Cambridge IGCSE

**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education (9–1)

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|---|---|---|---|---|---|---|---|---|---|
| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | |

*9427093572*

**MATHEMATICS** **0626/03**

Paper 3 (Core) **May/June 2018**

**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 all 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.

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

This document consists of **19** printed pages and **1** blank page.

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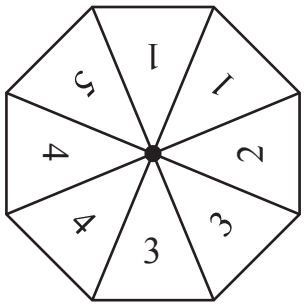
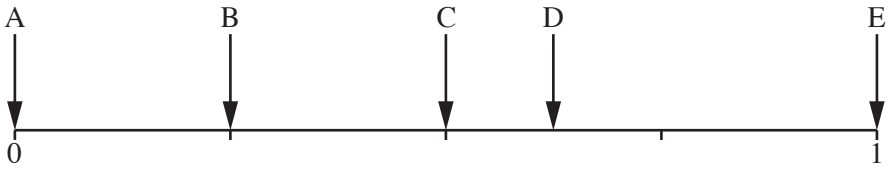
CAMBRIDGE International Examinations

**[Turn over**

**1** A fair spinner has eight sides.
The sections are labelled 1, 1, 2, 3, 3, 4, 4 and 5.




This is a probability scale.




The spinner is spun once.

**(a)** Write down the letter from the probability scale that shows the probability of getting

**(i)** a 4,

..... [1]

**(ii)** an odd number.

..... [1]

**(b)** Choose a word from the following that matches the probability shown by arrow E.

| likely | evens | unlikely | certain | impossible |
|---|---|---|---|---|

..... [1]

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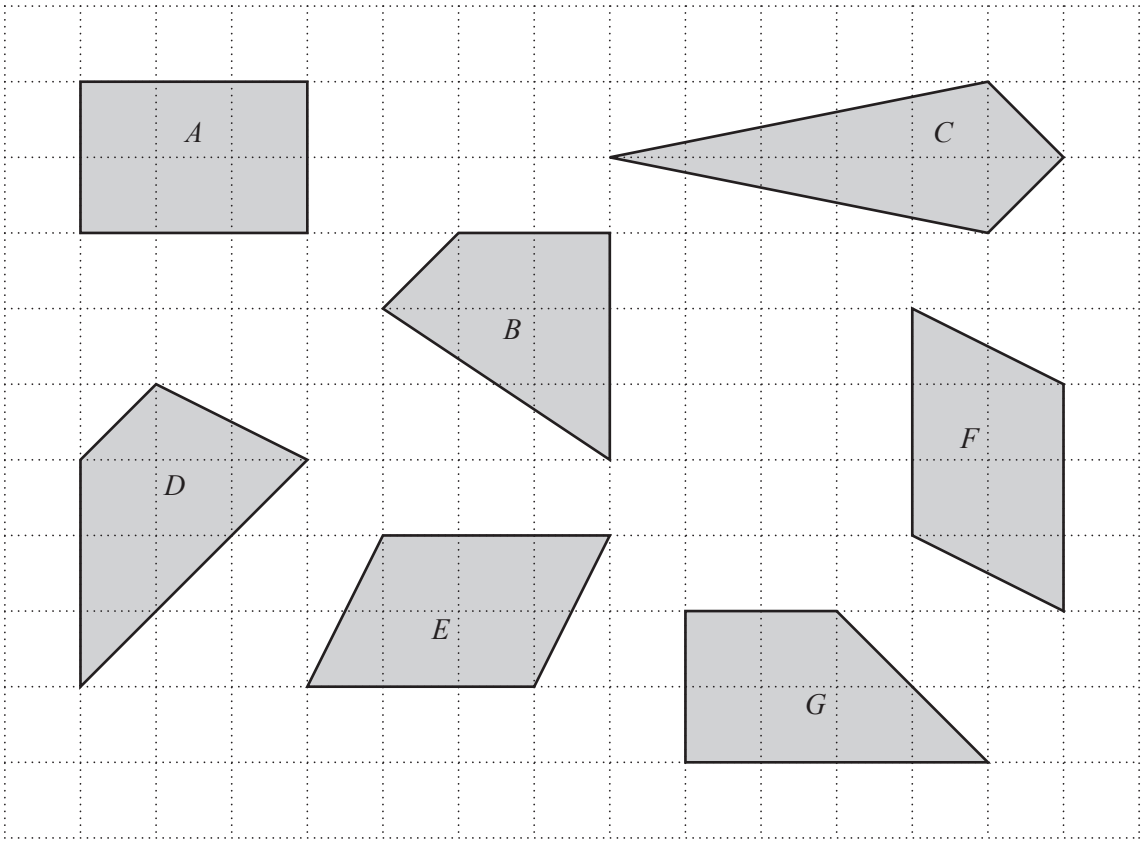
**2** Jason is asked to draw shapes of **area 6 cm$^2$**.

