



Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

GCSE

MATHEMATICS

F

Foundation Tier Paper 3 Calculator

8300/3F

Tuesday 11 June 2019 Morning

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

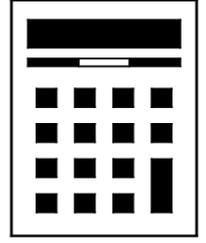
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JUN1983003F01

For this paper you must have:

- **a calculator**
- **mathematical instruments.**



INSTRUCTIONS

- **Use black ink or black ball-point pen. Draw diagrams in pencil.**
- **Answer ALL questions.**
- **You must answer the questions in the spaces provided. Do not write on blank pages.**
- **Do all rough work in this book. Cross through any work you do not want to be marked.**

INFORMATION

- **The marks for questions are shown in brackets.**
- **The maximum mark for this paper is 80.**
- **You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.**

ADVICE

In all calculations, show clearly how you work out your answer.

DO NOT TURN OVER UNTIL TOLD TO DO SO



Answer ALL questions in the spaces provided

1

Circle the value of the digit 2 in the answer to $5200 \div 10$

[1 mark]

2

20

200

2000

2

Solve $x - 8 = 5$

Circle your answer. [1 mark]

$x = -13$

$x = -3$

$x = 3$

$x = 13$



5

3

Circle the fraction that is equal to $2\frac{1}{4}$

[1 mark]

$$\frac{7}{4}$$

$$\frac{9}{4}$$

$$\frac{21}{4}$$

$$\frac{25}{4}$$

4

Circle the expression which means x divided by y

[1 mark]

$$\frac{x}{y}$$

$$\frac{y}{x}$$

$$\frac{1}{xy}$$

$$\frac{1}{x+y}$$

[Turn over]



5

Put these numbers in order from smallest to largest.

$$\frac{31}{40}$$

$$\frac{3}{4}$$

$$\frac{7}{10}$$

0.725

[2 marks]

Smallest _____

Largest _____



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[Turn over]



6

Josh downloads album A.

A has 11 tracks.

Each track on A costs the same.

The total cost of downloading A is £8.80

Josh also downloads album B.

B has 14 tracks.

6 (a)

Work out the total cost of downloading B.

Assume each track costs the same as a track on A. [3 marks]

Answer £ _____

[Turn over]

6 (b)

In fact, compared to the cost of each track on A

the cost of 6 tracks on B is MORE by 5p each

the cost of 8 tracks on B is LESS by 5p each.

What does this tell you about your answer to part (a)?

Tick ONE box.

The total cost is LESS than my answer to part (a)

The total cost is MORE than my answer to part (a)

The total cost is THE SAME as my answer to part (a)



**Give a reason for your decision.
[2 marks]**

<hr/>
5

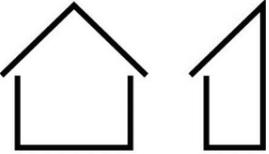
[Turn over]

7

The pictogram shows information about the houses in a street.

Each house has 3, 4 or 5 bedrooms.

KEY:  represents 2 houses

3-bedroom houses	
4-bedroom houses	
5-bedroom houses	

In total, how many bedrooms do these houses have? [3 marks]



Answer _____

6

[Turn over]

9

Jim wants to buy 10 rolls of wallpaper.

He sees these prices.

