

CANDIDATE  
NAME

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NUMBER

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**MATHEMATICS**

**0626/03**

Paper 3 (Core)

**For Examination from 2017**

SPECIMEN PAPER

**1 hour 30 minutes**

Candidates answer on the Question Paper.

Additional Materials:      Geometrical instruments  
   Tracing paper (optional)

**READ THESE INSTRUCTIONS FIRST**

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

Write in dark blue or black pen.

You may use an HB pencil for any diagrams and graphs.

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

**DO NOT WRITE IN ANY BARCODES.**

Answer **all** questions.

**CALCULATORS MAY NOT BE USED IN THIS PAPER.**

If working is required for any question it must be shown below that question.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

At the end of the examination, fasten all your work securely together.

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

The total of the marks for this paper is 84.

This syllabus is regulated in England as a Cambridge International Level 1/Level 2 (9–1) Certificate.

This document consists of **15** printed pages and **1** blank page.

- 1 Write  $\frac{12}{20}$  as a fraction in its lowest terms.

..... [1]

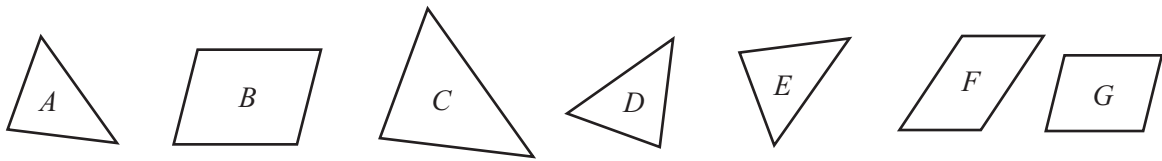
- 2 Complete the missing numbers in these function diagrams.

(a)  $4 \rightarrow \boxed{+6} \rightarrow \boxed{\times 8} \rightarrow \dots\dots$  [1]

(b)  $\dots\dots \rightarrow \boxed{\times 3} \rightarrow \boxed{-5} \rightarrow 13$  [1]

(c)  $14 \rightarrow \boxed{\div \dots\dots} \rightarrow \boxed{+4} \rightarrow 11$  [1]

- 3 Write down the letters of all of the shapes that are congruent.

