AQA

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

# GCSE MATHEMATICS

**F**

Foundation Tier

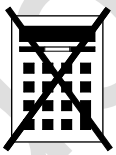
Paper 1 Non-Calculator

Shadow paper based on June 2022 question paper

Time allowed: 1 hour 30 minutes

### Materials

For this paper you must have:
- mathematical instruments
- the Formulae Sheet (enclosed).



You must **not** use a calculator.

### Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- 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.

| For Examiner's Use | |
|---|---|
| Pages | Mark |
| 2–3 | |
| 4–5 | |
| 6–7 | |
| 8–9 | |
| 10–11 | |
| 12–13 | |
| 14–15 | |
| 16–17 | |
| 18–19 | |
| 20–21 | |
| 22–23 | |
| 24–25 | |
| 26 | |
| **TOTAL** | |

Answer **all** questions in the spaces provided.

*Do not write outside the box*

**1 (a)** Circle the answer to $1800 \div 6$

**[1 mark]**

3 | 30 | 300 | 3000

**1 (b)** Circle the answer to $3 - 7$

**[1 mark]**

$-10$ | $-4$ | 4 | 10

**1 (c)** Circle the answer to $-4 \times 3$

**[1 mark]**

$-12$ | $-7$ | 7 | 12

*Do not write outside the box*

**2** $P$ is half $r$.

Circle the correct formula.

**[1 mark]**

$P = \frac{r}{2}$ $P = r + 2$ $P = r - 2$ $P = 2r$

**3** By rounding each number to the nearest 10, estimate the value of $29 \times 41$

**[3 marks]**

Answer _____

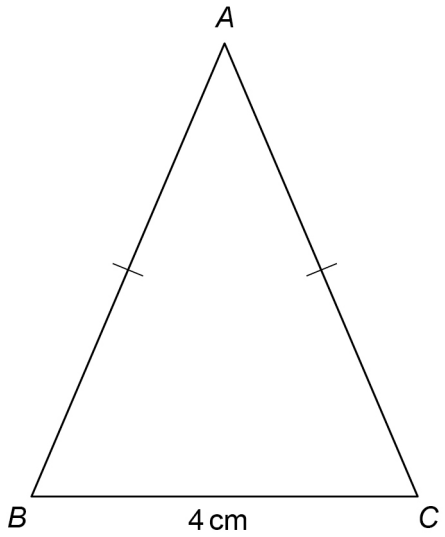
**Turn over for the next question**

7

*Do not write outside the box*

**4** In this isosceles triangle,

$AB = AC$




Not drawn accurately

The perimeter of the triangle is 18 cm

Work out the length of $AB$.

**[3 marks]**

Answer _____ cm

*Do not write outside the box*

**5** After work, Michael will

- go to the gym (G)
- write some emails (W)
- watch television (T).

Complete the list of the 6 possible orders in which he could do them.

**[2 marks]**

| GWT |
| --- |
| |
| |
| |
| |
| |

**Turn over for the next question**

5

**Turn over ►**

*Do not write outside the box*

**6 (a)** Which statement is correct?

Tick **one** box.

☐ $26 + 4 > 39 - 10$

☐ $26 + 4 = 39 - 10$

☐ $26 + 4 < 39 - 10$

Show working to support your answer.

**[2 marks]**

**6 (b)** Work out $30 \div 3 + 7$

**[2 marks]**

Answer _____

*Do not write outside the box*

**7**

| | Cost of 100 grams |
|---|---|
| **Beans** | 79p |
| **Lentils** | 22p |

Lucy buys 300 grams of beans and 350 grams of lentils.

Work out the **total** cost in £

**[4 marks]**

Answer £ _____

**Turn over for the next question**

**8**

*Do not write outside the box*

**8 (a)** For a set of five numbers,

the mode is 6

the median is 9

Work out **one** possible set of five numbers.

**[2 marks]**

Answer _____ _____ _____ _____ _____

**8 (b)** Here are the heights, in metres, of some buildings.

97 104 92 95 103 169 84

Which height is an outlier?

**[1 mark]**

Answer _____ m

*Do not write outside the box*

**9** Hannah has 16 books.

50% of these books are paperback books.