He draws the following shapes on centimetre squared paper.




**(a)** Which one of Jason's shapes is not correct?

..... [1]

**(b)** Which shape is a kite?

..... [1]

**(c)** Which shape has two lines of symmetry?

..... [1]

**(d)** Which two shapes are congruent?

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

**3** Ravi carries out a traffic survey for an hour one morning.
He records his results in this table.

| | Tally | Frequency |
|---|---|---|
| Car | 𝍸 𝍸 𝍸 𝍸 /// | |
| Bus | 𝍸 / | 6 |
| Lorry | 𝍸 𝍸 // | 12 |
| Motorbike | 𝍸 //// | |

**(a)** Complete the frequency column. [1]

**(b)** Ravi says:

More lorries than buses travel along the road.

Give a reason why Ravi may not be correct.

.....

..... [1]

**4** Ava recorded the temperature, in degrees Celsius, at 6 am for five days.
The table shows her results.

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| −3 | 2 | −5 | 0 | −1 |

**(a)** Write the temperatures in order, starting with the coldest.

..... , ..... , ..... , ..... , ..... [1]
*coldest*

**(b)** Find the difference between the coldest temperature and the warmest temperature.

..... °C [1]

**(c)** The temperature at 6 am on Saturday was 3 degrees colder than it was on Friday.

What was the temperature at 6 am on Saturday?

..... °C [1]

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**5** **(a)** Work out 45% of £12.

£ ..... [2]

**(b)** Jordan was given £40 as a gift.
He spent £28 on a shirt.

What percentage of his gift did he spend on his shirt?

..... % [2]

**6** **(a)** Find a fraction which is bigger than $\frac{3}{5}$ and smaller than $\frac{4}{5}$.

..... [1]

**(b)** Find a fraction which is bigger than $\frac{4}{7}$ and smaller than $\frac{2}{3}$.

..... [2]

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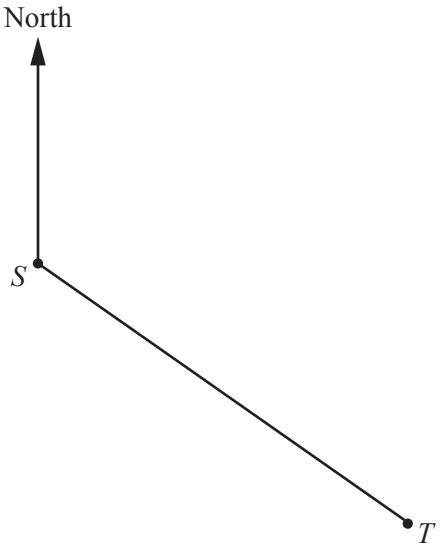
**7** The scale drawing shows the positions of farm *S* and farm *T*.
The scale is 4 cm represents 1 km.




