

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname StemUp Model Solution

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

Foundation Tier Paper 2 Calculator

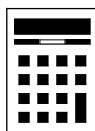
F

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.

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	
26–27	
TOTAL	

Advice

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



J U N 2 2 8 3 0 0 2 F 0 1

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

- 1 Here is a number line.



Which number is at A?

Circle your answer.

[1 mark]

1.2

1.4

1.5

1.8

- 2 Here is an expression $5a + 7b + 9c$

Which is the second term?

Circle your answer.

[1 mark]

a

7

$7b$

9

- 3 How many hours are there in 5 days?

Circle your answer.

[1 mark]

35

120

150

300



- 4 Which of these parts of a circle is a curve?
Circle your answer.

[1 mark]

circumference

diameter

centre

radius

- 5 (a) Write $1\frac{4}{9}$ as an improper fraction.

[1 mark]

$$1 \times 9 + 4 = 13 \text{ ninths}$$

Answer $\frac{13}{9}$

- 5 (b) Convert $\frac{7}{16}$ to a decimal.

[1 mark]

$$7 \div 16 = 0.4375$$

Answer 0.4375

- 5 (c) Round 2.84 to 1 decimal place.

[1 mark]

Answer 2.8



6

A machine to clean carpets can be hired.

Machine hire

£25 per day

Cleaning fluid

1-litre bottle £10

2-litre bottle £18

Rana wants to

hire the machine for 1 day

and

buy 5 litres of cleaning fluid.

Work out the **smallest** total amount she could pay.**[3 marks]**

$$5 \times 1 \text{ litre: } 5 \times 10 = £50$$

$$1 \times 2 \text{ litre} + 3 \times 1 \text{ litre: } 18 + 30 = £48$$

$$2 \times 2 \text{ litre} + 1 \times 1 \text{ litre: } 2 \times 18 + 10 = 36 + 10 = £46 \text{ (cheapest)}$$

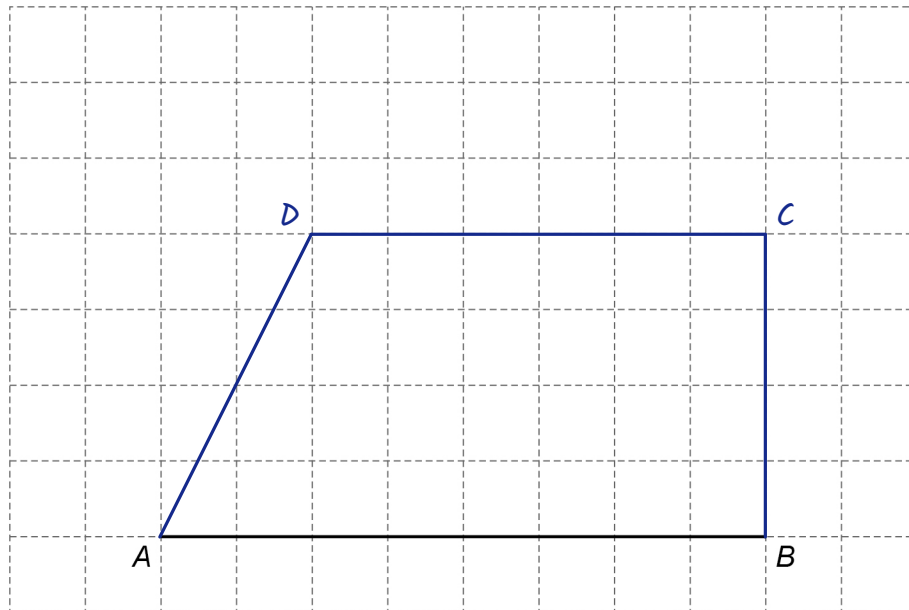
$$\text{Total} = 25 + 46 = £71$$

Answer £ 71

7

Quadrilateral $ABCD$ has

- angle $ABC = 90^\circ$
- $BC = 4\text{ cm}$
- CD is parallel to BA
- $CD = 6\text{ cm}$

Draw $ABCD$ on the centimetre grid. AB has been drawn for you.**[3 marks]**

Turn over for the next question

Turn over ►



8

The masses of some puppies were recorded.

The smallest mass was 7 kilograms 200 grams.

The range of the masses was 650 grams.

What was the **largest** mass?

Give your answer in kilograms and grams.