She gives 7 of her paperback books to a charity shop.

She buys 1 new paperback book.

What percentage of the books she has now are paperbacks?

**[4 marks]**

Answer _____ %

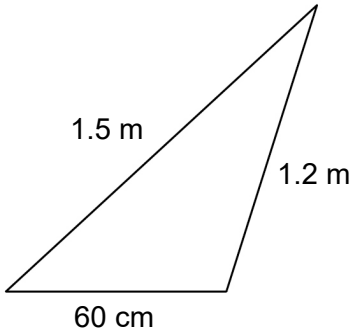
**Turn over for the next question**

7

*Do not write outside the box*

**10 (a)** Here is a triangle.

Not drawn accurately




Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

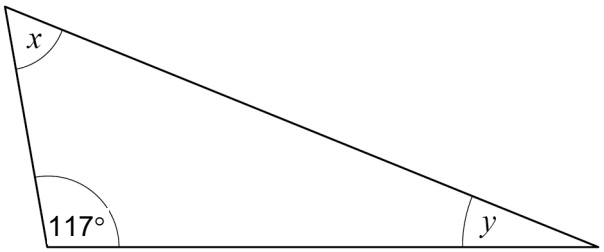
Give your answer as a fraction in its simplest form.

**[2 marks]**

Answer _____

*Do not write outside the box*

**10 (b)** Here is a different triangle.




$x = 2y$

Work out the size of angle $y$.

**[3 marks]**

$y =$ _____ °

**Turn over for the next question**

5

**Turn over ►**

*Do not write outside the box*

**11** Petrol stations A and B sell fuel for cars.

The table shows the costs **per litre** for two types of fuel, Regular and Super.

| Petrol Station | Regular | Super |
|---|---|---|
| A | £1.83 | £1.91 |
| B | £1.75 | £1.86 |

**11 (a)** Work out the difference in cost for the two types of fuel at **Petrol Station A**.

**[2 marks]**

Answer £ _____

*Do not write outside the box*

**11 (b)** Bronwyn wants to buy twelve litres of Regular fuel from **Petrol Station B**.

How much in total will she pay?

**[3 marks]**

Answer £ _____

**12** Work out $\frac{13}{18} - \frac{2}{3}$

**[2 marks]**

Answer _____

**7**

*Do not write outside the box*

**13 (a)** The term-to-term rule for a sequence is

multiply by 5

The 3rd term of the sequence is 80

Work out the 1st term.

Give your answer as a decimal.

