

Please write clearly in block capitals.

Centre number

Candidate number

Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

I declare this is my own work.

# GCSE MATHEMATICS

# F

Foundation Tier Paper 2 Calculator

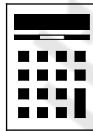
Wednesday 4 June 2025

Morning Time allowed: 1 hour 30 minutes

### Materials

For this paper you must have:

- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).



### 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	
<b>TOTAL</b>	



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

1 (a) Solve  $w + 8 = 19$

[1 mark]

$$19 - 8 = 11$$

$$w = 11$$

1 (b) Solve  $3x = 24$

[1 mark]

$$24 \div 3 = 8$$

$$x = 8$$

1 (c) Solve  $20 - y = 7$

[1 mark]

$$20 - 13 = 7$$

$$y = 13$$



2 The **only** animals in a field are sheep and cows.

The ratio sheep : cows = 31 : 47

There are fewer than 100 animals in the field.

$$31 + 47 = 78$$

2 (a) Write down the number of **cows** in the field.

[1 mark]

Answer 47

2 (b) In total, how many animals are there in the field?

[1 mark]

$$31 + 47 = 78$$

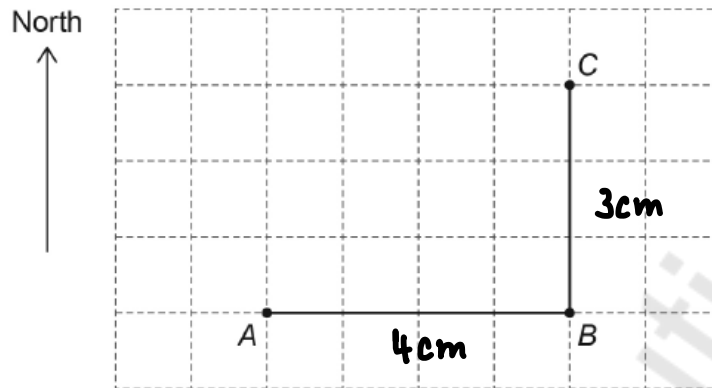
Answer 78

Turn over for the next question



- 3 A path joins points A, B, and C.  
The scale drawing shows the path on a centimetre grid.

**Scale:** 1 centimetre represents 10 metres



- 3 (a) Write down the direction of B from A.

[1 mark]

Answer East

- 3 (b) Work out the **actual** distance along the path from A to C.

[2 marks]

$$4 + 3 = 7\text{cm}$$

$$7 \times 10 = 70\text{m}$$

Answer 70 metres



4 (a) Simplify  $a \times b$

[1 mark]

Answer ab

4 (b) Simplify fully  $c + c + c$

[1 mark]

Answer 3c

4 (c) Simplify fully  $p \times p \times p$

[1 mark]

Answer  $p^3$

4 (d) Simplify  $d \div d$

[1 mark]

Answer 1

Turn over for the next question



5

Jenny walks

- 400 metres to the shop
- 250 metres to the park
- 380 metres home.

Show that Jenny walks more than 1 kilometre.

[2 marks]

