AQA

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 1 Non-Calculator

Thursday 15 May 2025 Morning 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	
TOTAL	

Do not write outside the box

Answer **all** questionsinthe spaces provided.

1 (a) Write down the next number in the sequence

1 4 7 10

+3 +3 +3 +3

[1 mark]

Answer 13

1 (b) Write down the next number in the sequence

2 4 8 16

×2 ×2 ×2 ×2

[1 mark]

Answer 32

Do not write outside the box

1 (c) Write down the next number in the sequence

20 14 8 2

-6 -6 -6 -6

[1 mark]

Answer -4

1 (d) Work out $3 \times (-6)$

[1 mark]

Answer -18

Turn over for thenext question

4

Do not write outside the box

2 Here is a card from a game.

	13		32
8		27	
	15		36

2 (a) Write down the number **from the card** that is a multiple of 5

[1 mark]

Answer 15

2 (b) Write down the number **from the card** that is a factor of 40 8×5

[1 mark]

Answer 8

2 (c) Write down the number **from the card** that is a prime number.

[1 mark]

Answer 13

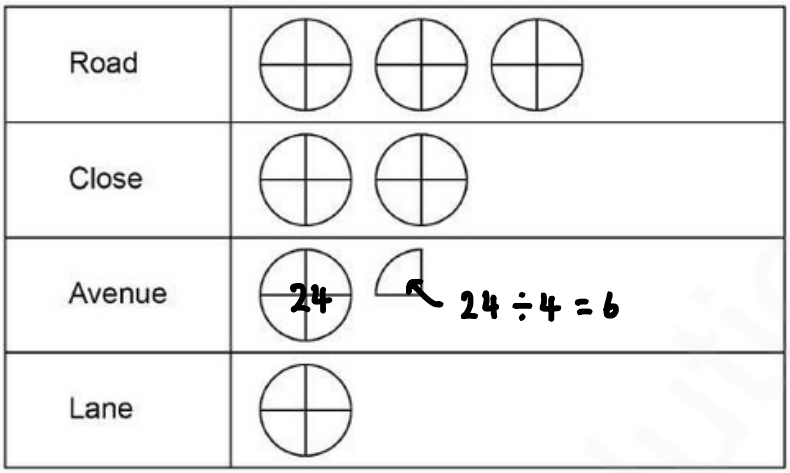
2 (d) Write down the number **from the card** that is a square number. $6^2 = 36$

[1 mark]

Answer 36

Do not write outside the box

3 The pictogram shows information about the endings of street names in a town.
The key is missing.



In the town, there are 48 street names ending in **Close**. 48 ÷ 2 = 24

How many street names end in **Avenue**?

[3 marks]