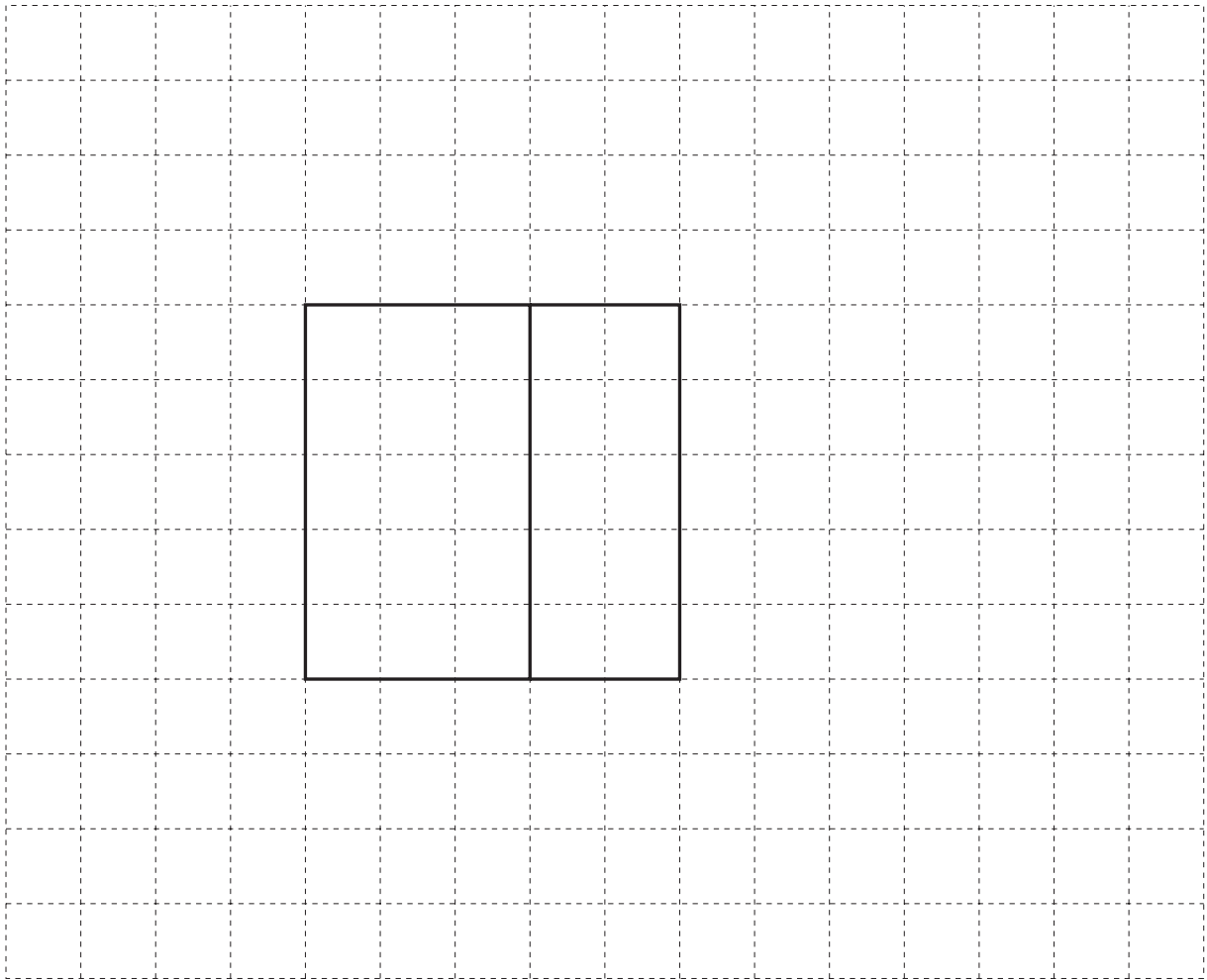


..... [1]

- 4 Write down the reciprocal of 4.

..... [1]

5



The diagram shows part of the net of a cuboid drawn on a  $1\text{ cm}^2$  grid.  
It is drawn full size.

(a) Complete the net of the cuboid. [2]

(b) Work out the volume of the cuboid.  
Write down the units of your answer.

..... [3]

- 6 Complete the table of equivalent fractions and percentages.

Fraction	Percentage
$\frac{3}{5}$	
	12.5%

[2]

- 7 A train leaves Hamilton at 9.50 am and arrives in Wellington at 7.25 pm.

Work out, in hours and minutes, the time taken for this journey.

..... h ..... min [1]

- 8 Rob recorded the outside temperature every three hours.

At 7 am the temperature was  $-2^{\circ}\text{C}$ .

- (a) This was  $5^{\circ}\text{C}$  higher than the temperature at 4 am.  
Write down the temperature at 4 am.

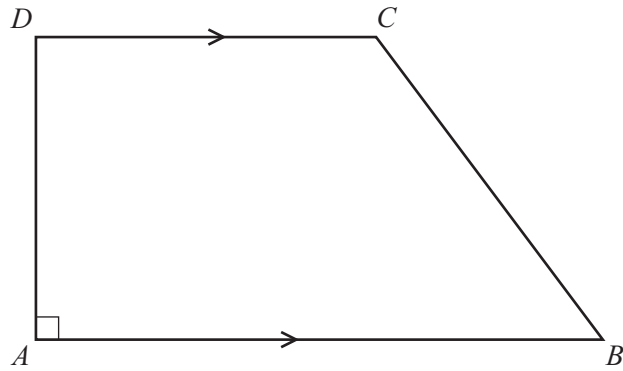
.....  $^{\circ}\text{C}$  [1]

- (b) At 10am the temperature was  $11^{\circ}\text{C}$ .