$$400 + 250 + 380 = 1030 \text{ m}$$

$$1000 \text{ m} = 1 \text{ km}$$

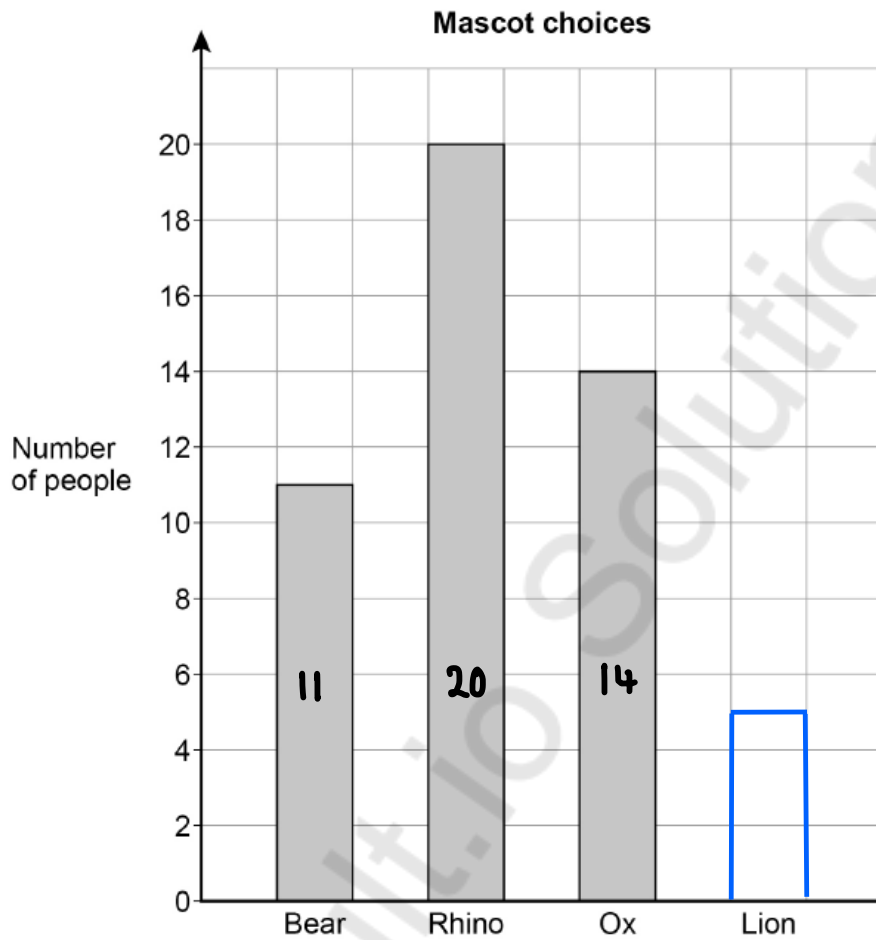
$$\div 1000$$

$$1030 \div 1000 = 1.03 \text{ km}$$

$$1.03 > 1$$



- 6 50 people choose a mascot for a team.  
The bar chart shows some information about their choices.



The 50 people each choose one of bear, rhino, ox or lion.

Complete the bar chart.

[4 marks]

$$11 + 20 + 14 = 45$$

$$50 - 45 = 5$$



- 7 Work out 80p as a fraction of £1  
Give your answer in its simplest form.

[2 marks]

$$\text{£}1 = 100\text{p}$$

$$\frac{80}{100} = \frac{4}{5}$$

Answer

$$\frac{4}{5}$$

- 8 (a) Convert  $3\frac{1}{2}$  hours to minutes.

[1 mark]

$$\begin{array}{l} \times 3 \quad 1 \text{ hr} = 60 \text{ mins} \quad \times 3 \\ \quad \quad 3 \text{ hr} = 180 \text{ mins} \end{array}$$

$$\frac{1}{2} \text{ hr} = 30 \text{ mins}$$

$$180 + 30 = 210$$

Answer

210

minutes

- 8 (b) Convert 1400 grams to kilograms.

[1 mark]

$$\begin{array}{l} \div 1000 \\ \swarrow \\ 1 \text{ kg} = 1000\text{g} \end{array}$$

$$1400 \div 1000$$

Answer

1.4

kilograms

- 8 (c) Convert 32 kilometres to miles.

Use 8 kilometres = 5 miles

[2 marks]

$$\begin{array}{l} \times 4 \quad 8 \text{ km} = 5 \text{ miles} \quad \times 4 \\ \quad \quad 32 \text{ km} = 20 \text{ miles} \end{array}$$

Answer

20

miles



- 9 The table shows information about two workers on one day.

	Total working time (hours)	Working time spent online (minutes)
Zeke	8	200
Margot	4	110

- 9 (a) Margot started work at 10:30am  
What time did she finish?

[1 mark]

$$10:30 \text{ am} + 4 \text{ hrs} = 14:30$$

Answer 14:30

- 9 (b) Zeke says he spent **more than one quarter** of his total working time online.  
Is he correct?

[3 marks]

Tick a box.

