

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

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Forename(s)

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Candidate signature

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I declare this is my own work.

# GCSE MATHEMATICS

# F

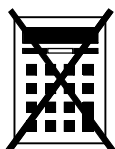
Foundation Tier Paper 1 Non-Calculator

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.

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	
<b>TOTAL</b>	

## Advice

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



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

Do not write  
outside the  
box

1 (a) Circle the answer to  $150 \div 5$

[1 mark]

3

30

300

3000

1 (b) Circle the answer to  $5 - 7$

[1 mark]

-12

-2

2

12

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

[1 mark]

-9

-6

6

9



- 2**  $P$  is double  $r$ .  
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  $31 \times 18$

[3 marks]

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Answer \_\_\_\_\_

Turn over for the next question

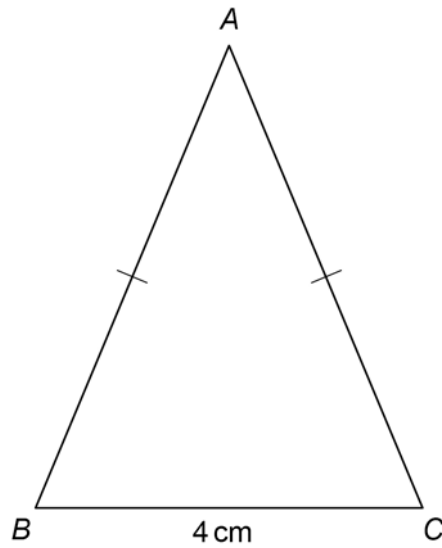
7

Turn over ►



4 In this isosceles triangle,

$$AB = AC$$



Not drawn  
accurately

The perimeter of the triangle is 22 cm

Work out the length of  $AB$ .

[3 marks]

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Answer \_\_\_\_\_ cm



5

After school, Priya will

- go running (R)
- do her homework (H)
- play a video game (V).

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

**[2 marks]**

RHV

**Turn over for the next question**

5

**Turn over ►**

6 (a) Which statement is correct?

Tick **one** box.

$17 + 3 < 29 - 10$

$17 + 3 = 29 - 10$

$17 + 3 > 29 - 10$

Show working to support your answer.

[2 marks]

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6 (b) Work out  $60 \div 2 + 4$

[2 marks]

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Answer \_\_\_\_\_



7

	Cost of 100 grams
Cereal	49p
Pasta	14p

Leah buys 400 grams of cereal and 250 grams of pasta.

Work out the **total** cost in £

[4 marks]

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Answer £ \_\_\_\_\_

Turn over for the next question

8
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Turn over ►



- 8 (a)** For a set of five numbers,  
the mode is 8  
the median is 12

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

**[2 marks]**

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Answer \_\_\_\_\_

- 8 (b)** Here are the heights, in centimetres, of some children.

98    103    91    85    159    102    91

Which height is an outlier?

**[1 mark]**

Answer \_\_\_\_\_ cm





**9** Shona has 14 dresses.

50% of these dresses are red.

She gives 5 of her red dresses to a charity shop.

She buys 1 new red dress.

What percentage of the dresses she has now are red?

**[4 marks]**

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Answer \_\_\_\_\_ %

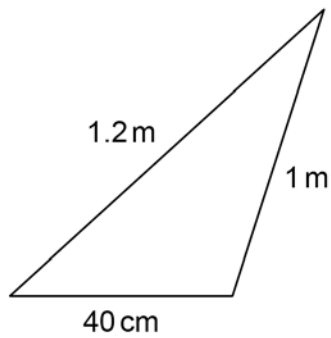
**Turn over for the next question**

7
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**Turn over ►**



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]

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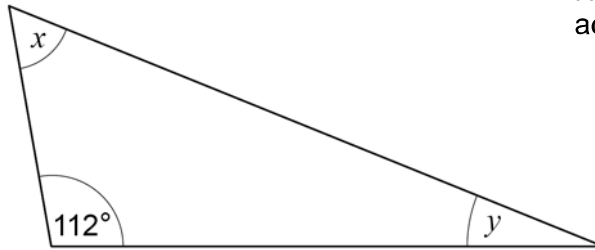
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Answer \_\_\_\_\_



10 (b) Here is a different triangle.



Not drawn  
accurately

$$x = 3y$$

Work out the size of angle  $y$ .

[3 marks]

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$$y = \underline{\hspace{4cm}}^\circ$$

Turn over for the next question



- 11** Companies A and B sell insurance for mobile phones.  
The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- 11 (a)** Work out the difference in monthly cost for the two types of cover with **Company A**.