Wallpaper	
Single roll	£12.50
Pack of 3 rolls	£34.50
Pack of 5 rolls	£58.75

**What is the cheapest price for 10 rolls?
[4 marks]**

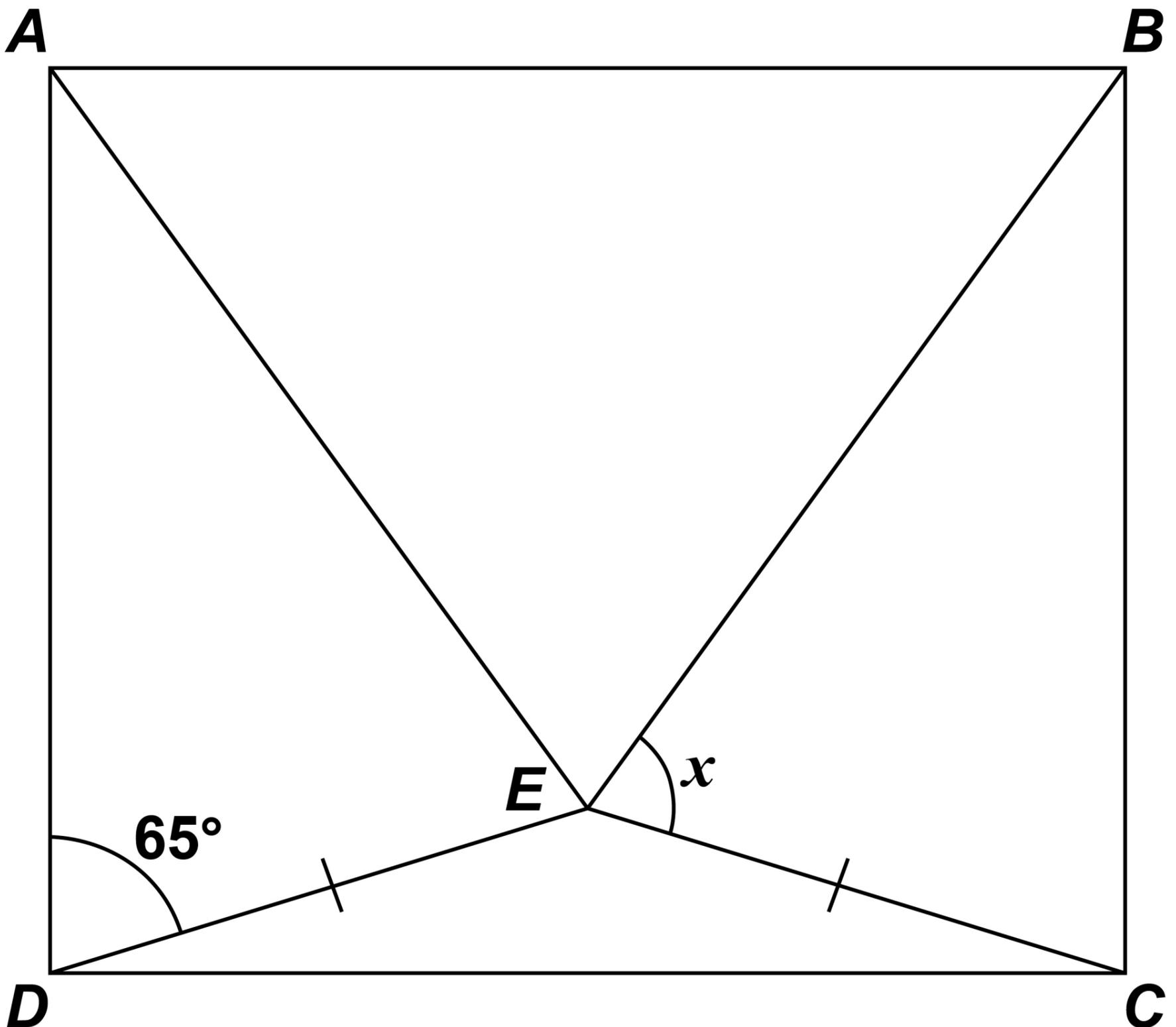
10

In rectangle $ABCD$

triangle ABE is equilateral

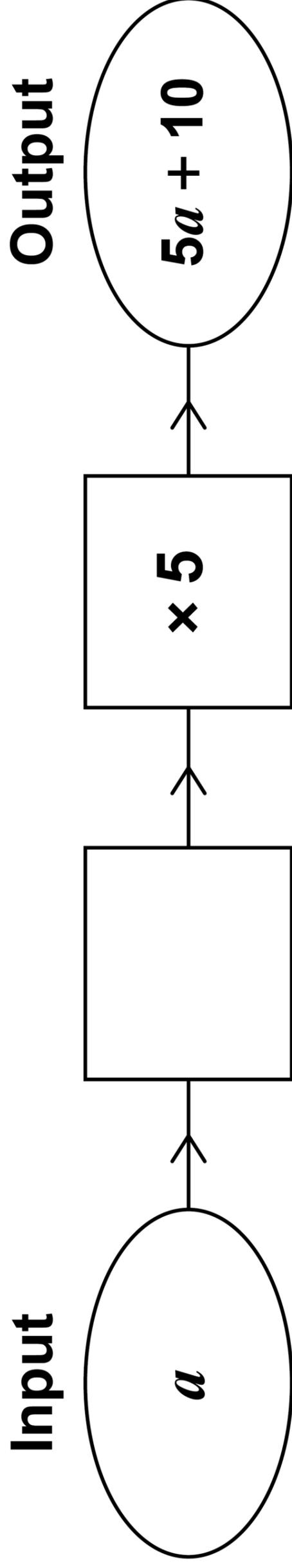
triangle CDE is isosceles, with $CE = DE$

The diagram is not drawn accurately.