Yes

No

Show working to support your answer.

$$\begin{array}{l} 1 \text{ hr} = 60 \text{ mins} \\ \times 8 \qquad \qquad \times 8 \\ 8 \text{ hrs} = 480 \text{ mins} \end{array}$$

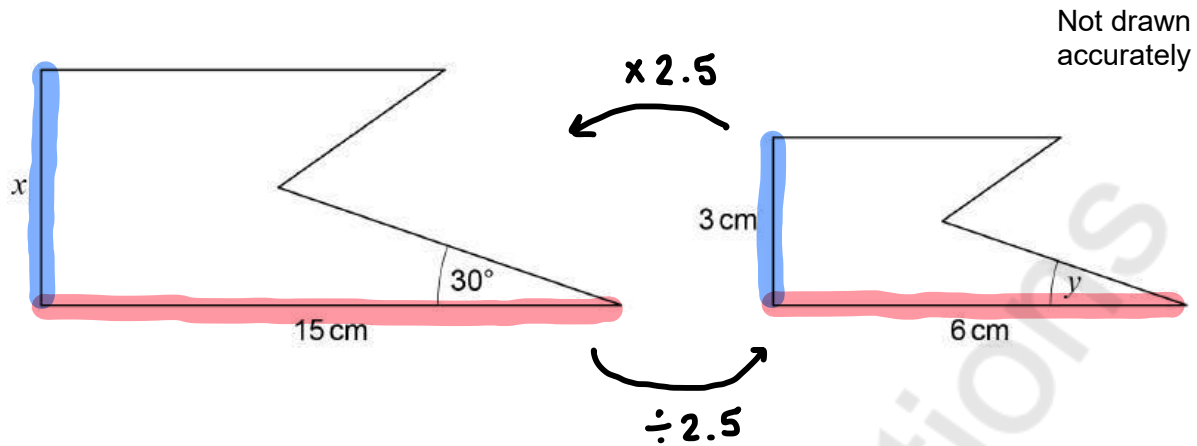
$$\frac{200}{480} = \frac{5}{12} = 0.41\bar{6} \qquad \frac{1}{4} = 0.25$$

$$0.41\bar{6} > 0.25$$

Turn over ►



- 10 These two shapes are similar.



- 10 (a) Write down the value of  $y$ .

[1 mark]

$$y = \underline{\hspace{2cm}} \quad 30^\circ$$

- 10 (b) Work out the value of  $x$ .

[2 marks]

$$SF = \frac{15}{6} = 2.5$$

$$3 \times 2.5 = 7.5$$

$$x = \underline{\hspace{2cm}} \quad 7.5 \quad \text{cm}$$



- 11 Here are two expressions, A and B.

<b>A</b>
$7(x - 2) + 4x + 6$

<b>B</b>
$5(3x + 2) - 4x - 18$

Show that A and B are equivalent.

[3 marks]

<p><b>A</b></p> $7(x-2) + 4x + 6$ $7x - 14 + 4x + 6$ $11x - 8$	<p><b>B</b></p> $5(3x+2) - 4x - 18$ $15x + 10 - 4x - 18$ $11x - 8$
--	--

- 12 4 apples cost £2.20

Work out the cost of 7 of these apples.

[2 marks]

$\begin{array}{r} 4 \text{ apples} = \text{£}2.20 \\ \div 4 \\ 1 \text{ apple} = \text{£}0.55 \\ \times 7 \\ 7 \text{ apples} = \text{£}3.85 \end{array}$	$\begin{array}{r} 4 \text{ apples} = \text{£}2.20 \\ \div 4 \\ 1 \text{ apple} = \text{£}0.55 \\ \times 7 \\ 7 \text{ apples} = \text{£}3.85 \end{array}$
---	---

Answer £ 3.85



13 Ingrid records the number of minutes she uses her mobile phone over four weeks.

140      168      205      192

13 (a) Work out the range.

[1 mark]

$$205 - 140$$

Answer 65 minutes

13 (b) Ingrid records the number of minutes for a fifth week.

The mean for all **five** weeks is 178 minutes.

Work out the number of minutes used in the fifth week.