**[2 marks]**

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Answer £ \_\_\_\_\_



11 (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3 marks]

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Answer £ \_\_\_\_\_

12

Work out  $\frac{11}{18} - \frac{1}{3}$

[2 marks]

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Answer \_\_\_\_\_

7
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Turn over ►



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

multiply by 2

The 3rd term of the sequence is 46

Work out the 1st term.

Give your answer as a decimal.

[3 marks]

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Answer \_\_\_\_\_

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

subtract  $k$

The 1st term is 34

The 4th term is 10

Work out the value of  $k$ .

[3 marks]

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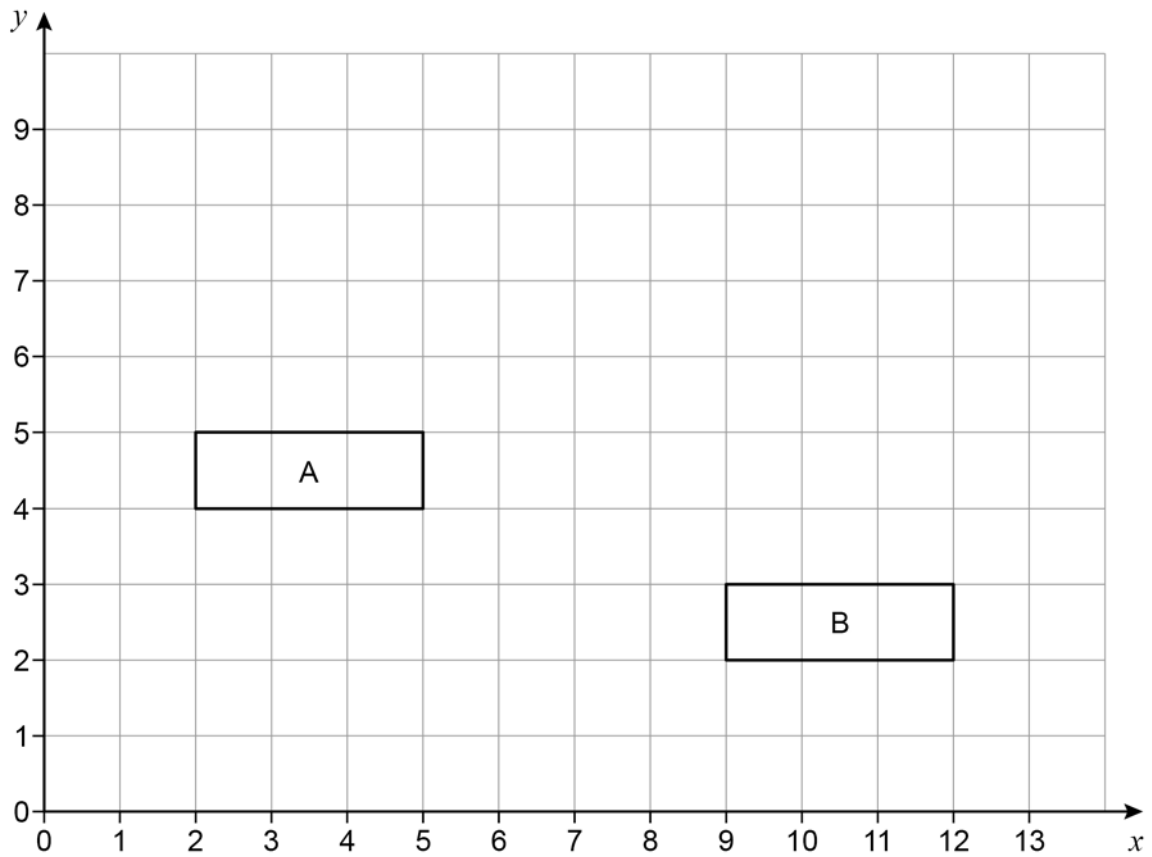
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$k =$  \_\_\_\_\_



14



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

[2 marks]

Answer  $\left( \begin{array}{c} \phantom{0} \\ \phantom{0} \end{array} \right)$

Turn over for the next question

Turn over ►



15

In a bag there are only red discs, blue discs and green discs.

There are 10 red discs.