= 24

Answer 30

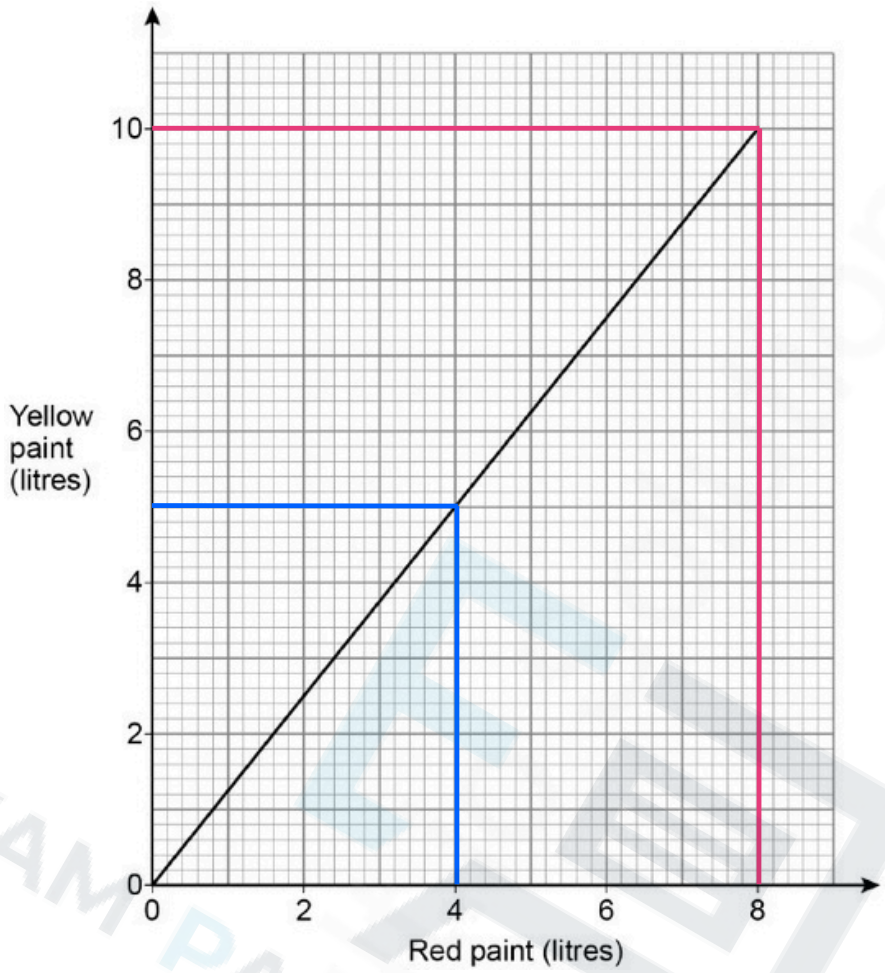
Turn over for thenext question

7

Do not write outside the box

4 Ola and Pip make orange paint by mixing red paint and yellow paint.

The graph shows how much of each colour paint to use.



4 (a) Ola uses 5 litres of yellowpaint.

Write down how much **red**paint Ola **uses**.

[1 mark]

Answer 4 litres

4 (b) Pip uses 10 litres of yellow paint.

How much **orange** paint does Pip **make**?

[2 marks]

10 + 8

Answer 18 litres

Do not write outside the box

5 A number is divided by 8

The answer is 43 remainder 5

$\frac{x}{8} = 43 \text{ r } 5$

Work out the number.

[3 marks]

$43 \times 8 = 344$

$344 + 5 = 349$

Answer 349

6 Quin buys 200 toys for £4 each.

He sells the toys for £5 each.

What is the **least** number of toys he must sell to make a profit?

[3 marks]

£200 × 4 = £800

£800 ÷ £5 = 160 toys to make £800

Answer 161

9

Do not write outside the box

7 Vinyl records cost £25 each.

Offer
Buy one and get another for half price

£25 £25 ÷ 2 = £12.50

$$2\overline{)25.10}\quad 12.5$$

Arif wants to buy **two** vinyl records.
He saves £8 every Saturday.

7 (a) Assume the offer is permanent.

How many Saturdays does Arif need to save for?
You **must** show your working.

[3 marks]

25 + 12.50 = £32.50
£8 x 4 = £32
£8 x 5 = £40

Answer 5

Do not write outside the box

7 (b) In fact, the offer is only for 1 week and there are no new offers.

What does this mean about the number of Saturdays he needs to save for?

Tick **one** box.

[1 mark]

- ☐ It is less than the answer to part (a)
- ☐ It is the same as the answer to part (a)
- ☑ It is greater than the answer to part (a)
- ☐ It is not possible to tell

8 Here is a list of ingredients for lentil soup.

Lentil soup for 4 people	
Lentils	170 g
Water	600 ml
Onion	50 g

How many grams of lentils are needed to make this soup for 10 people?

[3 marks]

4 ÷ 2 = 2
2 x 5 = 10
170g ÷ 2 = 85g
85g x 5 = 425g

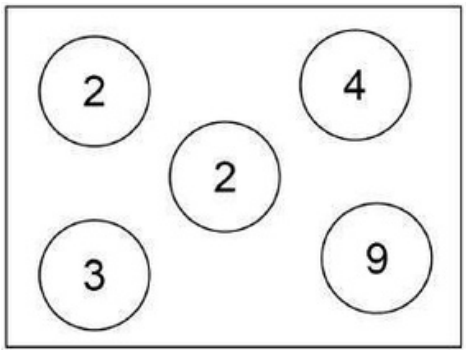
Answer 425 g

7

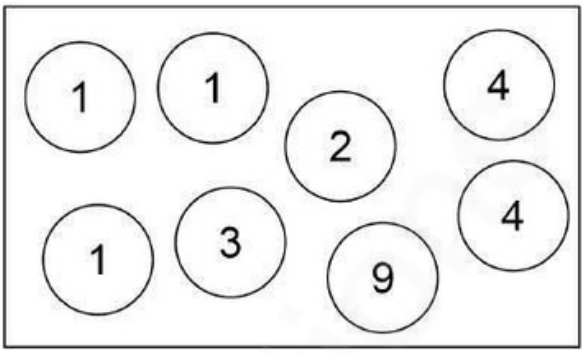
Do not write outside the box

9 Numbered discs are in two boxes.

Box A



Box B



9 (a) Work out the ratio

total value of the numbers in **Box A** : total value of the numbers in **Box B**

Give your answer in its simplest form.