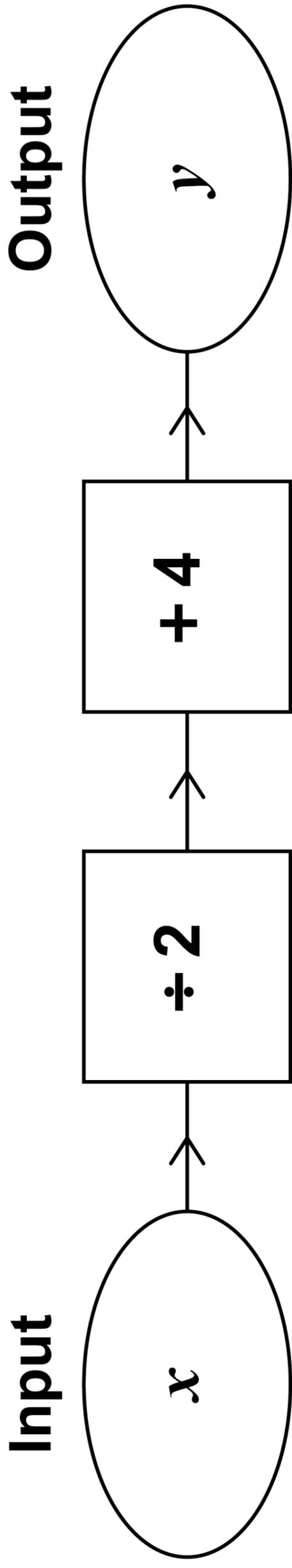
11 (a)

Complete the number machine. [1 mark]



11 (b)

Write down the output y in terms of x . [1 mark]



21

Answer _____

[Turn over]



12

The first four triangular numbers are
1, 3, 6, 10

Circle the next triangular number.
[1 mark]

14

15

16

19



13

**Write down ALL the prime numbers
between 40 and 50**

[2 marks]

Answer _____

<hr/>
5

[Turn over]



Answer _____ m³

15

Circle the correct statement. [1 mark]

$$\frac{1}{3} \leq 30\%$$

$$\frac{1}{3} = 30\%$$

$$\frac{1}{3} < 30\%$$

$$\frac{1}{3} \neq 30\%$$

[Turn over]



16

Which shape MUST have rotational symmetry?

Circle your answer. [1 mark]

isosceles triangle trapezium

kite parallelogram

<hr/>
5

17

A shop sells ice creams.

Each ice cream has two scoops.

The possible flavours are vanilla (V), strawberry (S), chocolate (C) and mint (M).

The two scoops can be the same flavour or different flavours.



17 (a)

List ALL the possible options for the two scoops. [2 marks]

[Turn over]



17 (b)

In one hour the shop sells 180 scoops of ice cream.