Scale: 4 cm represents 1 km

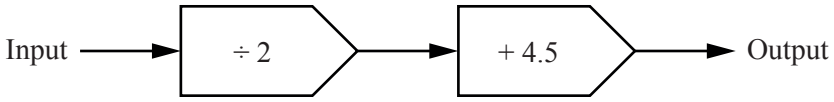
**(a)** Find the actual distance, in kilometres, between farm *S* and farm *T*.

..... km [2]

**(b)** Measure the bearing of farm *T* from farm *S*.

..... [1]

**8** **(a)** Here is a function machine.




**(i)** Use the function machine to find the output when the input is 5.

Output = ..... [1]

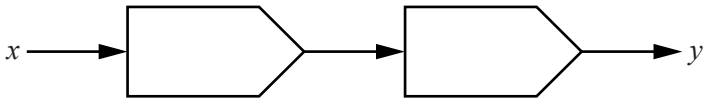
**(ii)** Use the function machine to find the **input** when the output is 6.

Input = ..... [2]

**(b)** Here is a formula.

$$y = 4(x + 2)$$

Complete this function machine to represent this formula.




[1]

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**9** **(a)** $g = 2$ and $h = 4$.

Work out the value of $(4g - 1)(h + 5)$.

..... [2]

**(b)** Mhairi is asked to find the value of $2x^2 + 4x - 5$ when $x = 3$.

This is her solution.

When $x = 3$

$2x^2 + 4x - 5 = 6^2 + 12 - 5$

$= 36 + 12 - 5$

$= 43$

**(i)** Mhairi has made an error.

Explain her error.

.....

..... [1]

**(ii)** Work out the correct value of $2x^2 + 4x - 5$ when $x = 3$.

..... [1]

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**10** A box contains 80 tea bags.
The box is a cuboid that measures 15 cm by 10 cm by 9 cm.

A carton is full of these boxes, with no spaces.
The carton is a cuboid that measures 75 cm by 60 cm by 36 cm.

How many tea bags are there in the carton?

..... [4]

**11** Four whole numbers have the following properties

- the mode is 2
- the median is 5.5
- the mean is 6.

Find the four numbers.

..... , ..... , ..... , ..... [3]

**12** In this question, you may use the grid below to help you.

**(a)** A transformation

- moves (3, 2) to (3, −2)
- moves (4, 5) to (4, −5)
- leaves (2, 0) in the same position
- leaves (5, 0) in the same position.

Describe fully this **single** transformation.

.....

..... [2]

