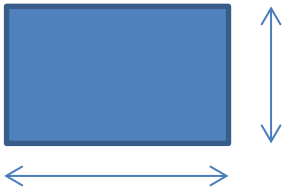


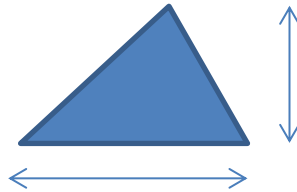
Compound area

- Split the compound shape into shapes that you can find the area of.

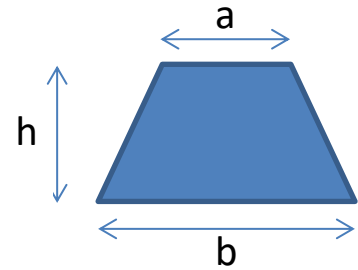
Common areas:



Base x height

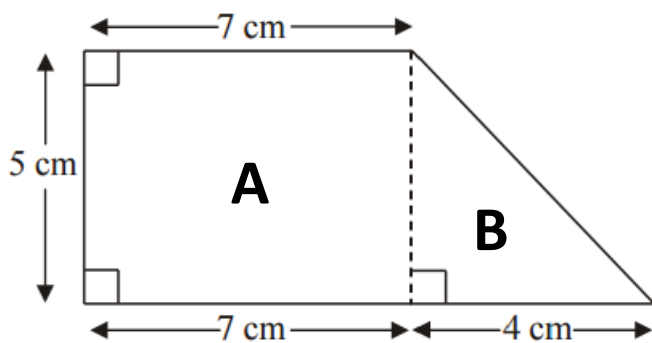


$\frac{1}{2}$ base x perpendicular height



$\frac{1}{2}(a + b) \times h$

Example

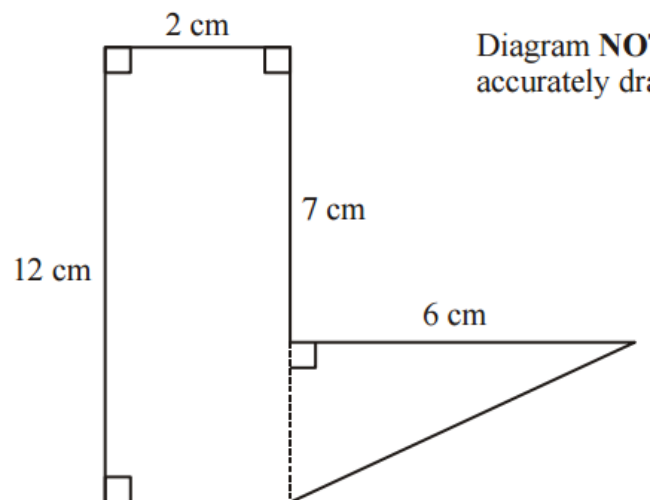
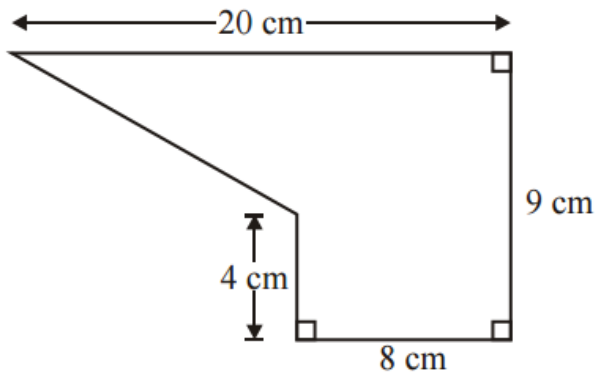