When one disc is picked at random

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

$$P(\text{blue}) = \frac{2}{5}$$

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

**[4 marks]**

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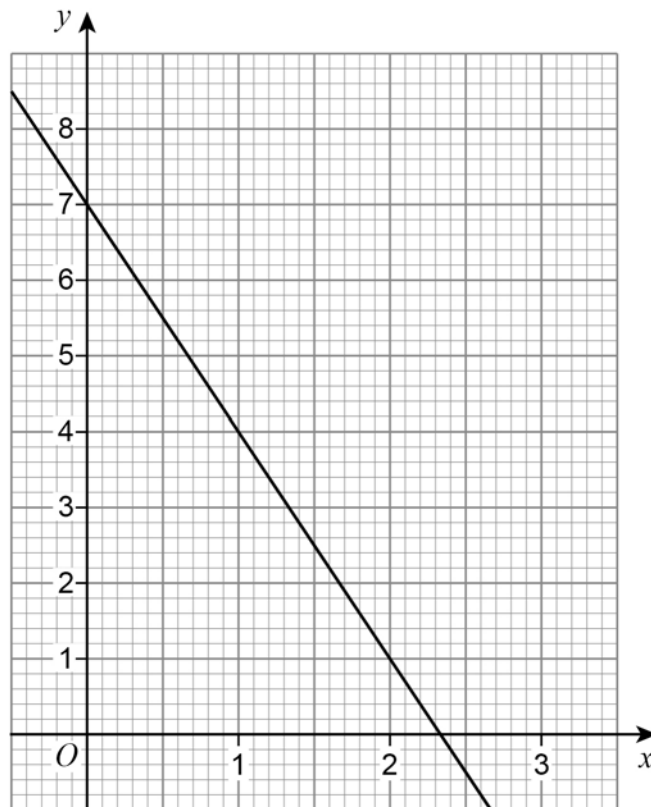
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Answer \_\_\_\_\_





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]

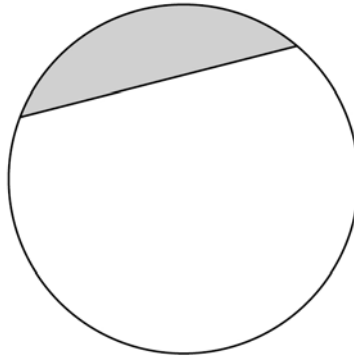
Answer \_\_\_\_\_

7
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Turn over ►



- 17 Part of this circle is shaded.



Circle the name of the shaded part.

[1 mark]

arc

sector

chord

segment

- 18 Work out  $80\,000\,000 \div 200$   
Give your answer in standard form.

[2 marks]

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Answer \_\_\_\_\_



19 (a) Work out  $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

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Answer \_\_\_\_\_

19 (b) Simplify  $8 \times 2^6 \times 2^4$

Give your answer as a power of 2

[2 marks]

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Answer \_\_\_\_\_

      
7

Turn over ►



20

In a group of 98 students

25 study both Art and French

10 study Art but do not study French

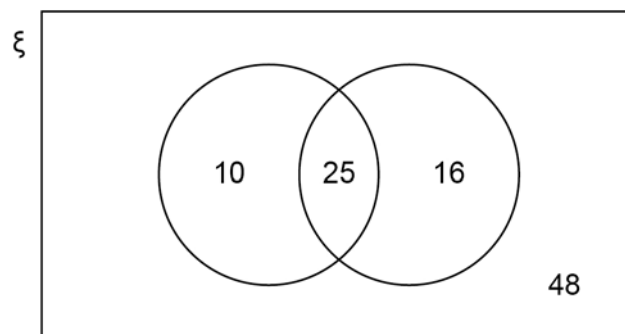
41 study French.

Joel draws this Venn diagram to represent the information.

$\xi$  = the group of 98 students

A = the students who study Art

F = the students who study French



Make **two** criticisms of his diagram.