[2 marks]

$$7 \text{ kg } 200 \text{ g} = 7200 \text{ g}$$

$$7200 + 650 = 7850 \text{ g} = 7 \text{ kg } 850 \text{ g}$$

Answer 7 kilograms 850 grams

9 (a)

Ali revises each day for five days.

On each of the first **four** days he revises from 5 pm to 8 pm

On the fifth day he starts revising at 1 pm

He finishes when he has revised for a **total** of 18 hours for the five days.

What time does he finish on the fifth day?

[3 marks]

$$5 \text{ pm to } 8 \text{ pm} = 3 \text{ hours}$$

$$\text{First four days: } 3 \times 4 = 12 \text{ hours}$$

$$\text{Fifth day: } 18 - 12 = 6 \text{ hours}$$

$$1 \text{ pm} + 6 \text{ hours} = 7 \text{ pm}$$

Answer 7 pm



9 (b) Sofia is revising for Maths.

She tries to work out $3 \times (4 + 2)$

Here is her working.

$$\begin{aligned} 3 \times (4 + 2) &= 12 + 3 \\ &= 15 \end{aligned}$$

What mistake has she made?

[1 mark]

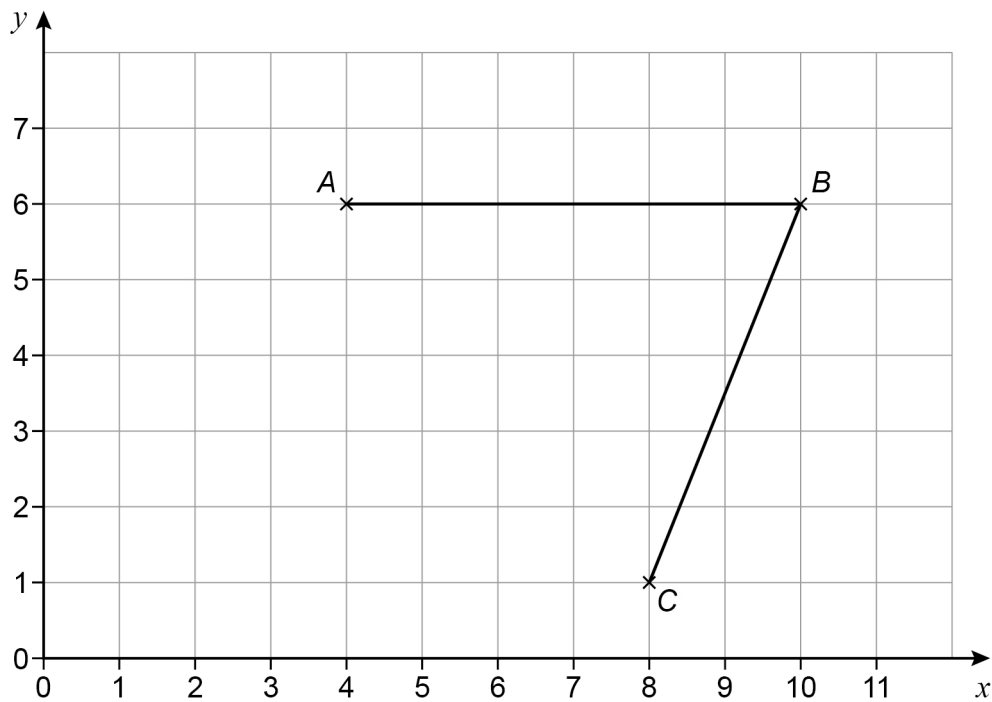
She has not multiplied the 2 by 3. It should be

$$3 \times (4 + 2) = 12 + 6 = 18 \quad (\text{or } 3 \times 6 = 18)$$

Turn over for the next question



- 10** Lines AB and BC are shown.



- 10 (a)** Write down the coordinates of C .

[1 mark]

Answer (8 , 1)

- 10 (b)** Write down the coordinates of the midpoint of AB .

[1 mark]

Answer (7 , 6)



- 10 (c) D is the point on the grid that makes $ABCD$ a parallelogram.

Work out the coordinates of D .

[1 mark]

B to C is 2 left and 5 down, so A to D is the same

Answer (2 , 1)

- 10 (d) Write down the equation of the line passing through A and B .