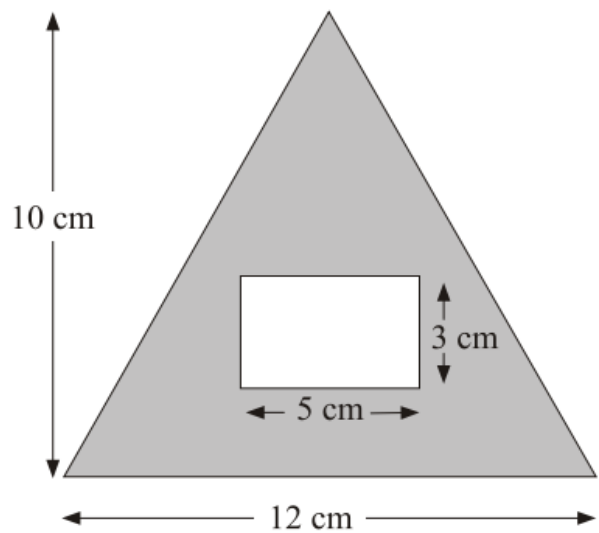
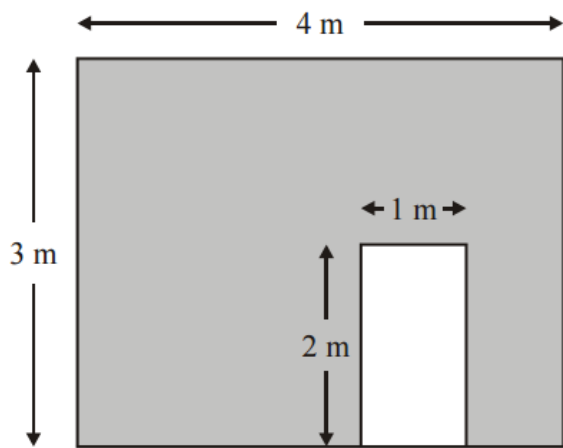
The shape is split into a rectangle and a triangle.

Area of shape A: $7 \times 5 = 35\text{cm}^2$

Area of shape B: $\frac{1}{2} 4 \times 5 = 10\text{cm}^2$

Total area = $35 + 10 = 45\text{cm}^2$





Find the shaded area

Exam style questions

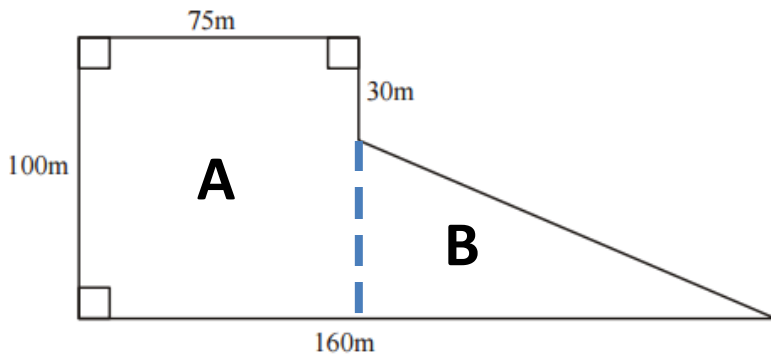
In exams you will combine area with other areas of Maths.

Common question types:

- Work out how much carpet / number of packs you need to cover the floor
- Work out the cost of flooring/ grass
- Work out the length of a missing side

The key is to make sure that your working out is clear.

Example



The diagram shows a field.

The farmer sells the field for £3 per square metre.

Work out how much money the farmer should get.

Shape A: Area = $75 \times 100 = 7500 \text{ m}^2$

Shape B: height = $(100 - 30) = 70\text{m}$
Area = $\frac{1}{2} 70 \times 85 = 2975 \text{ m}^2$

Total area = $7500 + 2975 = 10475 \text{ m}^2$

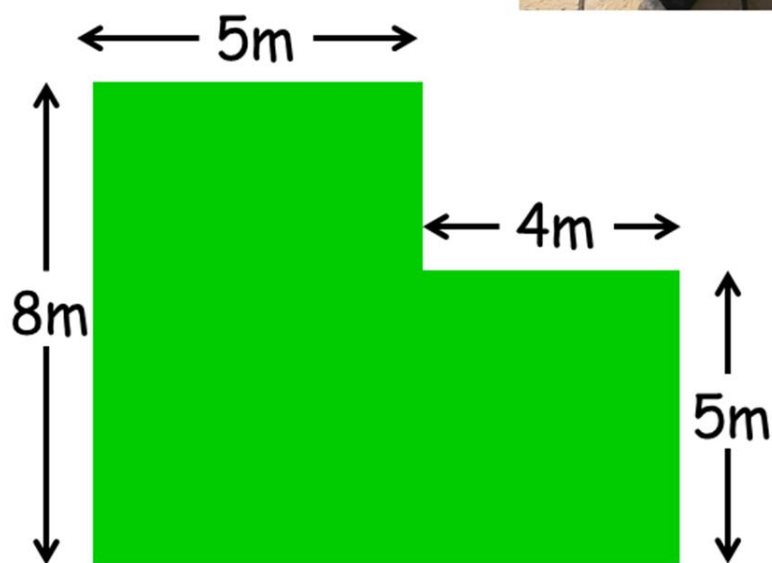
Each square metre costs £3

Total cost = $10475 \times £3 = \text{£}31425$

Question 1



Mr Foster wants to put patio tiles in his back garden.