**[2 marks]**

Criticism 1 \_\_\_\_\_

\_\_\_\_\_

Criticism 2 \_\_\_\_\_

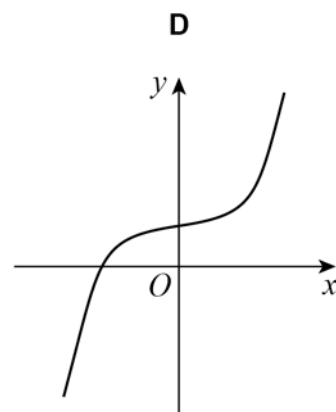
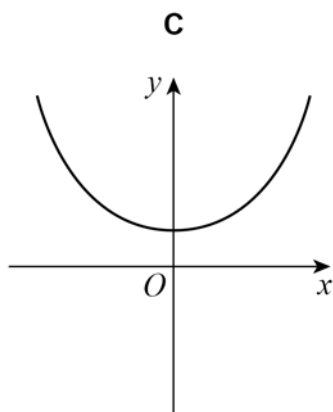
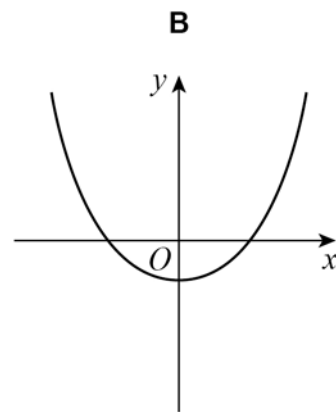
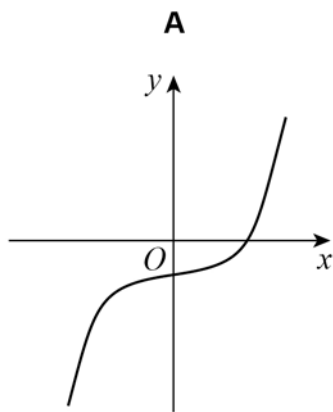
\_\_\_\_\_



21

Circle the letter of the possible sketch graph of  $y = x^3 - 4$ 

[1 mark]



Turn over for the next question

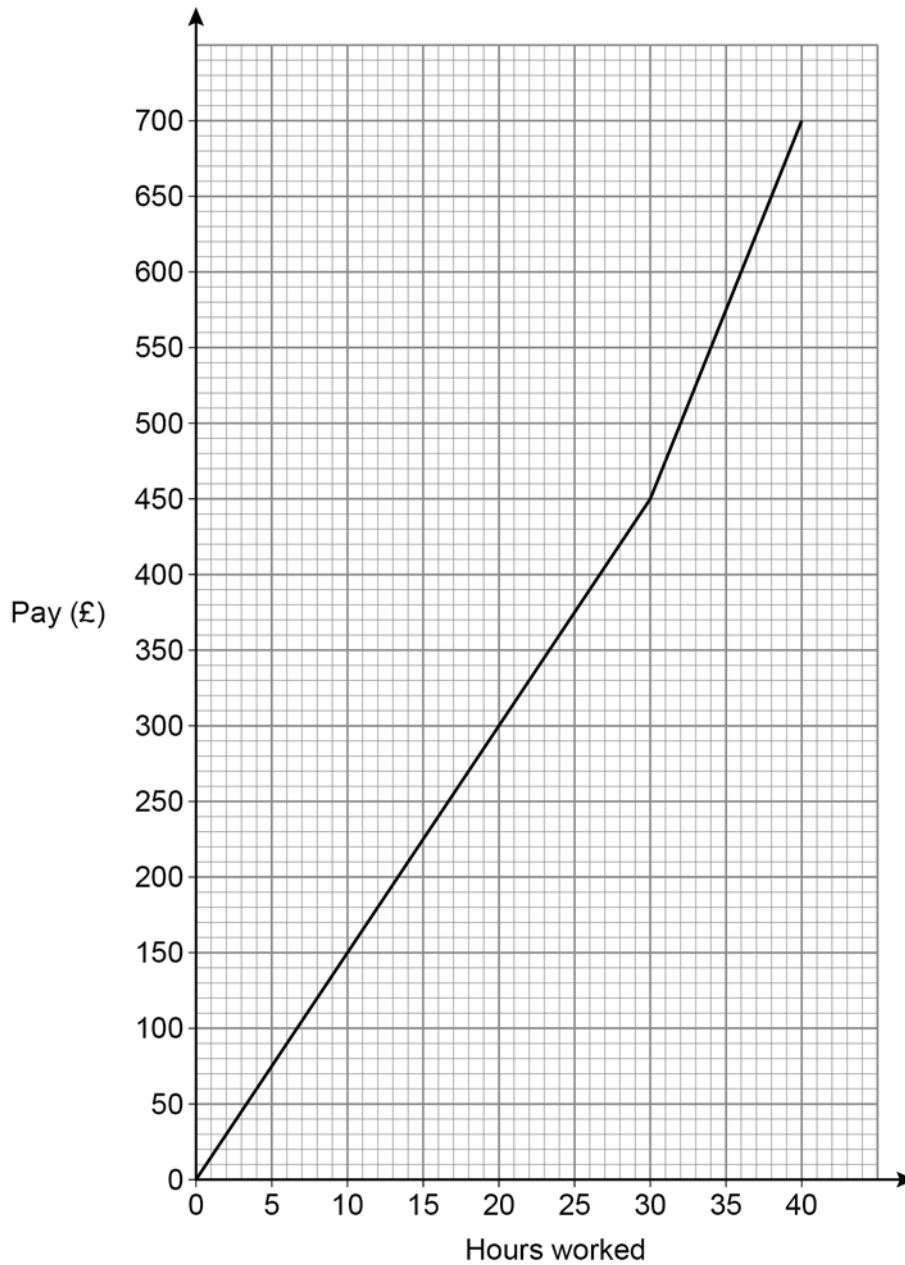
Turn over ►



22

In a week, Samir is paid  
a basic hourly rate for the first 30 hours worked  
an overtime hourly rate for any extra hours worked.