[3 marks]

Box A = 2 + 2 + 3 + 4 + 9
= 20

Box B = 1 + 1 + 1 + 2 + 3 + 4 + 4 + 9
= 25

A : B = 20 : 25 ÷5
= 4 : 5

Answer 4 : 5

9 (b) One disc is picked at random from **Box A**.

Write down the probability that the number on the disc is greater than 6

[1 mark]

Answer $\frac{1}{5}$

Do not write outside the box

10 Work out the value of $2(a^2 + 3a)$ when $a = 4$

[3 marks]

$2a^2 + 6a$

$2(4)^2 + 6(4)$

$2(16) + 6(4)$

$32 + 24$

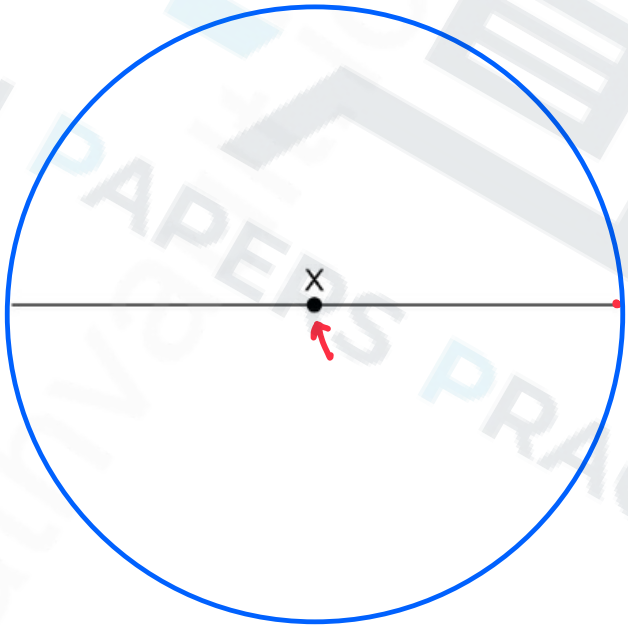
Answer 56

11 In this question use a pair of compasses.

The line shown is the **diameter** of a circle, centre X.

Draw the circle.

[1 mark]



Turn over for the next question

8

Do not write outside the box

12 (a) One day,

- a company runs 240 trains
- $\frac{1}{8}$ of these trains are late.

The company is charged £350 for each late train.

How much is the company charged that day?

[3 marks]

$\frac{1}{8} \times 240 = 240 \div 8 = 30$ late trains

350
× 30
000
10500
10500

Answer £ 10,500

12 (b) Hot drinks are sold at a station in the ratio

tea : coffee : hot chocolate = 3 : 5 : 2

2600 hot drinks are sold.

How many coffees are sold?

[3 marks]

3 + 5 + 2 = 10

2600 ÷ 10 = 260

5 × 260 = 1300

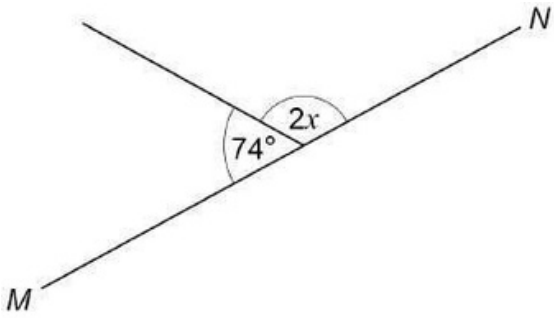
260
× 5
1300

Answer 1300

Do not write outside the box

13 *MN* is a straight line.

Not drawn accurately



Work out the value of x.

[3 marks]

$180° - 74° = 106°$

$2x = 106°$

$\div 2 \qquad \div 2$

$x = 53°$

Answer 53 °

Turn over for the next question

9

Turn over ►

Do not write outside the box

14 (a) By rounding each number to 1 significant figure, estimate the value of

$$1.98 \times 3.82 + 6.752$$

You **must** show your working.

[3 marks]

$1.98 \approx 2$

$3.82 \approx 4$

$6.75 \approx 7$

$= 2 \times 4 + 7^2$

$= 2 \times 4 + 49$

$= 8 + 49$

$= 57$

Answer 57

14 (b) Is your answer to part (a) an overestimate or an underestimate?