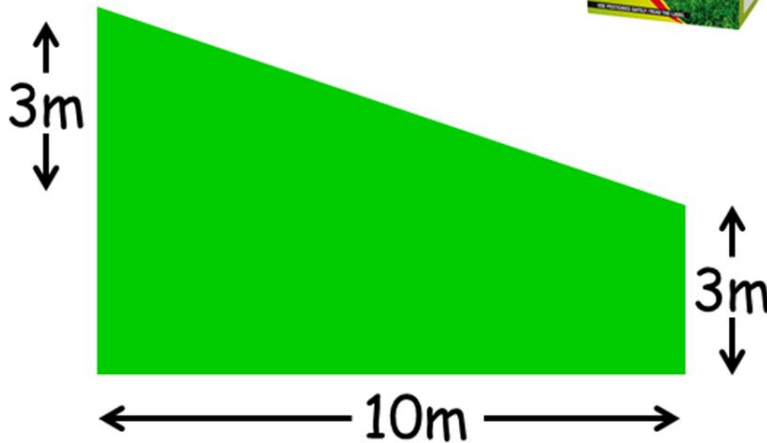


Each box of tiles will cover 20 m^2 .

Each box costs £30.

How much will it cost him to do his garden.

Question 2



Miss Pike wants to put weedkiller on the grass in her garden.

Each box will cover 15 m^2 .

Each box costs £6.

How much change will she receive if she pay's £20.

Question 3

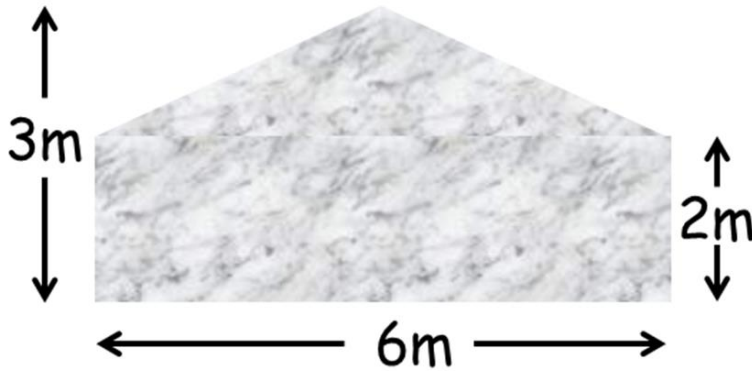


Miss Wickens wants to paint the wall in her room **pink**

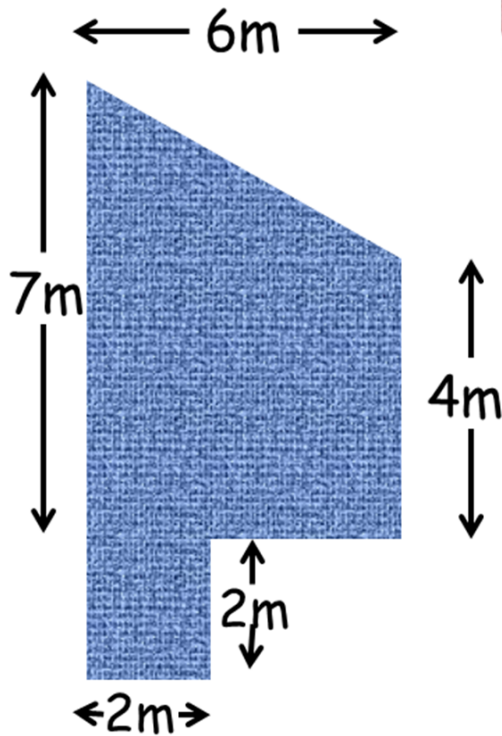
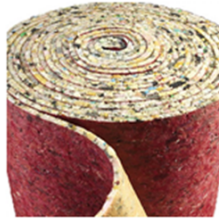
Each tin of paint will cover 3 m^2 .

Each tin costs £4.

Will she have enough in £15?