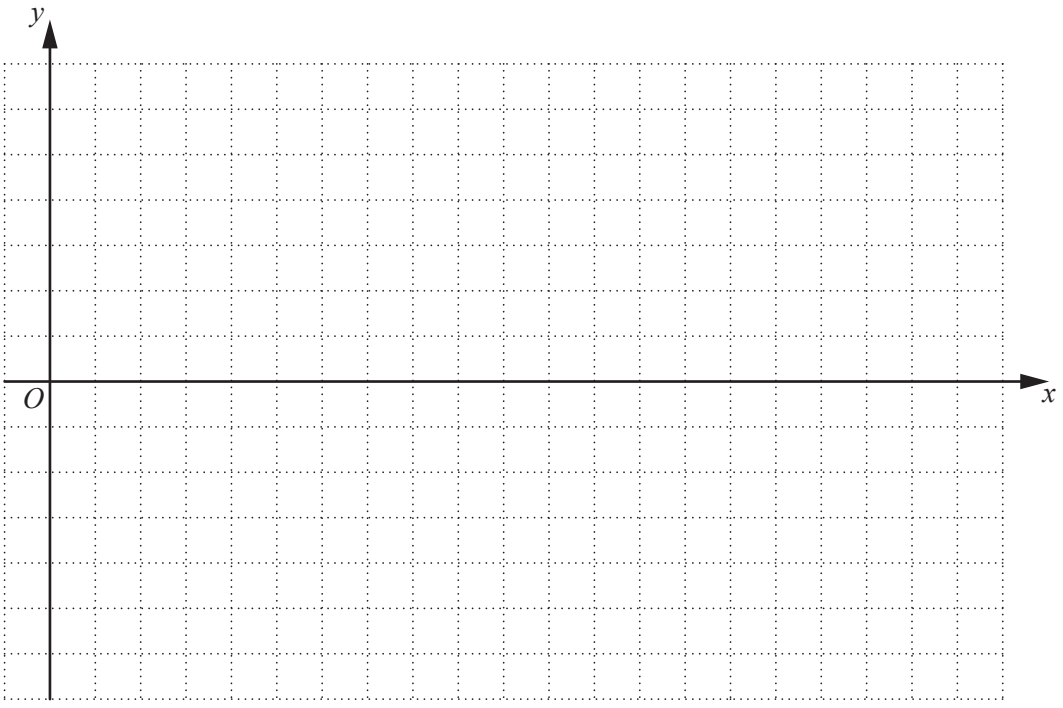
**(b)** A different transformation

- moves (7, 5) to (10, 4)
- moves (9, 2) to (12, 1)
- moves (13, −1) to (16, −2).

Describe fully this **single** transformation.

.....

..... [2]



**13** A unit fraction has a numerator of 1, for example $\frac{1}{12}$.

All unit fractions can be written as the sum of two different unit fractions.

**(a)** Show that $\frac{1}{3}+\frac{1}{6}=\frac{1}{2}$.

[2]

**(b)** Find the unit fraction $F$ to make this sum correct.

$$\frac{1}{10}+F=\frac{1}{6}$$

$F =$ ..... [2]

**(c)** **(i)** Complete these equivalent fractions.

$$\frac{1}{3}=\frac{}{12}$$ [1]

**(ii)** Write $\frac{1}{3}$ as the sum of two different unit fractions.

$\frac{1}{3}$ = ..... + ..... [1]

**14** Jackie shares £2475 between her children and her grandchildren.
She has 2 children and 3 grandchildren.

She gives each of her grandchildren the same amount.
She gives each of her children **four times** the amount each grandchild receives.

How much does each grandchild receive?

£ ..... [3]

**15** **(a)** Write 231 as a product of prime factors.

..... [2]

**(b)** Abby and Salma are racing in go-karts.
Abby takes 75 seconds to complete each lap.
Salma takes 100 seconds to complete each lap.
At the start of the race, they line up together on the start line.

How many **minutes** later do they next cross the start line together?

..... minutes [2]

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**[Turn over**

**16** Work out $5\frac{1}{3} \times 1\frac{3}{4}$.

Give your answer as a mixed number in its lowest terms.

..... [3]

**17** The exterior angle of a regular polygon is 12°.
The polygon has $n$ sides.

Find the value of $n$.

$n =$ ..... [2]

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**18** There are 300 marbles in a bag.
Luna carries out an experiment to estimate how many of the marbles are red.
She takes a marble out of the bag at random, records its colour and replaces it in the bag.
Luna does this 50 times and she records a red marble 11 times.

Estimate how many of the marbles in the bag are red.

..... [2]

**19** Solve.

**(a)** $7-2(x-3)=6x+1$

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

**(b)** $x^2-4x=0$

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

**20** **(a)** Find the value of each of the following.

**(i)** $10^0$

..... [1]

**(ii)** $64^{\frac{1}{2}}$

..... [1]

**(iii)** $12^5 \div 12^3$

..... [2]

**(b)** Harry writes:

$$x^{-1} = \frac{1}{x} \quad \text{so} \quad x^{-2} = \frac{2}{x}$$

Is Harry correct?
Explain how you know.

.....