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



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

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Answer \_\_\_\_\_ : \_\_\_\_\_

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

[1 mark]

$$\boxed{\frac{\quad}{\quad}} \times \boxed{\frac{\quad}{\quad}} = \frac{3}{10}$$

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

[1 mark]

$$\boxed{\quad} \times \boxed{\quad} = 0.06$$

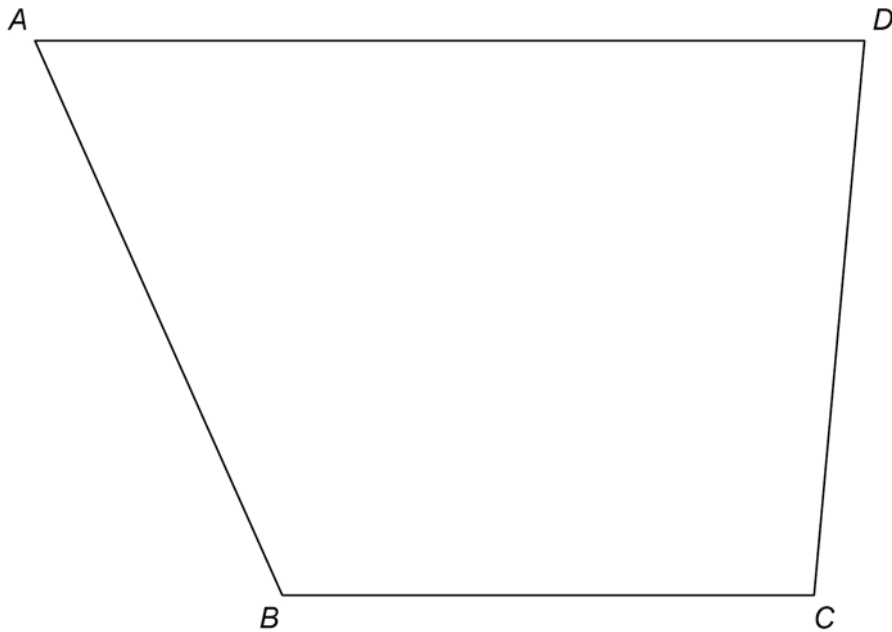
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Turn over ►



24 Use a ruler and compasses in this question.

$ABCD$  represents a garden.



A tree is to be planted in the garden.

The tree will be in the region that is closer to  $AB$  than to  $BC$ .

Label the region,  $R$ , where the tree could be planted.

Show all your construction lines.

**[3 marks]**

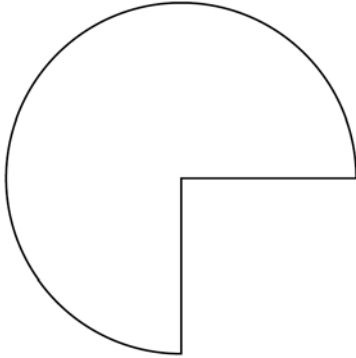




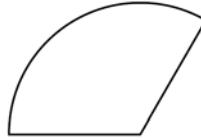
25

Here are two shapes, P and Q.

**P**  
 $\frac{3}{4}$  of a circle, radius 20 cm



**Q**  
 $\frac{1}{3}$  of a circle, radius 15 cm

Not drawn  
accurately

How many times bigger is the area of P than the area of Q?

You **must** show your working.**[4 marks]**


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Answer \_\_\_\_\_

7
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Turn over ►



26 Solve  $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

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$w =$  \_\_\_\_\_

27 A solid has volume  $300 \text{ cm}^3$  and density  $2 \text{ g/cm}^3$

Circle the mass of the solid.

[1 mark]

150 g

298 g

302 g

600 g

28  $x:y$  is  $9:5$

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

[1 mark]

$\frac{5}{18}$

$\frac{18}{5}$

$\frac{9}{10}$

$\frac{10}{9}$

END OF QUESTIONS



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