Question 4



Miss Philip wants to put a new carpet in her bedroom.

The carpet is sold in rolls which cover $15m^2$.

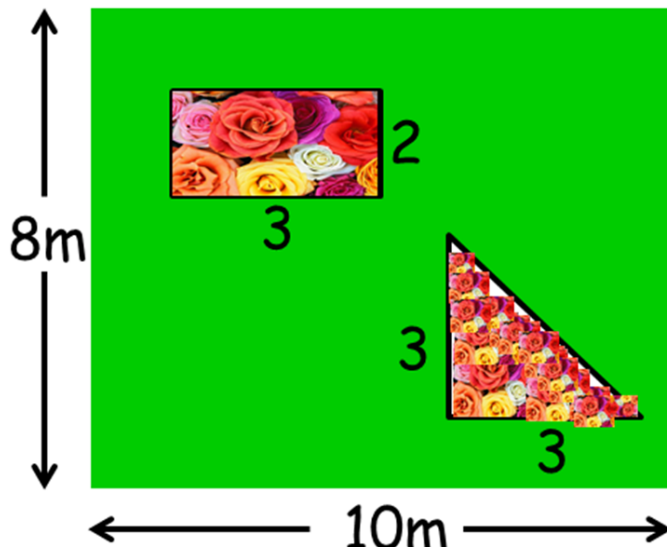
Each roll costs £70.

How much will it cost her to carpet her room?

Question 5



Miss Cole wants to put a garden beside the greenhouse. She wants to lay rolls of grass around two flower designs



Each roll will cover 15 m^2 and costs £70

Will Miss Cole have enough with £400?

Mixed exam questions

Q1. June 2012 unit 2

Janice cuts a triangle from a rectangular piece of metal.
She uses the rest of the metal to make a name badge.

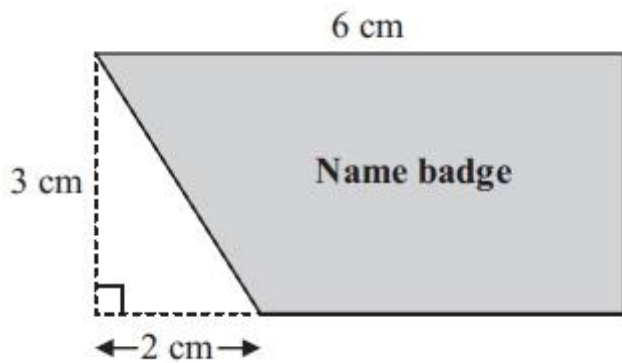


Diagram **NOT** accurately drawn

The rectangle has length 6 cm and width 3 cm.

The right-angled triangle has base 2 cm and height 3 cm.

Work out the area of the name badge.

(Total for Question is 4 marks)

Q2. June 2012 paper 1 (non-calculator)

The diagram shows a patio in the shape of a rectangle.

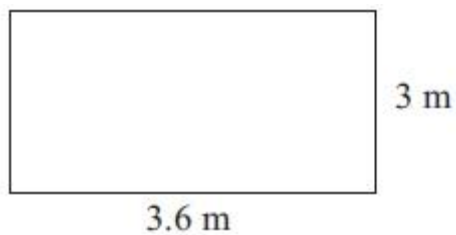


Diagram **NOT** accurately drawn

The patio is 3.6 m long and 3 m wide.

Matthew is going to cover the patio with paving slabs.

Each paving slab is a square of side 60 cm.

Matthew buys 32 of the paving slabs.

(a) Does Matthew buy enough paving slabs to cover the patio?

You must show all your working.

.....
(3)

The paving slabs cost £8.63 each.

(b) Work out the total cost of the 32 paving slabs.

£.....
(3)

(Total for Question is 6 marks)

Q3. June 2014 paper 1 (non-calculator)

*The diagram shows the plan of a small field.