..... [1]

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**21** Work out.

$$4.2 \times 10^{-5} + 7.5 \times 10^{-5}$$

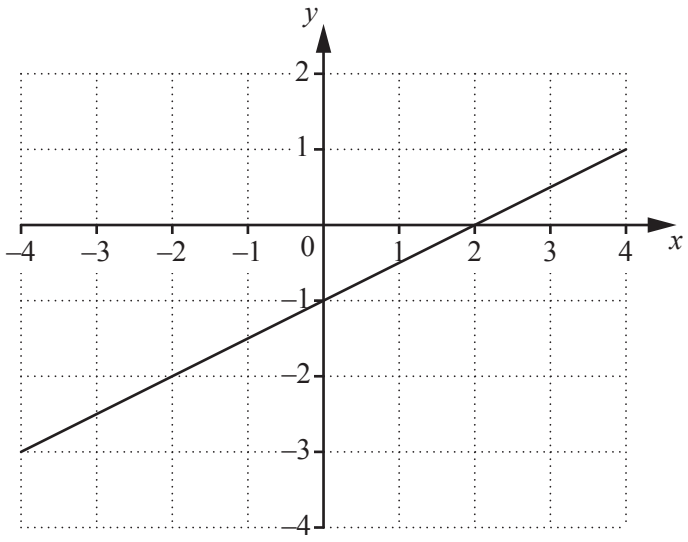
Give your answer in standard form.

..... [2]

**22** Show that $2x(3x^2 - 4x) + 8(x^2 + 3)$ can be simplified to $6(x^3 + 4)$.

[3]

**23**




The diagram shows the graph of a straight line.

Find the equation of this straight line.
Give your answer in the form $y = mx + c$.

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

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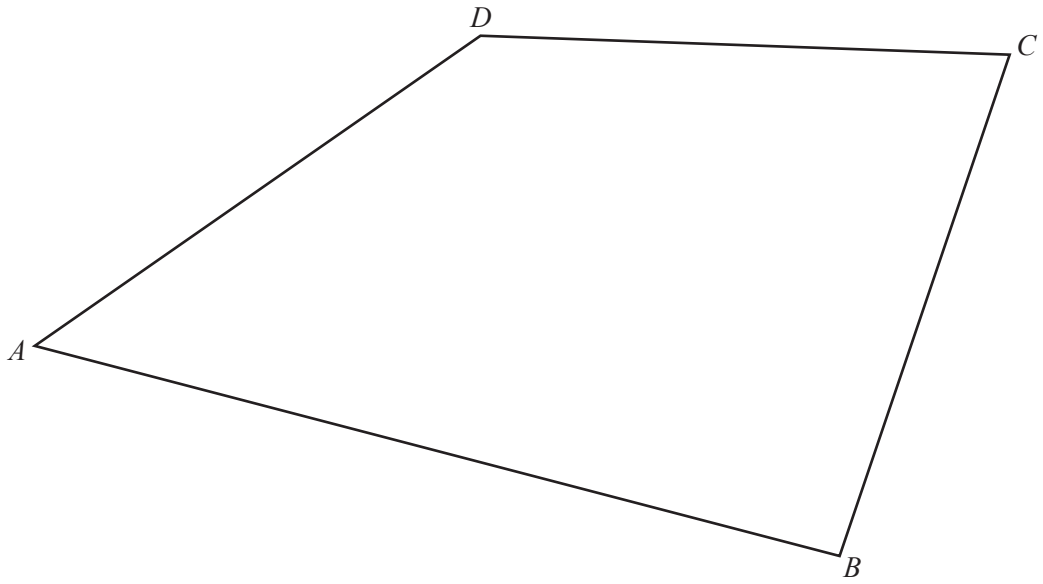
**24 Use a straight edge and compasses only for this question.**
**Leave in all your construction arcs.**




Construct and shade the region inside the quadrilateral *ABCD* which is

- nearer to *AB* than *AD*

and

- nearer to *C* than *D*. [5]

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