Write down the increase in temperature between 7 am and 10 am.

.....  $^{\circ}\text{C}$  [1]

- 9 This is an accurate drawing of quadrilateral  $ABCD$ .



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

..... [1]

- (b) Measure the size of the acute angle.

..... [1]

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

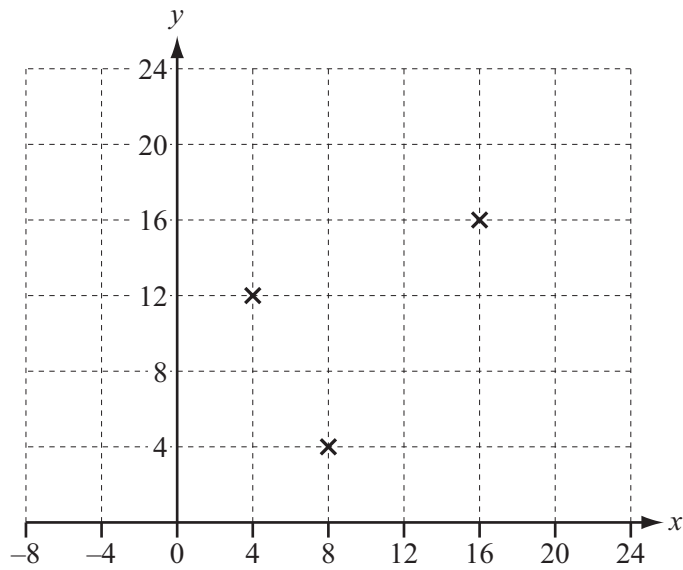
.....  $\text{cm}^2$  [3]

- 10  $x$  is a whole number.

Find the value of  $x$  when  $-7 < x < -5$ .

$x =$  ..... [1]

- 11 Three of the vertices of a parallelogram are at (4, 12), (8, 4) and (16, 16).



Write down the co-ordinates of two possible positions of the fourth vertex.

(....., .....) and (....., .....) [2]

- 12 James is working out  $3 + 5 \times 4 - 2$ .

He uses the following method.

$3 + 5 = 8$ $8 \times 4 = 32$ $32 - 2 = 30$
---

Comment on any errors he has made and give the correct answer.

.....

.....

.....

correct answer ..... [2]

- 13 Mia invested £800 at a rate of 3% per year simple interest.

Find the **total** amount she has after 6 years.

£ ..... [3]

- 14 Jon thinks of a number.  
He doubles it, adds 4 and then divides the result by 7.  
The number he has now is 2.

Find the number he first thought of.

..... [2]

15 Amy wins the student of the year award. She sends three photographs by post to her relatives.

- One of size 13 cm by 23 cm to her uncle in France, Europe,
- One of size 15 cm by 23 cm to her sister in China, Asia,
- One of size 23 cm by 35 cm to her mother in the USA, North America.

Maximum lengths	Europe	Rest of the world
13 cm by 23.5 cm	£1.90	£2.50
15.5 cm by 23.5 cm	£2.40	£2.90
23 cm by 32.5 cm	£2.80	£3.40
26 cm by 38.5 cm	£3.60	£5.20

The cost of postage is shown in the table above.

Use this information to calculate the **total** cost of sending the three photographs.

£ ..... [3]

16 Write down an expression for the total length, in millimetres, of  $n$  nails each of length 35 millimetres and  $s$  screws each of length 6 centimetres.

..... mm [2]



17 Work out the following, giving each answer as a fraction in its lowest terms.

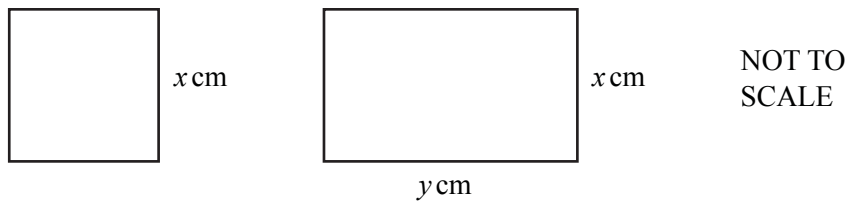
(a)  $\frac{3}{4} - \frac{1}{12}$

..... [2]

(b)  $2\frac{1}{2} \times \frac{4}{25}$

..... [2]

18



The diagram shows a square and a rectangle.