Tick **one** box.

Overestimate ✓ Underestimate ☐

Give a reason for your answer.

[1 mark]

Each number had to be rounded up

Do not write outside the box

15 (a) A sphere has diameter 20 cm

Show that the radius of the sphere is 10 cm

$d = r \times 2$

$\div 2 \qquad \div 2$

$r = \frac{d}{2}$

[1 mark]

$20 \div 2 = 10$

15 (b) The volume of a sphere is $\frac{4}{3}\pi r^3$ where r is the radius.

Work out the volume of a sphere with **diameter** 20 cm

↳ radius = 10cm

Give your answer in terms of π

[2 marks]

$\frac{4}{3} \times \pi \times (10)^3$

$\frac{4}{3} \times \pi \times 1000$

$\frac{4}{3} \times 1000 = \frac{4000}{3}$

Answer $\frac{4000}{3}\pi$ cm3

Turn over for thenext question

7

Turn over ▶

Do not write outside the box

16 (a)

$$d = \frac{800}{w}$$

- d represents the number of days to complete a job.
- w represents the number of workers needed.

Assume the job needs completing in 20 days.

How many workers are needed?

[3 marks]

$20 = \frac{800}{w}$ ×w

×w

$20w = 800$

÷20 ÷20

$w = 40$

Answer 40

16 (b) In fact, the job needs completing in **fewer** than 20 days.

What does this mean about the number of workers that are needed?

Tick **one** box.

[1 mark]

☐ Itis less than the answer to part (a)

☐ Itis the same as the answer to part (a)

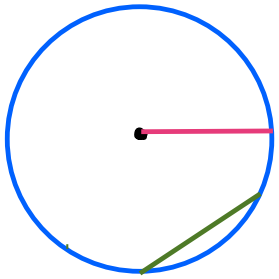
☑ Itisgreater than the answer to part (a)

Do not write outside the box

17 A chord is drawn on a circle.

Which statement is correct?

Tick **one** box.



[1 mark]

☐ The chord must be longer than theradius.

☐ The chord must be equal in length to the radius.

☐ The chord must be shorter than the radius.

☑ The chord could be longer than, equal in length to or shorter than the radius.

18 A metal solid has volume 11cm3

The density of the metal is 8.5g/cm3

Work out the mass of the solid.

[2 marks]

m
D V

m = D x V

m = 8.5 x 11

8.5
× 11
85
850
93.5

Answer 93.5 g

7

Do not write outside the box

19 The table shows information about the marks of students in a test.

	Mean mark	Range of marks
School A	61	14
School B	56	21

Tick **one** box for each statement.

[3 marks]

	True	Maybe true	Nottrue
On average, School A had higher marks mean	✓		
There are more students in School B		✓	
School B had a greater spread of marks range	✓		

Do not write outside the box

20 (a) Work out 0.6 ÷ 100

Give your answer in standard form.

[2 marks]

0.6

0.006 → 6×10^{-3}

-3

Answer 6×10^{-3}

20 (b) Work out 40 × 30 × 105

Give your answer in standard form.

[2 marks]

$40 = 4 \times 10^{1}$ $30 = 3 \times 10^{1}$

$\bullet \times 10^{\bullet} \times \bullet \times 10^{\bullet} \times 10^{\bullet}$