[1 mark]

Answer $y = 6$

Turn over for the next question

Turn over ►



11 Nihal has savings of £168

He uses $\frac{5}{7}$ of his savings to buy sports equipment.

11 (a) Assume that he will use $\frac{1}{3}$ of the **rest** of the money to buy a shirt.

How much of his savings, in £, will he have left?

[3 marks]

$$168 \div 7 \times 5 = 120 \quad (\text{spent on equipment})$$

$$\text{Rest} = 168 - 120 = £48$$

$$48 \div 3 = 16 \quad (\text{shirt})$$

$$\text{Left} = 48 - 16 = £32$$

Answer £ 32



- 11 (b) In fact, he uses **more** than $\frac{1}{3}$ of the rest of the money to buy a shirt.

What does this tell you about how much of his savings he has left?

Tick **one** box.

[1 mark]

☐

It is more than the answer to part (a)

☐

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

☒

It is less than the answer to part (a)

☐

It is not possible to tell

Turn over for the next question

Turn over ►



- 12** Sue is working with 2-digit numbers.
She multiplies the digits together to get an answer.

For 63, she multiplies 6 by 3
so 63 gives an answer of 18

- 12 (a)** Write down a different 2-digit number that gives an answer of 18

[1 mark]

Answer _____ 36

- 12 (b)** Write down a 2-digit number that gives an answer of 0

[1 mark]

Answer _____ 50

- 12 (c)** Write down a 2-digit number that gives an answer **greater** than 70

[1 mark]

Answer _____ 99



13

Steve and Molly each buy 480 tea bags.

Small packs

80 tea bags for £1.90

Large packs

160 tea bags for £3.25

Steve buys only small packs.

Molly buys only large packs.

In total, how much **more** than Molly does Steve pay?**[4 marks]**

$$\text{Steve: } 480 \div 80 = 6 \text{ small packs}$$

$$6 \times 1.90 = \pounds 11.40$$

$$\text{Molly: } 480 \div 160 = 3 \text{ large packs}$$

$$3 \times 3.25 = \pounds 9.75$$

$$\text{Difference} = 11.40 - 9.75 = \pounds 1.65$$

Answer £ 1.65

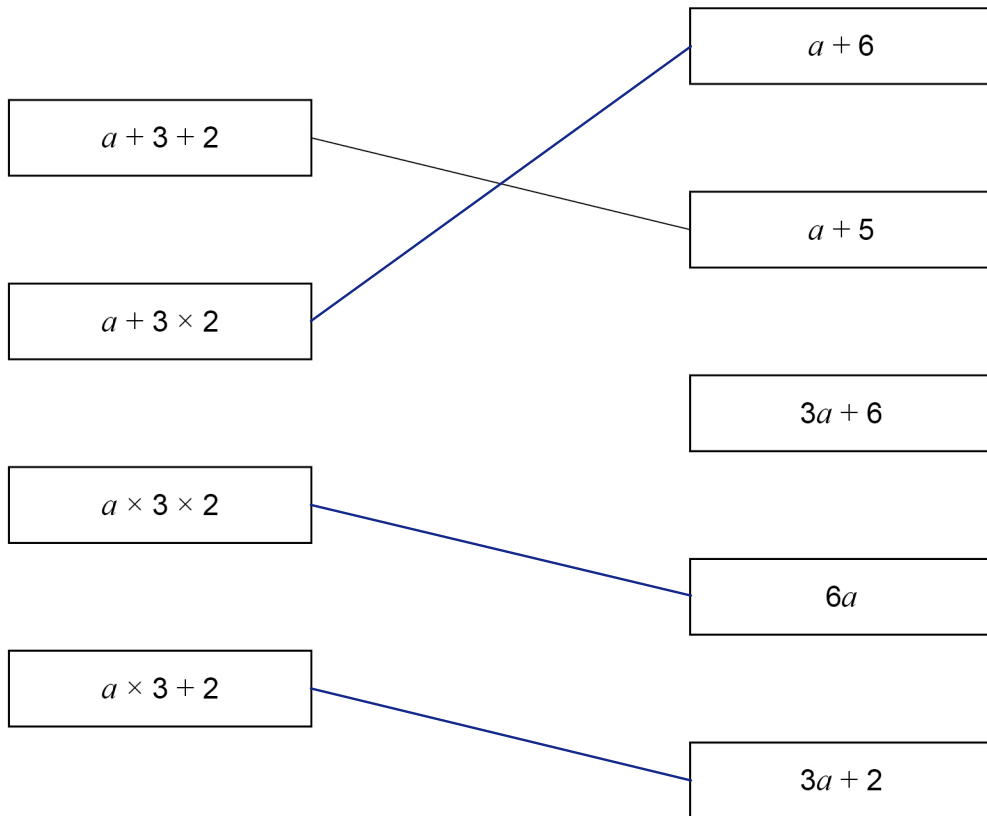
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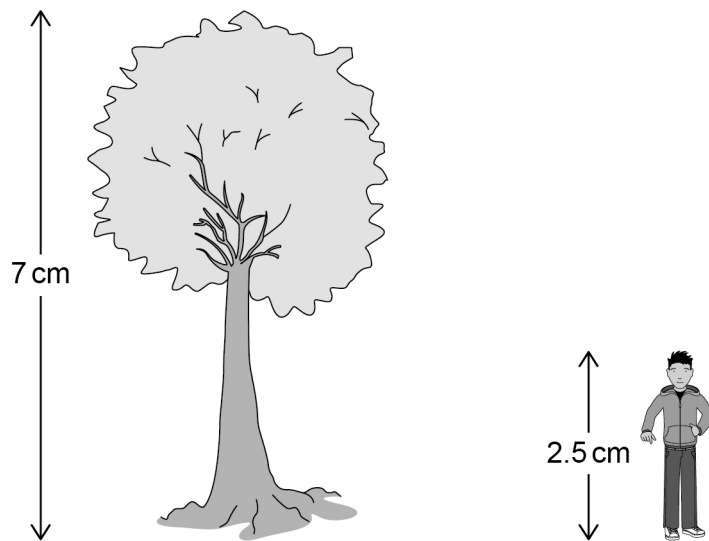
14