[3 marks]

$$\frac{140 + 168 + 205 + 192 + x}{5} = 178$$

$$\frac{705 + x}{5} = 178$$

$$\times 5 \qquad \times 5$$

$$705 + x = 890$$

$$- 705 \qquad - 705 \qquad x = 185$$

Answer 185 minutes



14

Match each description to the correct expression.

One has been done for you.

[4 marks]

		$2n$
2 more than $n$	—	$n + 2$
$n$ doubled $n \times 2 = 2n$	—	$\sqrt{n}$
$n$ multiplied by itself $n \times n = n^2$	—	$\frac{n}{2}$
half of $n$ $n \div 2 = \frac{n}{2}$	—	$n - 2$
2 less than $n$	—	$n^2$
		$2 - n$



15

A rectangle has

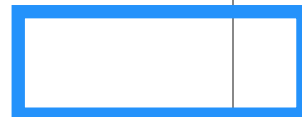
- an area of  $60 \text{ cm}^2$
- a side length of  $10 \text{ cm}$

$$\text{Area} = l \times w$$

$$60 = 10 \times w$$

$$w = 60 \div 10 = 6$$

10



Warren says,

“The perimeter of the rectangle is  $32 \text{ cm}$  because  $60 \div 10 = 6$ ”

Is Warren correct?

Tick a box.

Yes

No

Show working to support your answer.

[1 mark]

$$10 + 6 + 10 + 6 = 32$$

16

Rearrange  $a + 3 = b$  to make  $a$  the subject.

$$-3 \quad -3$$

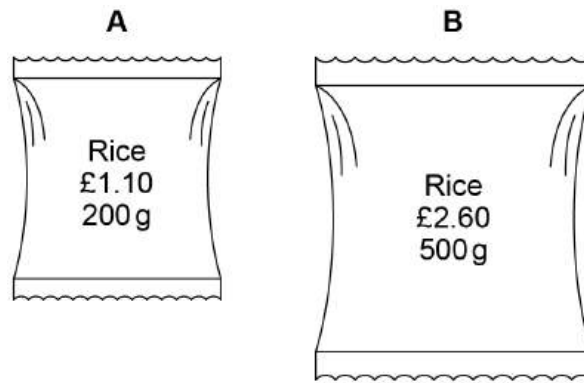
$$a = b - 3$$

[1 mark]

$$a = b - 3$$



17



Which packet of rice is better value for money?

Tick a box.

A

B

You **must** show your working.

[3 marks]

$$\begin{array}{l} \text{A} \quad 200\text{g} = \text{£}1.10 \\ \div 2 \qquad \qquad \qquad \div 2 \\ \hline 100\text{g} = \text{£}0.55 \end{array}$$

$$\begin{array}{l} \text{B} \quad 500\text{g} = \text{£}2.60 \\ \div 5 \qquad \qquad \qquad \div 5 \\ \hline 100\text{g} = \text{£}0.52 \end{array}$$

$$\text{£}0.52 < \text{£}0.55 \quad - \text{Packet B}$$



- 18 (a) Sam uses either the bus or the train to get to work.

$$\frac{\text{number of days using bus}}{\text{number of days using train}} = \frac{1}{8}$$

Write down the ratio number of days using bus : number of days using train

[1 mark]

Answer 1 : 8

- 18 (b) Write the ratio  $6a : 5a$  in the form  $n : 1$  where  $n$  is a decimal.

[2 marks]

$$\begin{array}{c} 6 : 5 \\ \div 5 \quad \div 5 \\ \hline 1.2 : 1 \end{array}$$

Answer 1.2 : 1

- 18 (c)  $1 : x = x : 4$

Work out the value of  $x$

[1 mark]