**[3 marks]**

Answer _____

**13 (b)** The term-to-term rule for a different sequence is

add $k$

The 1st term is 19

The 5th term is 47

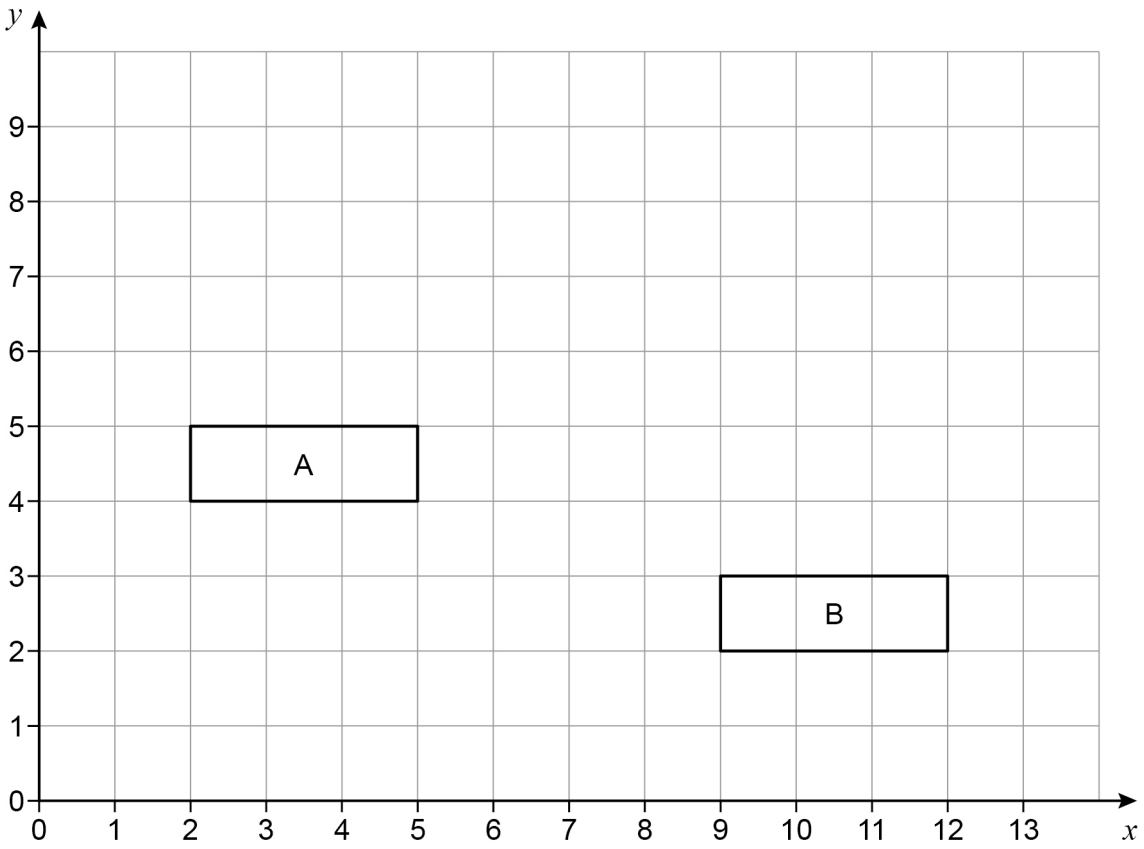
Work out the value of $k$.

**[3 marks]**

$k =$ _____

*Do not write outside the box*

**14**




Work out the vector that translates shape B to shape A.

**[2 marks]**

Answer ( )

**Turn over for the next question**

8

**Turn over ►**

*Do not write outside the box*

**15** In a bag there are only red discs, blue discs and yellow discs.

There are 12 red discs.

When one disc is picked at random

$$P(\text{red}) = \frac{1}{8}$$

$$P(\text{blue}) = \frac{1}{3}$$

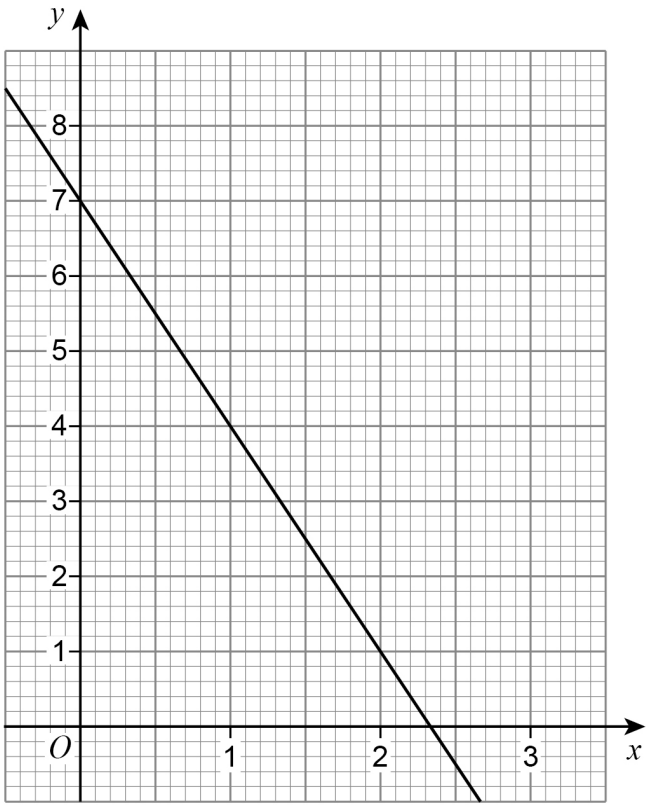
How many **yellow** discs are in the bag?