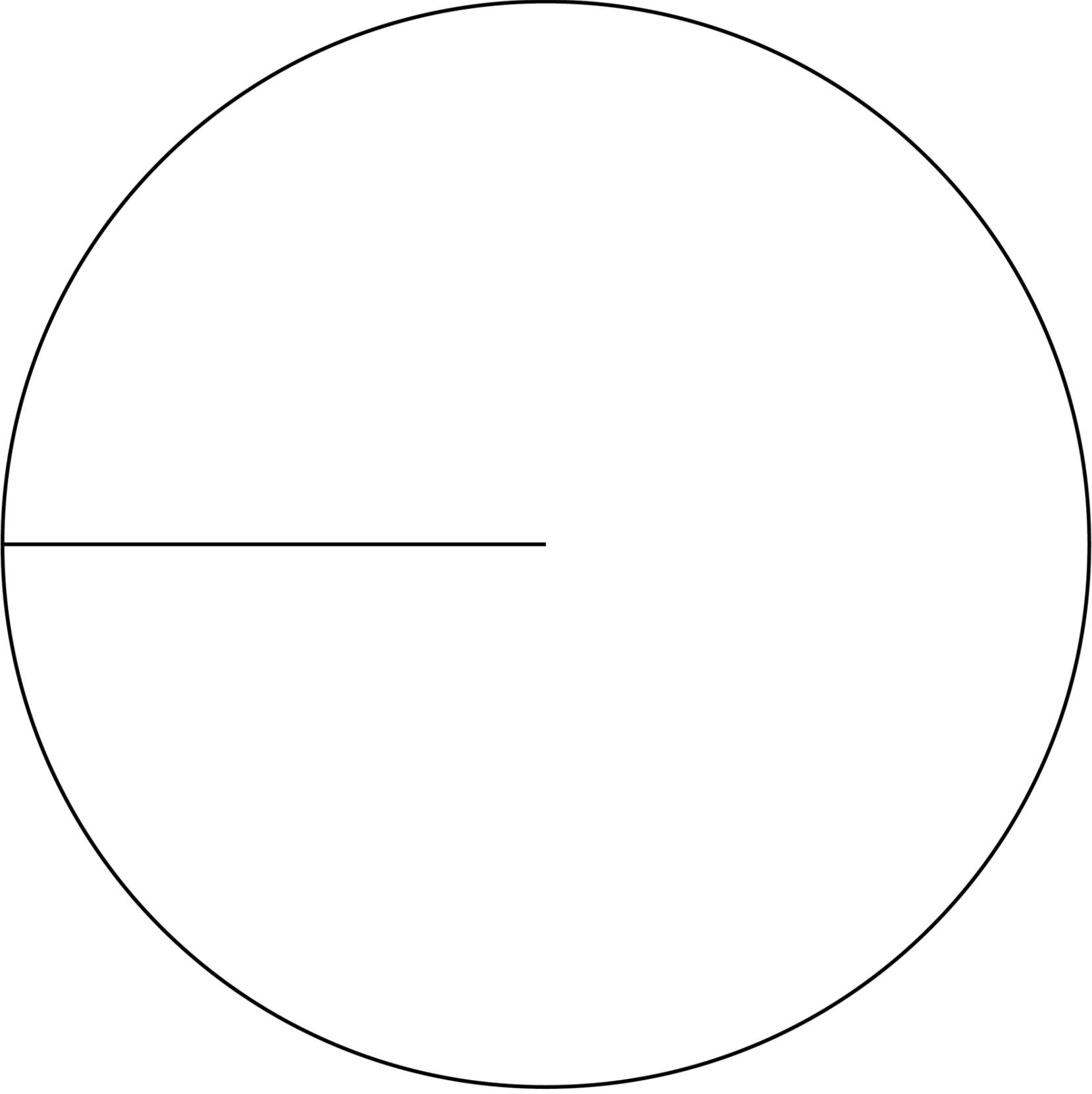
The number of scoops of each flavour is shown in the table.

Flavour	Vanilla	Strawberry	Chocolate	Mint
Number of scoops	45	75	50	10

28

Complete the pie chart to represent the data. [4 marks]





[Turn over]