The perimeter of the square is 12 cm and the perimeter of the rectangle is 16 cm.

Find the value of  $x$  and the value of  $y$ .

$x =$  .....

$y =$  ..... [4]

19 Find the value of

(a)  $4^3$ ,

..... [1]

(b)  $6^0$ ,

..... [1]

(c)  $81^{\frac{1}{2}}$ ,

..... [1]

(d)  $\left(\frac{4}{3}\right)^{-1}$ .

..... [1]

20 In a sale, the price of a car was reduced from £17 000 to £15 300.

Calculate the reduction as a percentage of the original price.

..... % [2]

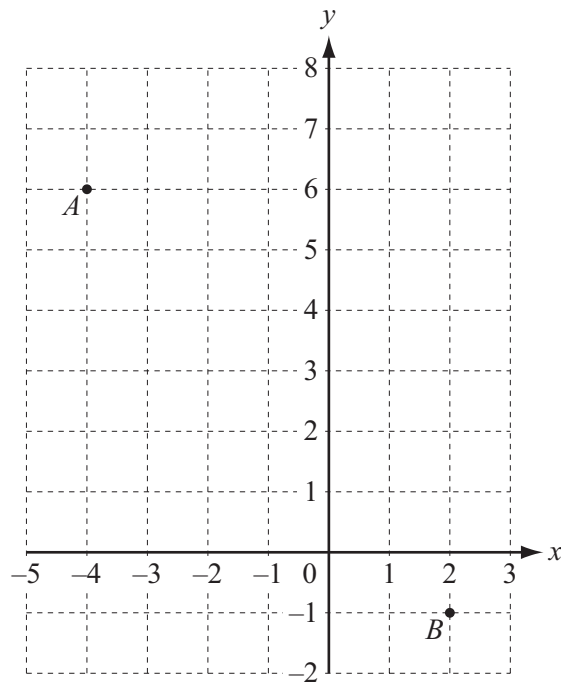
21 (a) Write 230 000 in standard form.

..... [1]

(b) Write  $4.8 \times 10^{-4}$  as an ordinary number.

..... [1]

22 The diagram shows two points,  $A$  and  $B$ .



(a) Write  $\vec{AB}$  as a column vector.

$$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix} [1]$$

(b) Explain why the vector  $\begin{pmatrix} 12 \\ -14 \end{pmatrix}$  is parallel to  $\vec{AB}$ .

.....  
 ..... [1]

23 (a) Factorise completely.

$$6ab - 24bc$$

..... [2]

(b) Rearrange the following formula to make  $m$  the subject.

$$j = \frac{m}{n} - k$$

$$m = \dots\dots\dots [2]$$

24 Solve the following equations.

(a)  $4(5x - 2) = 18x$

$x = \dots\dots\dots$  [3]

(b)  $x^2 + 2x - 3 = 0$

$x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [3]

25 (a) Kim knows that one angle of an isosceles triangle is  $48^\circ$ .  
He says that one of the other angles **must** be  $66^\circ$ .

Explain why Kim is wrong.