**[4 marks]**

Answer _____

*Do not write outside the box*

**16** Here is the graph of $y = 7 - 3x$




Draw the graph of $y = 2x - 1$ on the grid

and then

work out an approximate solution to $7 - 3x = 2x - 1$

**[3 marks]**

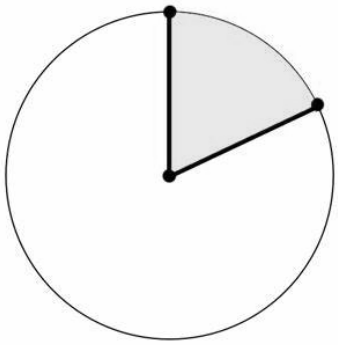
Answer _____

7

**Turn over ►**

*Do not write outside the box*

**17** Part of this circle is shaded.



Circle the name of the shaded part.

**[1 mark]**

arc chord sector segment

**18** Work out 900 000 000 ÷ 300

Give your answer in standard form.

**[2 marks]**

Answer _____

*Do not write outside the box*

**19 (a)** Work out $\frac{5^{13}}{5^{10}}$

Give your answer as a whole number.

**[2 marks]**

Answer _____

**19 (b)** Simplify $9 \times 3^6 \times 3^4$

Give your answer as a power of 3

**[2 marks]**

Answer _____

**7**

*Do not write outside the box*

**20** In a group of 100 students

25 study both Maths and Biology

10 study Maths but do not study Biology

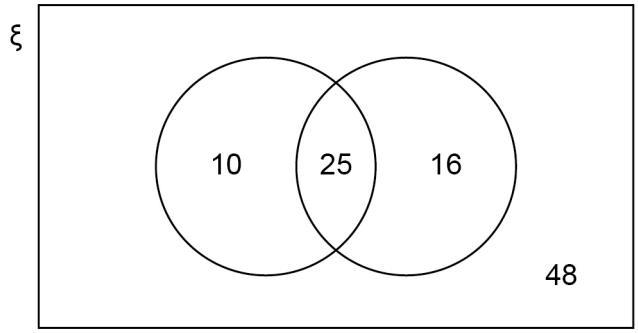
41 study Biology.

Jenni draws this Venn diagram to represent the information.

ξ = the group of 100 students

M = the students who study Maths

B = the students who study Biology




Make **two** criticisms of her diagram.

**[2 marks]**

Criticism 1 _____

_____

Criticism 2 _____

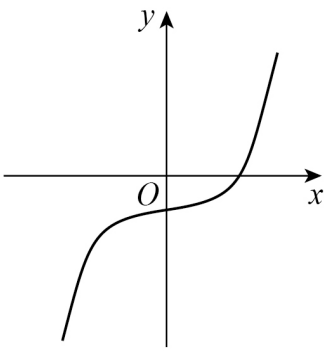
_____

*Do not write outside the box*

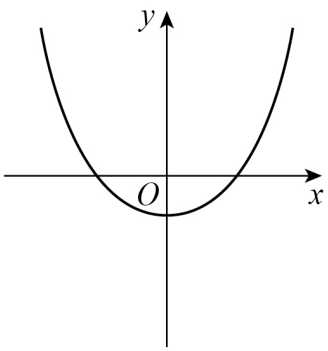
**21** Circle the letter of the possible sketch graph of $y = x^3 + 3$