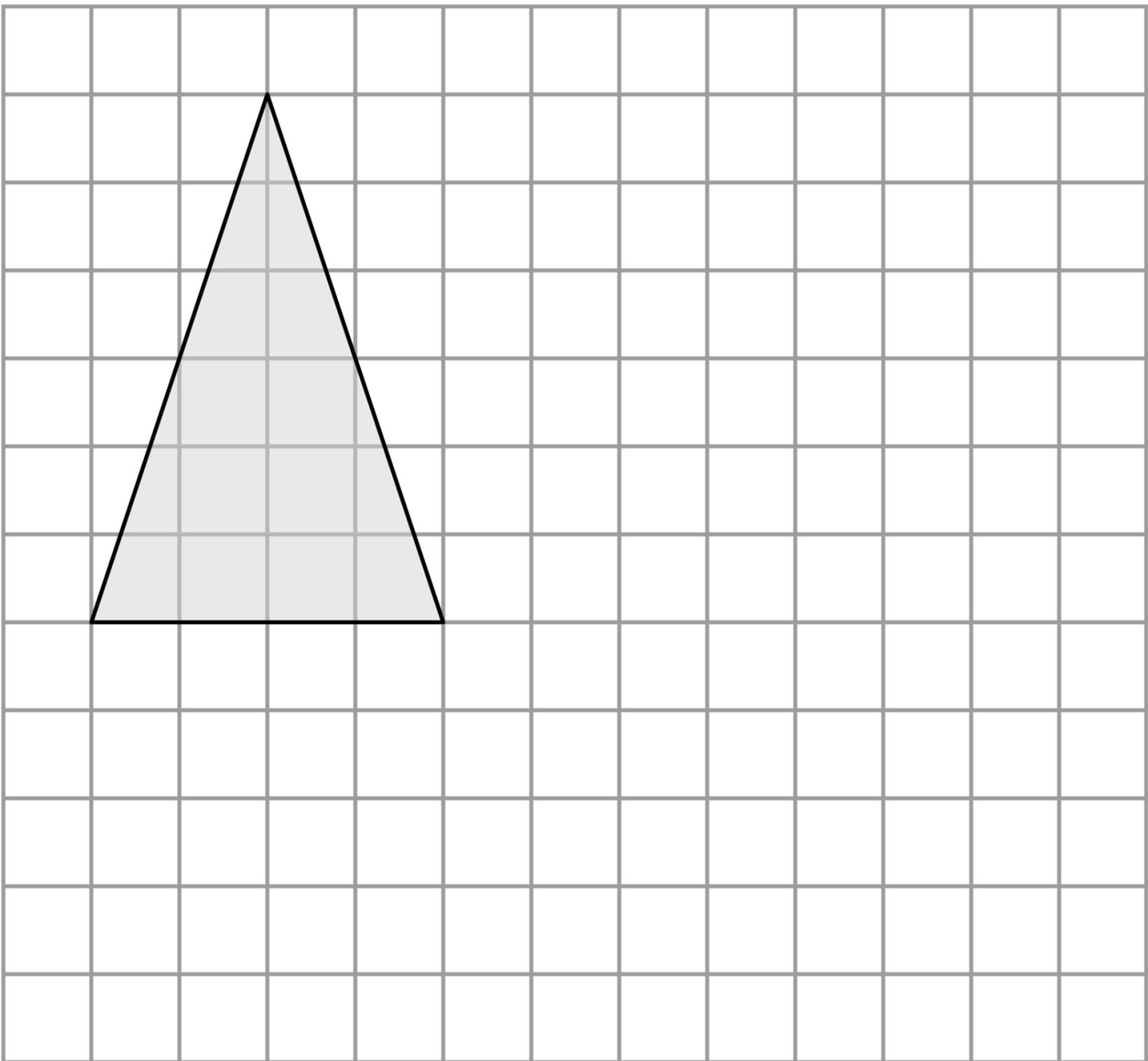
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18

On the grid, draw an enlargement of the triangle with scale factor $\frac{1}{2}$

[2 marks]



19 (a)

Simplify fully $3a^2 + 7a + 3 - a^2 + 8a - 4$

[3 marks]

Answer _____

19 (b)

Factorise fully $24y^2 - 20y$

[2 marks]

Answer _____



20

Solve $x^2 = 196$ **[2 marks]**

Answer _____

9



22

Here is a formula.

$$T = n^2 - \frac{12}{n}$$

22 (a)

Work out T when $n = 5$

[1 mark]

Answer _____



23

In one hour a machine can make
600 nuts
or
720 bolts.

At 3 pm the machine starts working.

It makes 900 nuts and then changes to
making bolts.

How many **BOLTS** will the machine make
by 8 pm? [4 marks]

24

Two solids, J and K, have the same density.

Complete the table.