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

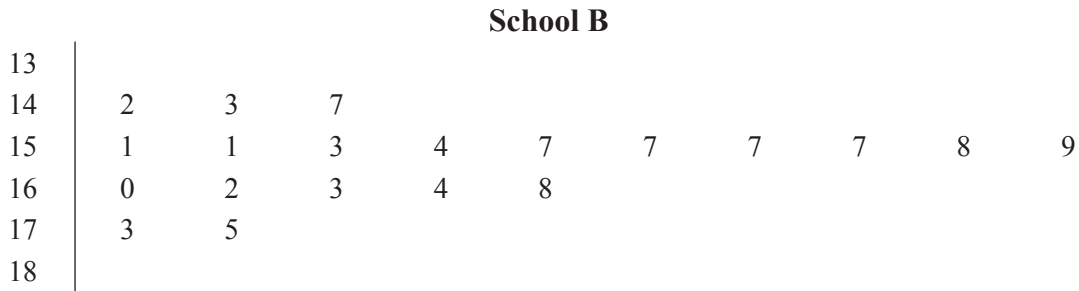
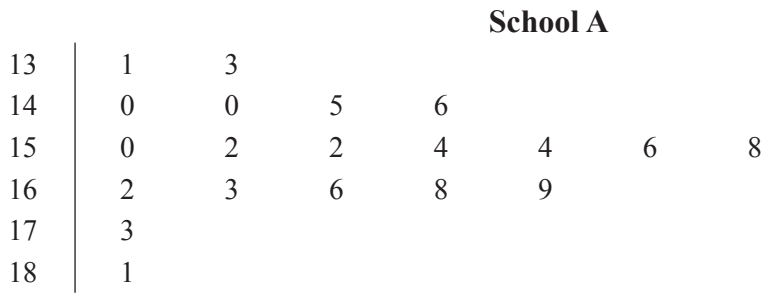
(b) Robert says it is possible to draw a regular polygon with interior angles of  $130^\circ$ .

Explain why Robert is wrong.

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



27 Two stem and leaf diagrams show the heights, in centimetres, of a random sample of 20 students of the same age in each of two schools.



**Key:** 15 | 2 represents 152 cm

(a) Compare these two distributions.

.....

.....

.....

.....

..... [3]

(b) School A is in Manchester and School B is in Cambridge.

Give **two** reasons why you should not use your answers to **part (a)** to draw conclusions about the heights of the **girls** from Manchester and the **girls** from Cambridge.

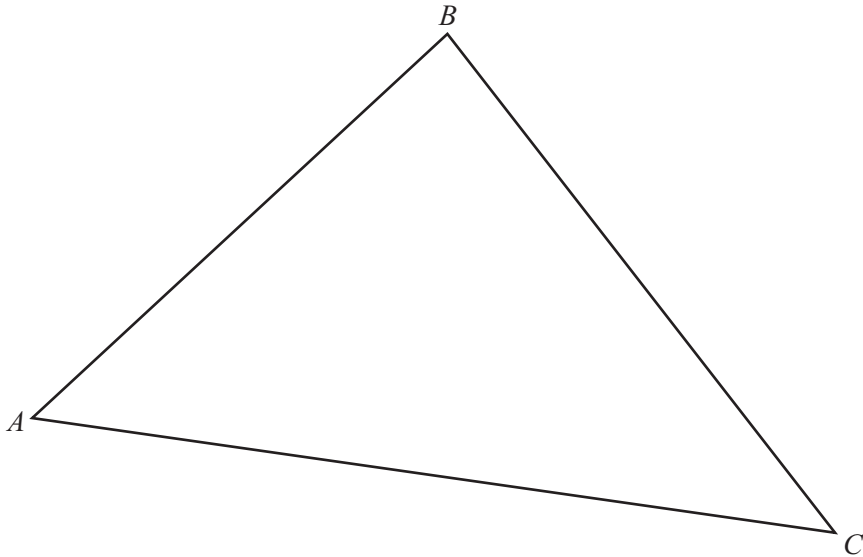
**1** .....

.....

**2** .....

..... [2]

28 Use a ruler and compasses only for this question.  
 Leave in all your construction arcs.



Construct and shade the region inside triangle  $ABC$  containing points that are

- less than 7 cm from  $C$
- and
- closer to  $A$  than to  $B$ .

[4]

29 Lea uses the following method to estimate the value of  $\sqrt{90005 \times 3.97^2}$

$\sqrt{100000 \times 4^2}$ $\sqrt{1600000}$ $= 4000$
--

Comment on her method and solution.

.....

..... [2]

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