$$\frac{1}{x} = \frac{x}{4}$$

$$4 = x^2$$

$$1 : 2 = 2 : 4$$

$$x = 2$$

$$x = \underline{2}$$



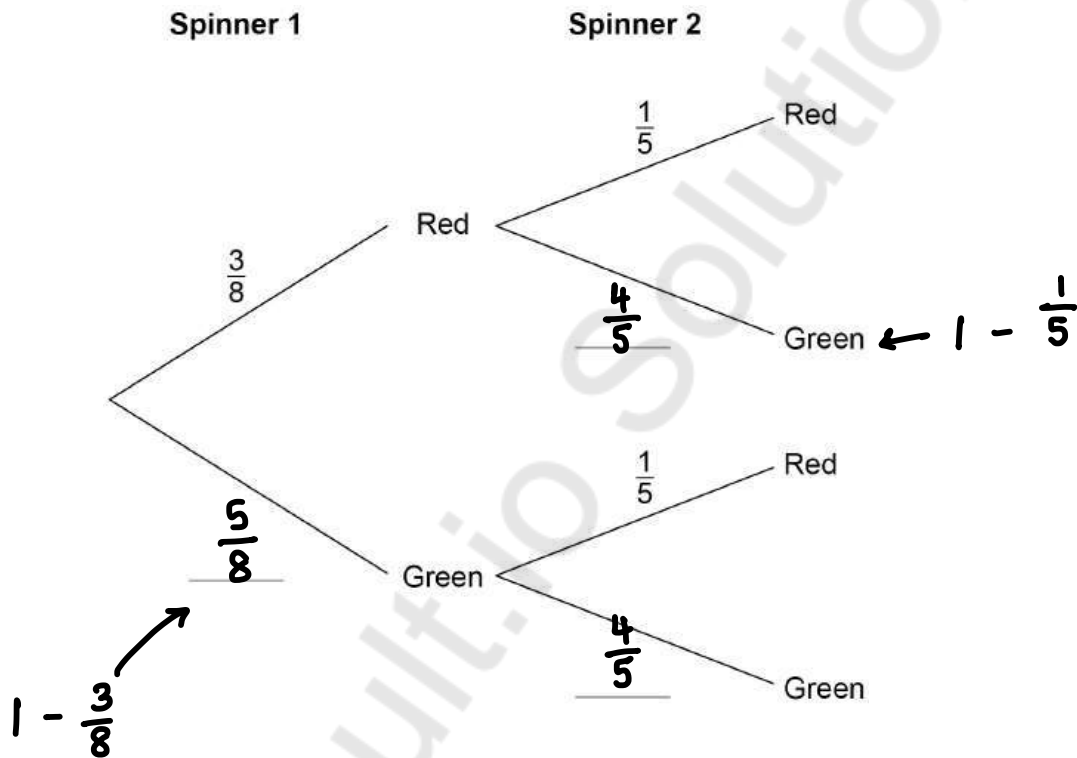
- 19 Two spinners each have only red sections and green sections.

Spinner 1  $P(\text{red}) = \frac{3}{8}$

Spinner 2  $P(\text{red}) = \frac{1}{5}$

- 19 (a) Complete the tree diagram.

[2 marks]



- 19 (b) Both spinners are spun.

Work out the probability that **both** spinners land on red.

[1 mark]