Match each expression on the left with one on the right.

One has been done for you.

[3 marks]

- 15 The scale drawing shows a tree and a student.



The actual height of the tree is 4.2 metres.

Work out the actual height of the student.

[3 marks]

7 cm represents 4.2 m

1 cm represents $4.2 \div 7 = 0.6$ m

Student = $2.5 \times 0.6 = 1.5$ m

Answer 1.5 m

Turn over ►



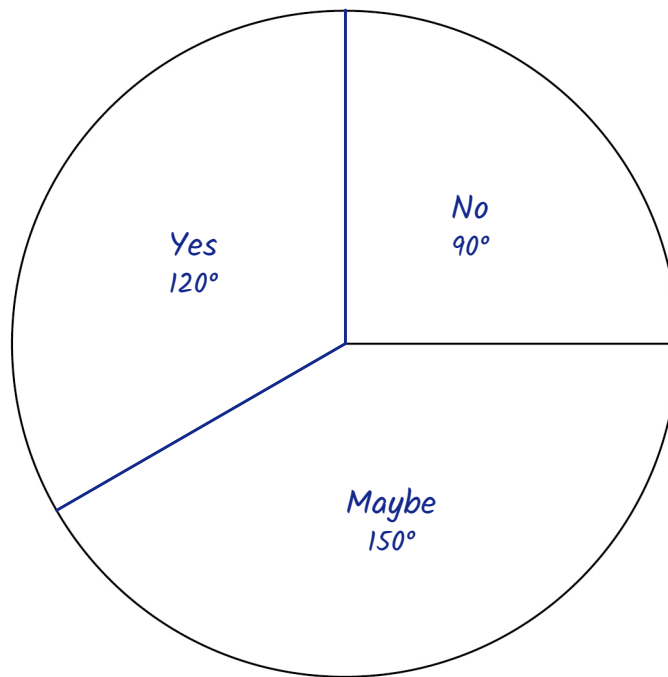
16

60 people were asked if they would vote in an election.

- $\frac{1}{4}$ of the people said No
- 20 people said Yes
- The rest said Maybe

Draw and label a pie chart to show this information.

[3 marks]



No: $360 \div 4 = 90^\circ$ (15 people)

Yes: $20 \div 60 \times 360 = 120^\circ$

Maybe: $360 - 90 - 120 = 150^\circ$ (25 people)



- 17 (a) x is at least 7
Circle the correct inequality.