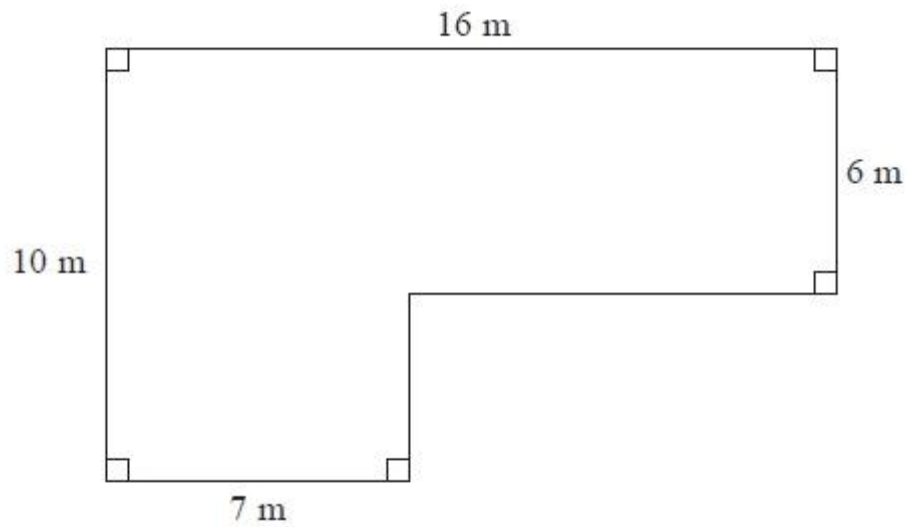


Diagram **NOT**
accurately drawn

Kevin is going to keep some pigs in the field.

Each pig needs an area of 36 square metres.

Work out the greatest number of pigs Kevin can keep in the field.

(Total for Question is 4 marks)

Q4. June 2015 paper 1 (non-calculator)

* The diagram shows the floor plan of Mary's conservatory.

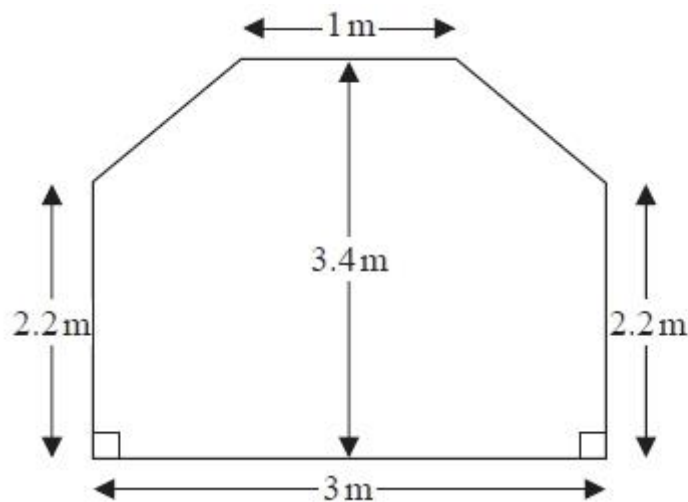


Diagram NOT
accurately drawn

Mary is going to cover the floor with tiles.

The tiles are sold in packs.

One pack of tiles will cover 2m^2

A pack of tiles normally costs £24.80

Mary gets a discount of 25% off the cost of the tiles.

Mary has £100

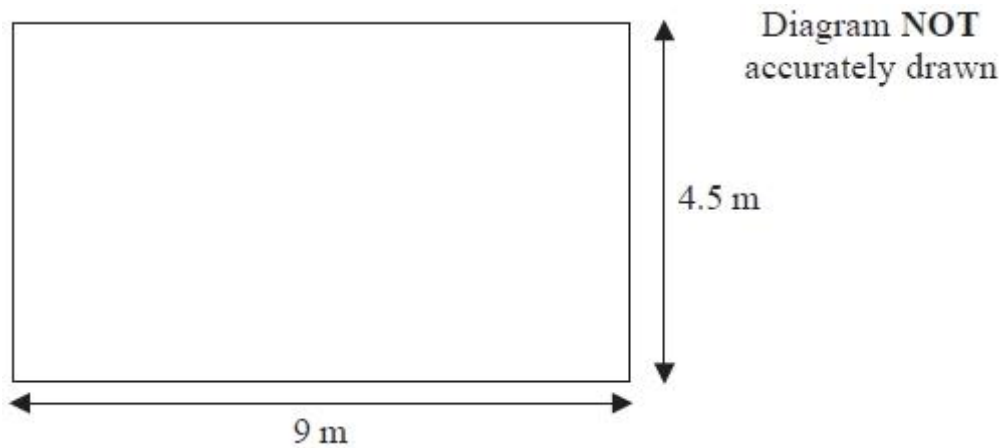
Does Mary have enough money to buy all the tiles she needs?

You must show all your working.