$$\frac{3}{8} \times \frac{1}{5} = \frac{3}{40}$$

Answer  $\frac{3}{40}$



20

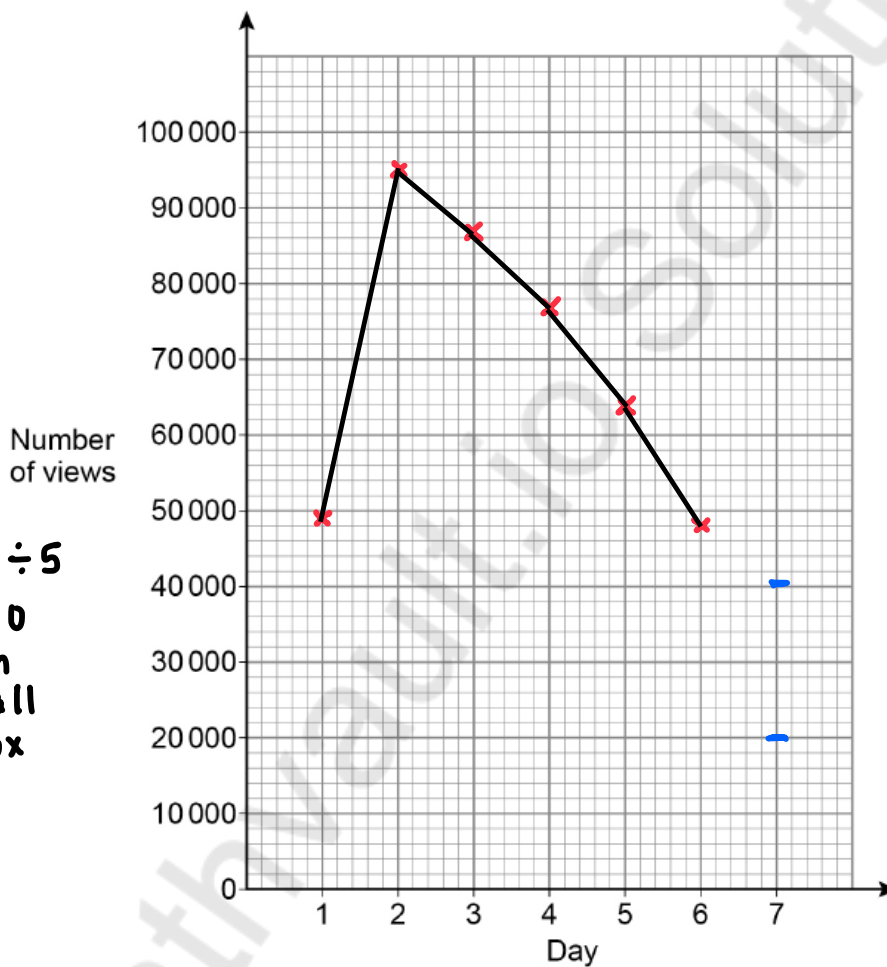
Youssuf posted an advert on his social media channel.

The table shows the number of views of the advert during its first 6 days.

Day	1	2	3	4	5	6
Number of views	49 000	95 000	87 000	77 000	64 000	48 000

20 (a) On the grid, draw a time series graph to represent the data.

[2 marks]



$$10,000 \div 5$$

$$= 2,000$$

each  
small  
box



- 20 (b) Youssuf receives 0.018p for each view of the advert.  
Estimate how much he receives from views of the advert on day 7

[3 marks]

$$30,000 \times 0.018p = 540p \quad \downarrow \div 100$$

£5.40

Answer £ 5.40

[£3.60 to £7.20]

- 21 70% of the discs in a box are red and the rest are blue.

- 40% of the red discs are removed.
- 50% of the blue discs are removed.

In total, what percentage of the discs are removed from the box?

[3 marks]

$$\begin{aligned} \text{Red} \quad 0.4 \times 0.7 &= 0.28 \\ &= 28\% \text{ removed} \end{aligned}$$

$$\begin{aligned} \text{Blue} \quad 30\% \text{ blue} \\ 0.3 \times 0.5 &= 0.15 \\ &= 15\% \end{aligned} \quad 28 + 15 = 43\%$$

Answer 43 %



22

A group of adults and students go to a theme park.

Here are the prices.

Adult	£24.50
Student	£16.25
One adult free with every 5 students	

In the group there are 48 students.

The total price for the group is £927

How many adults are in the group?

[4 marks]

$$48 \times 16.25 = £780$$

$$£927 - £780 = £147$$

$$£147 \div £24.50 = 6 \text{ adults paid for}$$

$$48 \div 5 = 9.6 \text{ adults}$$

$$\approx 9 \text{ adults free}$$

$$9 + 6 = 15$$

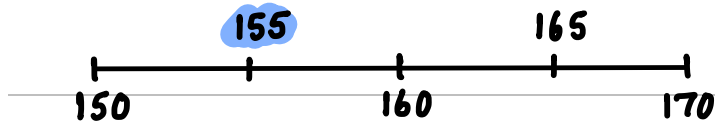
Answer 15



- 23 (a) The length of a fence panel is 160 cm to the nearest 10 cm

Complete the error interval.