12×10^{7}

÷10 +1

1.2×10^{8}

Answer 1.2×10^{8}

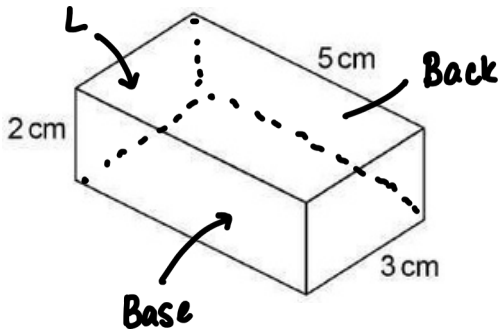
Turn over for thenext question

7

Turn over ▶

Do not write outside the box

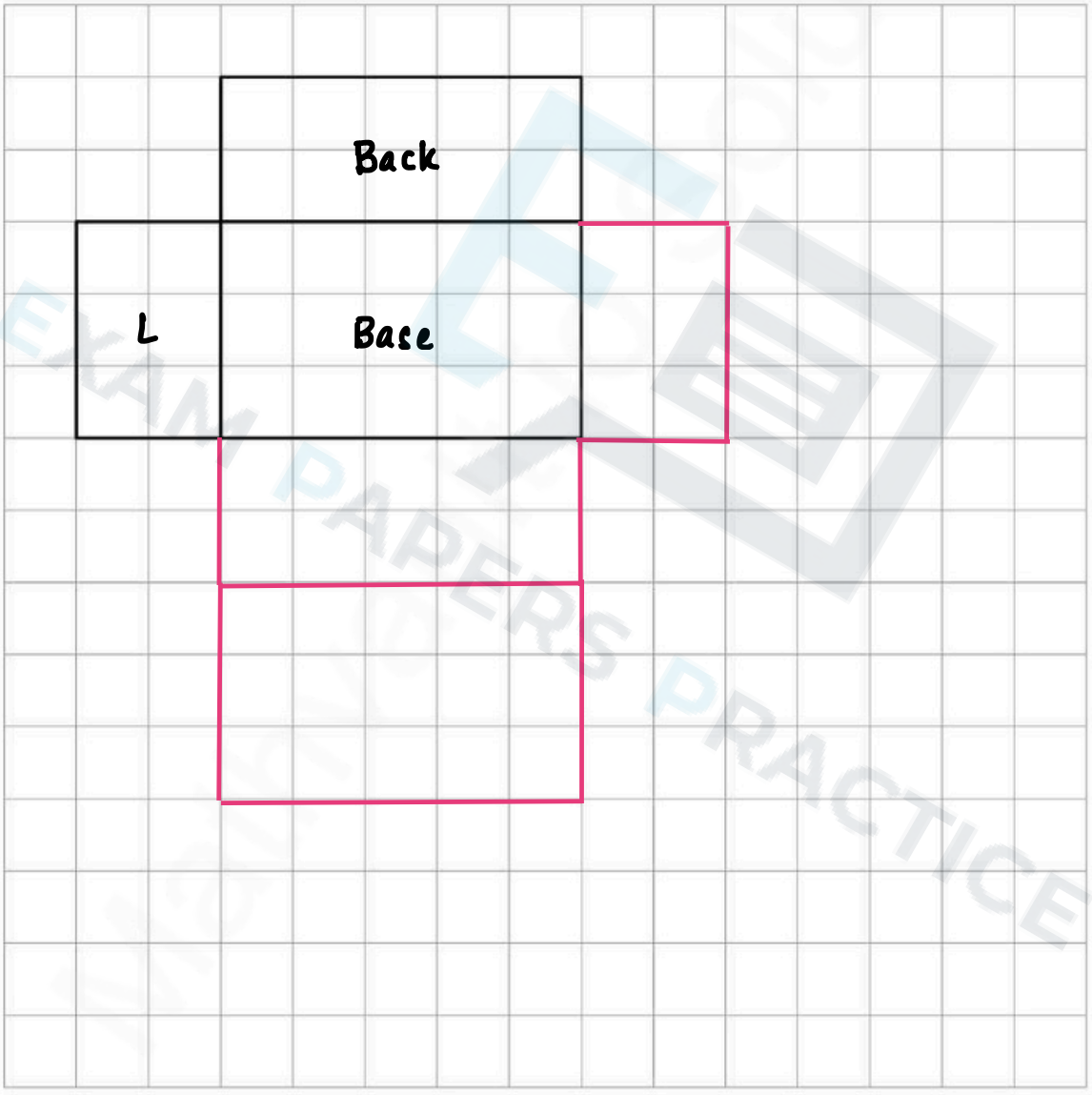
21 Here is a cuboid.



6 faces

Complete the drawing of the net on thecentimetre grid.

[2 marks]