Include units in your answers. [3 marks]

	J	K
Mass	48 g	78 g
Volume	8 cm ³	
Density		

<hr/> 7



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[Turn over]



25

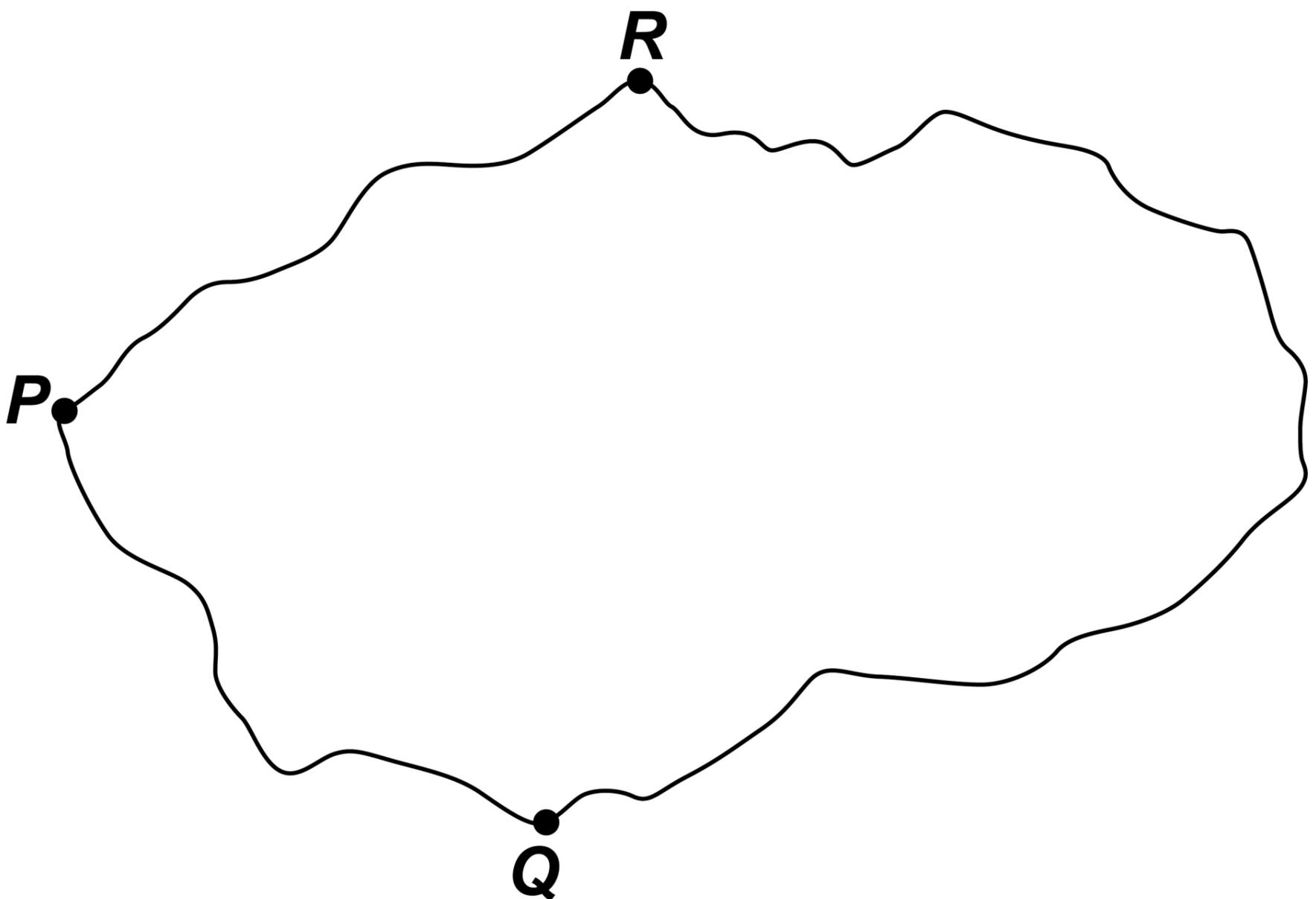
Towns P , Q and R are connected by roads PQ , PR and QR .

PR is 10 km longer than PQ .

QR is twice as long as PR .

The total length of the three roads is 170 km

The diagram is not drawn accurately.



26

Mia wants to borrow £6000 and repay it, with interest, after two years.

She sees two offers for loans.

OFFER 1

**Compound interest
3% per year**

OFFER 2

**Compound interest
First year 1%
Second year 5%**

Mia says,

“I will pay back the same amount because the average of 1% and 5% is 3%”

Is she correct?

You MUST show your working. [3 marks]



27

Here are two sets of numbers, A and B.