[1 mark]

$x < 7$

$x \leq 7$

$x > 7$

$x \geq 7$

- 17 (b) Multiply out $5c(2d + 1)$

[2 marks]

$$5c \times 2d = 10cd \quad 5c \times 1 = 5c$$

Answer $10cd + 5c$

- 17 (c) Factorise $21x + 28$

[1 mark]

$$\text{HCF of 21 and 28 is 7}$$

Answer $7(3x + 4)$

Turn over ►



- 18 (a) The people at a party are either adults or children.

$$\text{adults : children} = 9 : 11$$

What percentage are adults?

[2 marks]

$$\text{Total parts} = 9 + 11 = 20$$

$$9 \div 20 \times 100 = 45\%$$

Answer 45 %

- 18 (b) The people at a different party are from Spain, France or Germany.

68% are from Spain

number from France = number from Germany

Work out number from Spain : number from France

Give your answer in the form $n : 1$

[3 marks]

$$\text{France} + \text{Germany} = 100 - 68 = 32\%$$

$$\text{France} = 32 \div 2 = 16\%$$

$$\text{Spain} : \text{France} = 68 : 16$$

$$68 \div 16 = 4.25, \text{ so } 4.25 : 1$$

Answer 4.25 : 1



- 19 (a) Circle the point that is on the line $4x + y = 7$

[1 mark]

(2, 1)

(2, -1)

(1, 2)

(-1, 2)

- 19 (b) Write down the coordinates of the y -intercept of the line $y = 3x + 8$

[1 mark]

Answer (0 , 8)

- 19 (c) Work out the gradient of the line $2y = 10x$

[1 mark]

$$2y = 10x \text{ so } y = 5x$$

Answer 5

Turn over for the next question

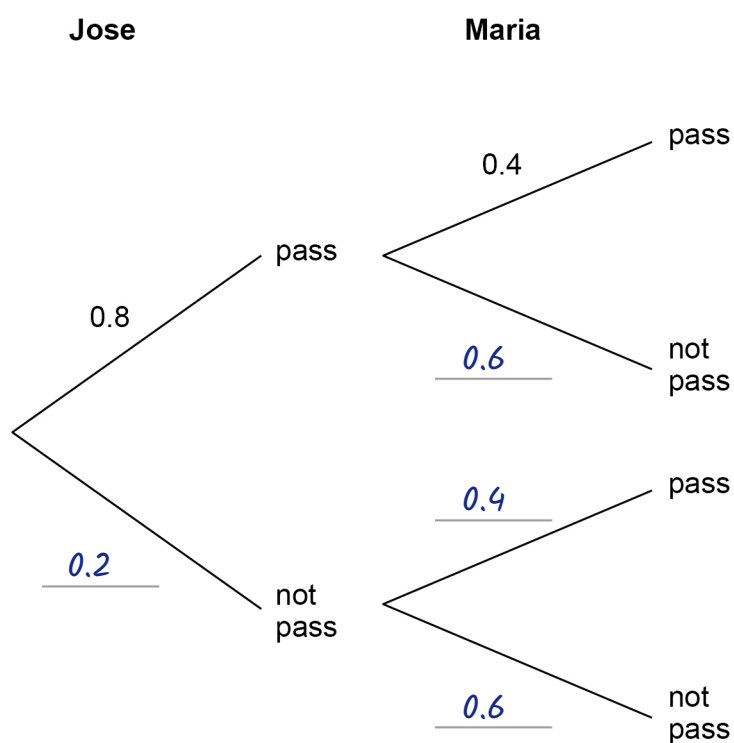
Turn over ►



- 20** Jose and Maria each take a test.
 The probability that Jose passes is 0.8
 The probability that Maria passes is 0.4

20 (a) Complete the tree diagram.

[2 marks]



20 (b) Work out the probability that they **both** pass.

[1 mark]

$$0.8 \times 0.4 = 0.32$$

Answer 0.32



21

Show that 2125 can be written as
a cube number **multiplied** by a prime number between 10 and 20

[2 marks]

Primes between 10 and 20: 11, 13, 17, 19

$$2125 \div 17 = 125$$

$$125 = 5 \times 5 \times 5 = 5^3, \text{ which is a cube number}$$

17 is a prime number between 10 and 20

$$\text{So } 2125 = 125 \times 17 = 5^3 \times 17$$

Turn over for the next question

Turn over ►



22

A school play takes place each day from Monday to Friday.