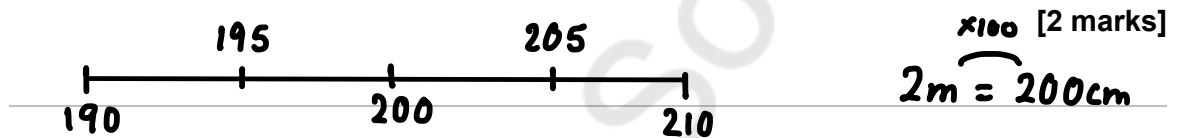
[2 marks]



Answer 155 cm  $\leq$  length  $<$  165 cm

- 23 (b) A different fence panel measures 2 metres to the nearest 10 cm  
Kim says that the total length of **three** of these fence panels must be less than 6.2 m

Show that Kim is correct.



$$\begin{aligned} 205 \times 3 &= 615 \text{ cm} \\ &\div 100 \\ &= 6.15 \text{ m} \end{aligned}$$

$$6.15 \text{ m} < 6.2 \text{ m}$$

- 24 Circle the expression which is a factor of  $3x + 15$

[1 mark]

~~$3x$~~

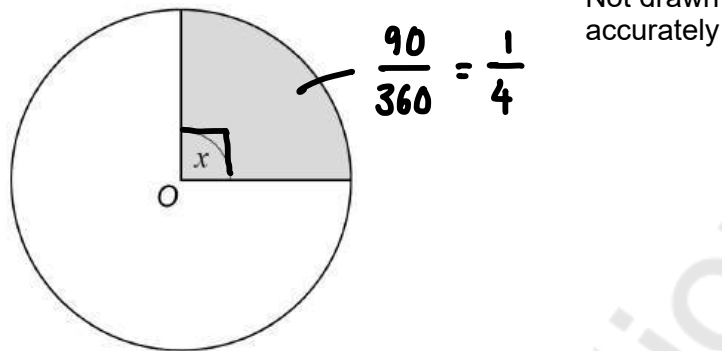
~~$x + 12$~~

$x + 5$   
 $\times 2 \quad \times 3$   
 $3x + 15$

$x + 15$



25 Here is a circle, centre O.



25 (a) The circle has a circumference of 20 cm

Assume that angle  $x$  is  $90^\circ$

Work out the shaded area.

Give your answer as a decimal.

[3 marks]

$$\text{Circumference} = 2\pi r \text{ or } \pi d$$

$$20 = 2\pi r$$

$$\div 2\pi \quad \div 2\pi$$

$$\frac{20}{2\pi} = r$$

$$\text{Shaded} = \frac{1}{4} \times \pi r^2$$

$$= \frac{1}{4} \times \pi \left( \frac{20}{2\pi} \right)^2 = 7.957747155$$

Answer

7.96 cm<sup>2</sup>



**25 (b)** In fact, angle  $x$  is smaller than  $90^\circ$

What does this mean about the shaded area?

Tick **one** box.

[1 mark]

It is smaller than the answer to part (a)

It is the same as the answer to part (a)

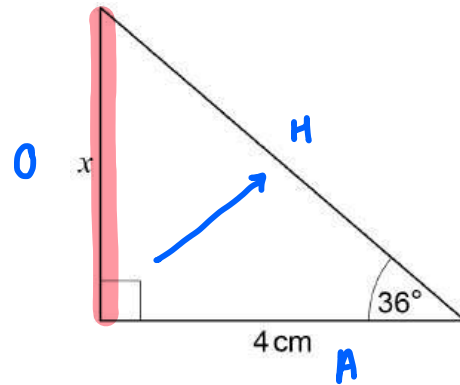
It is larger than the answer to part (a)

It could be any of the above

Turn over for the next question



26

Not drawn  
accuratelyUse trigonometry to work out the value of  $x$ .You **must** show your working.

[3 marks]

S O H      C A H      T O A

$$\tan \theta = \frac{O}{A}$$

$$\tan(36) = \frac{x}{4} \quad \times 4$$

$$4 \tan(36) = x \quad x = 2.906170112$$

$$x = 2.91 \text{ cm}$$

END OF QUESTIONS



**There are no questions printed on this page**

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ANSWER IN THE SPACES PROVIDED**

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