is made by joining a square and two congruent, isosceles triangles.



NOT TO SCALE

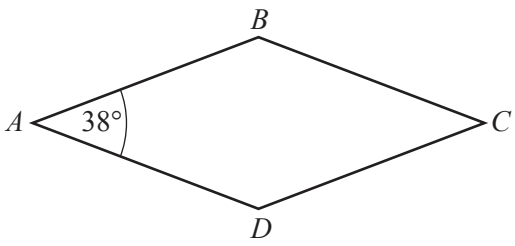
(a) Work out the perimeter of the shaded shape.

..... cm [1]

(b) Work out the area of the shaded shape.

..... cm^2 [3]

19 (a)



NOT TO SCALE

ABCD is a rhombus with angle *BAD* = 38°.

Work out angle *ABC*.

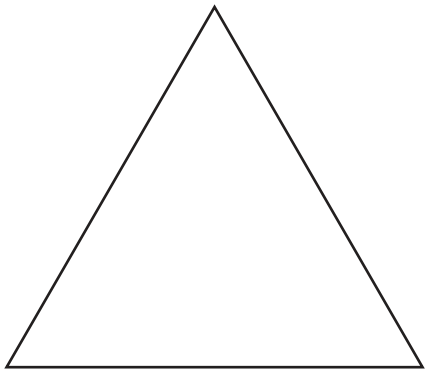
Angle *ABC* = ... [1]

(b) A regular polygon has an exterior angle of 40°.

Work out the number of sides of this polygon.

..... [2]

20 **(a)** The diagram shows an equilateral triangle.



On the diagram, draw all the lines of symmetry. [2]

(b) **(i)** In the space below, draw a quadrilateral that has 2 lines of symmetry and rotational symmetry of order 2.

[1]

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

..... [1]

21 **(a)** For each of these sequences, write down the next term and the rule for continuing the sequence.

(i) 49, 42, 35, 28, ...

Next term is .....

The rule is .....[2]

(ii) 2, 6, 18, 54, ...

Next term is .....

The rule is .....[2]

(b) Find the *n*th term of this sequence.

3, 8, 13, 18, 23, ...

..... [2]

22 Solve the system of linear equations.
You must show all your working.

$$5x + 4y = 17$$
$$x - y = 7$$

$x =$ .....

$y =$ ..... [3]

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