**[1 mark]**

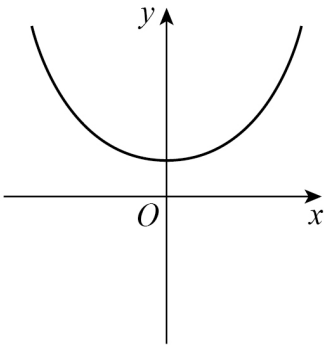
**A**



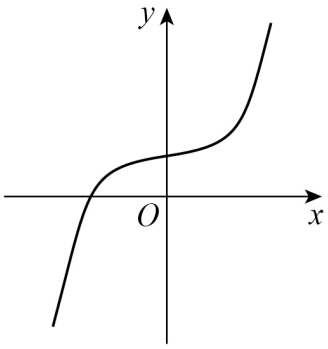

**B**




**C**




**D**




**Turn over for the next question**

3

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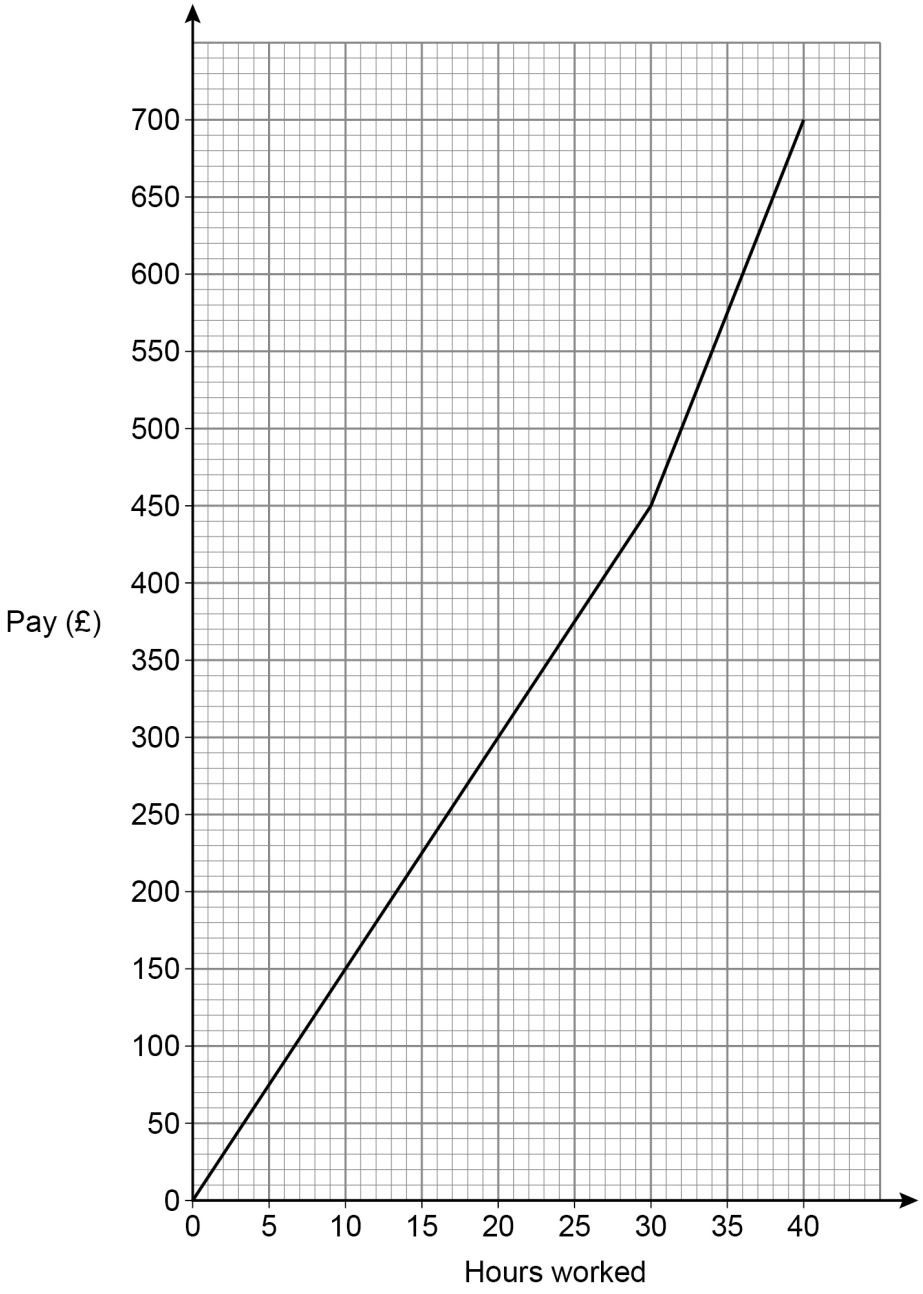
**22** In a week, Louisa is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows her pay for working up to 40 hours in a week.



*Do not write outside the box*

Work out the ratio overtime hourly rate : basic hourly rate

Give your answer in its simplest form.