Here are the attendances on four of the days.

Monday	Tuesday	Wednesday	Thursday
72	83	88	97

For all **five** days, the mean attendance is 90

Work out the attendance on Friday.

[3 marks]

$$\text{Total for 5 days} = 90 \times 5 = 450$$

$$\text{Total for 4 days} = 72 + 83 + 88 + 97 = 340$$

$$\text{Friday} = 450 - 340 = 110$$

Answer 110



23

Sam types a constant number of words per minute.

He takes 8 minutes to type a report of 416 words.

How long does it take him to type an essay of 1534 words?

Give your answer in minutes and seconds.

[3 marks]

$$416 \div 8 = 52 \text{ words per minute}$$

$$1534 \div 52 = 29.5 \text{ minutes}$$

$$0.5 \text{ minutes} = 0.5 \times 60 = 30 \text{ seconds}$$

Answer 29 minutes 30 seconds

24

$$4y = 5x$$

Which statement is correct?

Tick **one** box.

[1 mark]

☐

y is 80% of x

☒

y is 125% of x

☐

x is 20% of y

☐

x is 400% of y

Turn over ►



- 25** Rosie makes phone calls to try to sell broadband.
Today, she made 120 calls.
The table shows the results.

Result of call	Frequency
Not answered	33
Answered but sale not made	81
Answered and sale made	6

- 25 (a)** Write down the relative frequency that a call was **not answered**.

[1 mark]

Answer $\frac{33}{120} = 0.275$

- 25 (b)** During the **rest of the week**, Rosie will make 500 calls.

Using the results in the table, how many sales does she expect to make during the **rest of the week**?

[2 marks]

$$\text{Relative frequency of a sale} = 6 \div 120 = 0.05$$

$$\text{Expected sales} = 0.05 \times 500 = 25$$

Answer 25



26

Harry and Ellie each bought a printer and a hard drive.
Here is some information about how much they paid.

	Printer	Hard drive
Harry	£80	£25
Ellie	10% less than Harry	20% more than Harry

Ellie says,

“In total, I paid more than Harry because 20% is greater than 10%”

Is she correct?

Tick a box.

Yes

☐

No

☒

Show calculations to support your answer.

[2 marks]

$$\text{Harry total} = 80 + 25 = £105$$

$$\text{Ellie printer} = 80 \times 0.9 = £72$$

$$\text{Ellie hard drive} = 25 \times 1.2 = £30$$

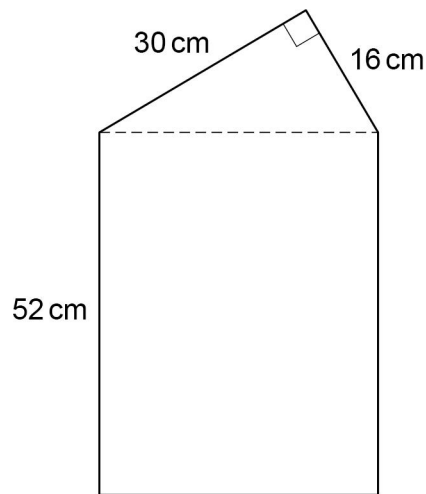
$$\text{Ellie total} = 72 + 30 = £102$$

$102 < 105$, so Ellie paid £3 less than Harry. She is not correct.



27

A shape is made by joining a right-angled triangle to a rectangle.

Not drawn
accurately

Work out the area of the shape.

[5 marks]*Hypotenuse of triangle = width of rectangle*

$$16^2 + 30^2 = 256 + 900 = 1156$$

$$\sqrt{1156} = 34 \text{ cm}$$

$$\text{Rectangle} = 52 \times 34 = 1768 \text{ cm}^2$$

$$\text{Triangle} = \frac{1}{2} \times 30 \times 16 = 240 \text{ cm}^2$$

$$\text{Total area} = 1768 + 240 = 2008 \text{ cm}^2$$

Answer 2008 cm²

28

Solve $5(2x - 1) = 6x + 9$ **[3 marks]**

$$10x - 5 = 6x + 9$$

$$10x - 6x = 9 + 5$$

$$4x = 14$$

$$x = 14 \div 4 = 3.5$$

$$x = \underline{\hspace{10em} 3.5 \hspace{10em}}$$

END OF QUESTIONS

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3 2



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