(Total for question = 5 marks)

Q5. June 2015 unit 2

The diagram shows a rectangular floor.



Toji is going to cover the floor with floor boards.

Each floor board is 0.1 m wide and 1.5 m long.

Work out the smallest number of floor boards Toji needs.

.....
(Total for question = 3 marks)

Examiner's Report Key points

- Mistakes are often made when finding the area of a triangle. Don't forget that you need $\frac{1}{2}$
- Don't forget to include the units in your answer. This can be worth a mark, even if you can't find the area of the shape.
- Always show all of your working out clearly.
- It can help to underline the important parts of a question and check back to make sure that you have done as the question has asked. For example, many people find the area of the shape but forget that the question wants the cost.
- Structuring your answer is very important. Make it clear to the examiner exactly what you are trying to work out.

Answers

102cm²

39cm²

10m²

45cm²

Exam style questions

Question 1

60m²

3 boxes

£90

Question 2

45m²

3 boxes

£18

£2

• Question 3

Area = 15m²

She will need 5 tins.

It will cost her £20 so £15 will not be enough.

Question 4

37m²

2 boxes will only cover 30m² so she will need 3.

£210

Question 5

69.5 m^2

5 rolls

It will cost £350 so £400 will be enough.

Mixed exam questions

Q1.

Working	Answer	Mark	Notes
$\frac{1}{2} (6 + 4) \times 3$	15 cm^2	4	M2 for $\frac{1}{2} (6 + 4) \times 3$ oe A1 for 15 cao B1 for cm^2

Q2.

(a)	$360 \div 60 = 6$ $300 \div 60 = 5$ $6 \times 5 =$	Yes and 30	3	<p>M1 for dividing side of patio by side of paving slab eg. $360 \div 60$ or $300 \div 60$ or $3.6 \div 0.6$ or $3 \div 0.6$ or 6 and 5 seen (may be on a diagram) or 6 divisions seen on length of diagram or 5 divisions seen on width of diagram</p> <p>M1 for correct method to find number of paving slabs eg. $(360 \div 60) \times (300 \div 60)$ oe or 6×5 or 30 squares seen on diagram (units may not be consistent)</p> <p>A1 for Yes and 30 (or 2 extra) with correct calculations</p>
(b)	$\begin{array}{r} 1726 \\ 25890 \\ \hline 27616 \end{array}$ 	276.16	3	<p>eg. $60 \times 60 \times 32$ and 360×300 (units may not be consistent)</p> <p>A1 for Yes and 115200 and 108000 OR Yes and 11.52 and 10.8</p> <p>NB : Throughout the question, candidates could be working in metres or centimetres</p>

Q3.

Answer	Mark	Notes
3	4	<p>M1 for a method to calculate at least one area eg $10 \times 7 (=70)$ or $16 \times 10 (=160)$</p> <p>M1 for a method to find the total area ($=124$)</p> <p>M1 (dep on M1) for "$124 \div 36$"</p> <p>C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations</p>

Q4.

Answer	Mark	Notes
Has enough (with evidence)	5	<p>M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape</p> <p>M1 for a complete method to find the total area, ($= 9 \text{ m}^2$)</p> <p>M1 (dep on M1) for a method to find the number of packs required from their total area, eg. "$9 \div 2 = 4.5$ rounded up to 5"</p> <p>M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. $24.80 \times 5 \times \frac{75}{100} (= 93)$ or $24.80 \times \frac{75}{100} (= 18.6)$</p> <p>C1 for a conclusion supported by fully correct answers, eg. showing $9 \text{ (m}^2\text{)}$, 5 (packs) and 93 or 7 (from $100 - 93$)</p>

Q5.

Answer	Mark	Notes
270	3	<p>M1 for $9 \div 0.1 (=90)$ or $4.5 \div 1.5 (=3)$ oe</p> <p>M1 for "3×90" oe ($=270$)</p> <p>A1 cao</p> <p>OR</p> <p>M1 for $4.5 \div 0.1 (=45)$ or $9 \div 1.5 (=6)$ oe</p> <p>M1 for "6×45" oe ($=270$)</p> <p>A1 cao</p> <p>OR</p> <p>M1 for $9 \times 4.5 (=40.5)$ or $1.5 \times 0.1 (=0.15)$ oe</p> <p>M1 for "$40.5 \div 0.15$" ($=270$) oe</p> <p>A1 cao</p>