Set A

200	160
104	100

Set B

270	400	483
300	x	

mean of Set A : mean of Set B = 3 : 8

Work out the value of x . [4 marks]



29

Two sides of a triangle have lengths
13 cm and 27 cm

Which of these is a POSSIBLE length of
the other side?

Circle your answer. [1 mark]

13 cm

14 cm

27 cm

40 cm

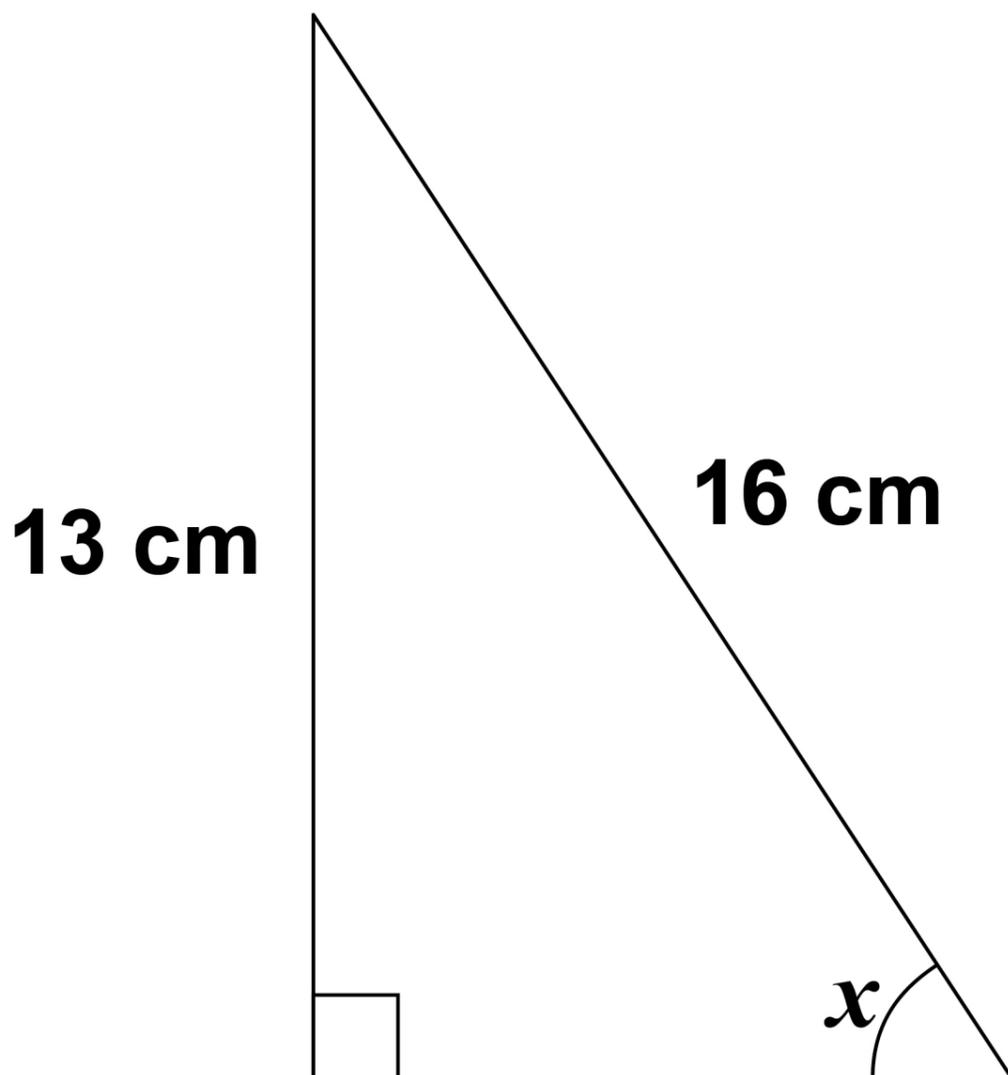
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30

Here is a right-angled triangle.

It is not drawn accurately.



Use trigonometry to work out the size of angle x . [2 marks]

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For Examiner's Use	
Pages	Mark
4–6	
8–11	
12–15	
16–19	
20–23	
24–26	
27–31	
32–34	
35–37	
38–40	
42–45	
46–48	
49–51	
TOTAL	

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