**[3 marks]**

Answer _____ : _____

**23 (a)** In each box, write a fraction **less** than 1 to make a correct calculation.

**[1 mark]**

$$\frac{\square}{\square} \times \frac{\square}{\square} = \frac{3}{8}$$

**23 (b)** In each box, write a decimal **less** than 1 to make a correct calculation.

**[1 mark]**

$$\square \times \square = 0.18$$

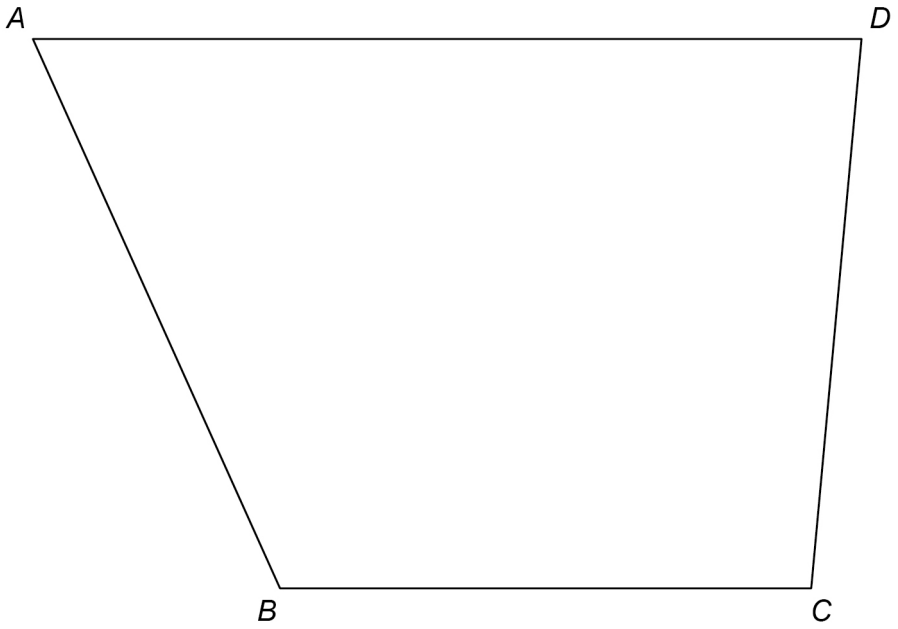
**5**

**Turn over ►**

*Do not write outside the box*

**24** Use a ruler and compasses in this question.

*ABCD* represents a car park.




A ticket machine is to be placed in the car park.

The ticket machine will be placed in the region that is closer to *BC* than to *AB*.

Label the region, R, where the ticket machine could be placed.

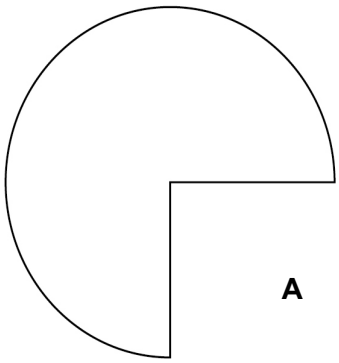
Show all your construction lines.

**[3 marks]**

*Do not write outside the box*

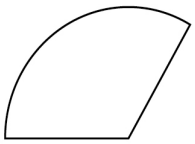
**25** Here are two shapes, A and B.

$\frac{3}{4}$ of a circle, radius 10 cm



**A**

$\frac{2}{5}$ of a circle, radius 5 cm



**B**

Not drawn accurately

How many times bigger is the area of A than the area of B?

You **must** show your working.

**[4 marks]**

Answer _____

7

**Turn over ►**

*Do not write outside the box*

**26** Solve $\frac{3h}{20} = \frac{3}{5}$

**[2 marks]**

$h =$ _____

**27** A solid has volume 200 $cm^3$ and density 5 $g/cm^3$

Circle the mass of the solid.

**[1 mark]**

1000 g  195 g  205 g  40 g

**28** $x : y$ is 7 : 5

Circle the value of $\frac{x}{2y}$

**[1 mark]**

$\frac{10}{7}$  $\frac{5}{14}$  $\frac{7}{10}$  $\frac{14}{5}$

**END OF QUESTIONS**

4

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