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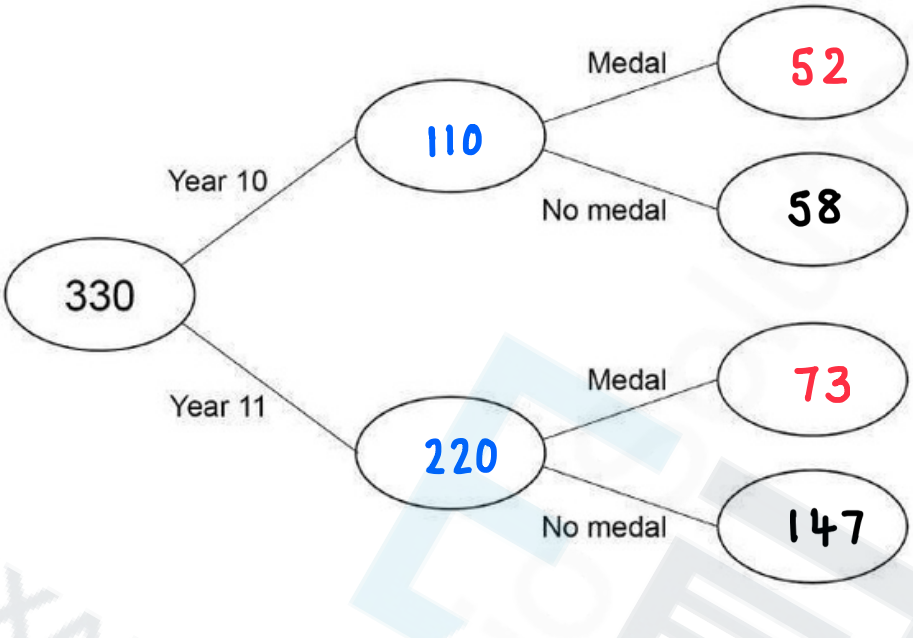
22 330 students from Year 10 and Year 11 take part in a competition.

- number of students in Year 10 : number of students in Year 11 = 1 : 2 ✓
- 125 students win a medal.
- 73 of the students who win a medal are in Year 11

Complete the frequency tree.

[4 marks]



125
- 73
52

110
- 52
58

220
- 73
147

1 + 2 = 3

330 ÷ 3 = 110

1 : 2

110 : 220

Turn over for thenext question

6

Do not write outside the box

23 Work out $\frac{4}{15} + \frac{1}{5} \div \frac{1}{2}$

Give your answer as a fraction.

[3 marks]

K C F

$\frac{1}{5} \div \frac{1}{2}$

B
I
D ←
m
A ←
S

$\frac{1}{5} \times \frac{2}{1} = \frac{2}{5}$

$\frac{4}{15} + \frac{2}{5}$ ×3 ×3

$\frac{4}{15} + \frac{6}{15} = \frac{10}{15}$ ÷5 ÷5

$= \frac{2}{3}$

Answer $\frac{2}{3}$

24 $y = \frac{1}{x}$

Which of these values of x gives the **greatest** value of y ?

Circle your answer.

[1 mark]

$\frac{9}{20}$ ×5 ×5 → $\frac{45}{100} = 0.45$

$\frac{2}{5}$ ×2 ×2 → $\frac{4}{10} = 0.4$

-80 95

small / big = smaller

small / smaller = bigger

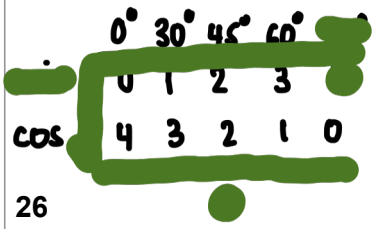
0.4 is smallest

DDoon noot tw w oouutstisdideet h bboox x

25 Circle the value of $\sin 90°$

[1 mark]

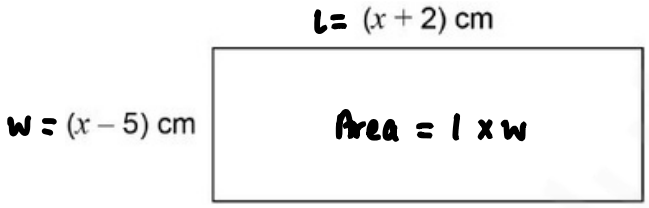
0 $\frac{1}{2}$ $\frac{\sqrt{3}}{2}$ 1



$= \frac{\sqrt{4}}{2} = \frac{2}{2} = 1$

26

Not drawn accurately



The area of the rectangle is 120cm2

Work out the value of x.

[4 marks]

$(x+2)(x-5) = 120$

$x^2 \square\square - 10 = 120$

$x^2 - 3x - 10 = 120$

$-120 \quad -120$

$x^2 - 3x - 130 = 0$

$+10 \times -13 = -130$

$+10 + -13 = -3$

$(x+10)(x-13) = 0$

$x + 10 = 0$ $\qquad$ $x - 13 = 0$

$-10 \quad -10$ $\qquad$ $+13 \quad +13$

$x = -10$ ✗ $\qquad$ $x = 13$ ✓

$x =$ 13

END OF QUESTIONS

9

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