

Area & Perimeter (H & F)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	C. Beale
Total Marks:	

1. Peter decides to cover the floor of a room with a striped carpet.

A shop sells this striped carpet from a roll that is 3m wide at a price of £25 per metre length.

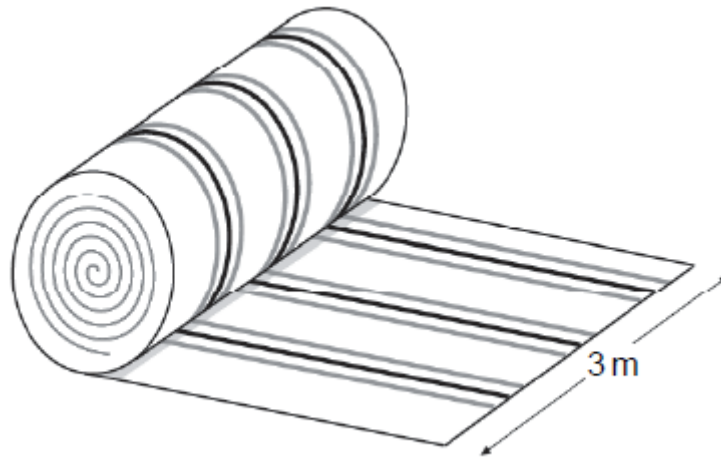
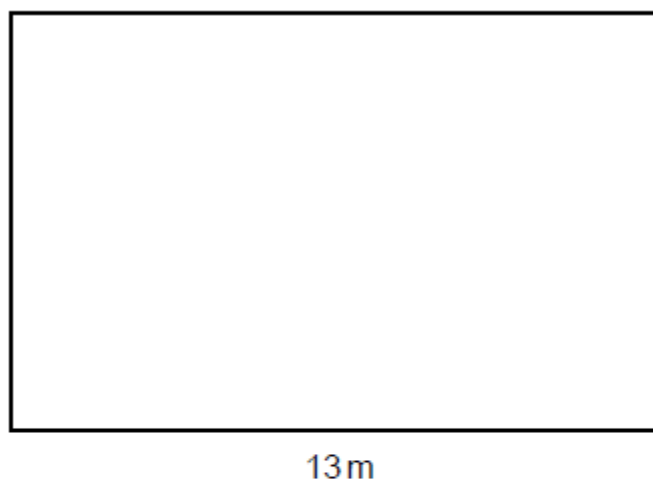


Diagram not drawn to scale

His floor is rectangular in shape with length 13m and width 8 m.



$$13 \div 3 = 4 \dots 1$$

$$8 \div 3 = 2 \dots 2$$

$$5 \times 8 = 40$$

$$3 \times 13 = 39$$

Diagram not drawn to scale

The carpet is laid to ensure that the stripes on the carpet are parallel to two of the sides of the room and lie in one direction only.

Find the cost of the cheapest way of covering the floor, and state by how much it is cheaper.

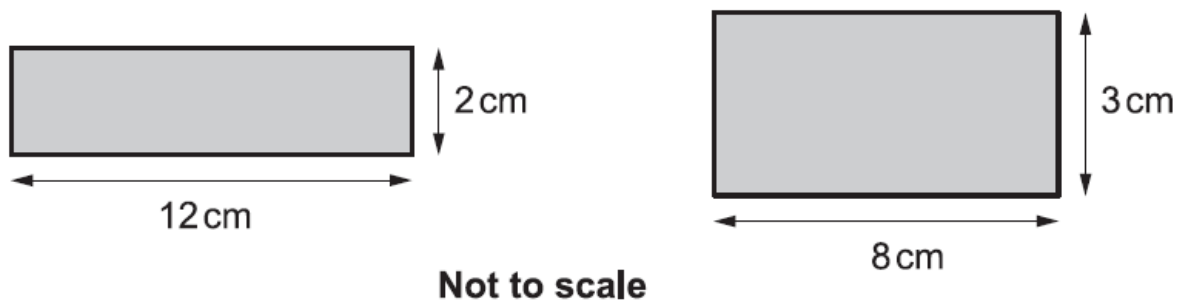
Show all your working.

1 m difference = £25 difference
 laying horizontally is better
 3x13 m needed

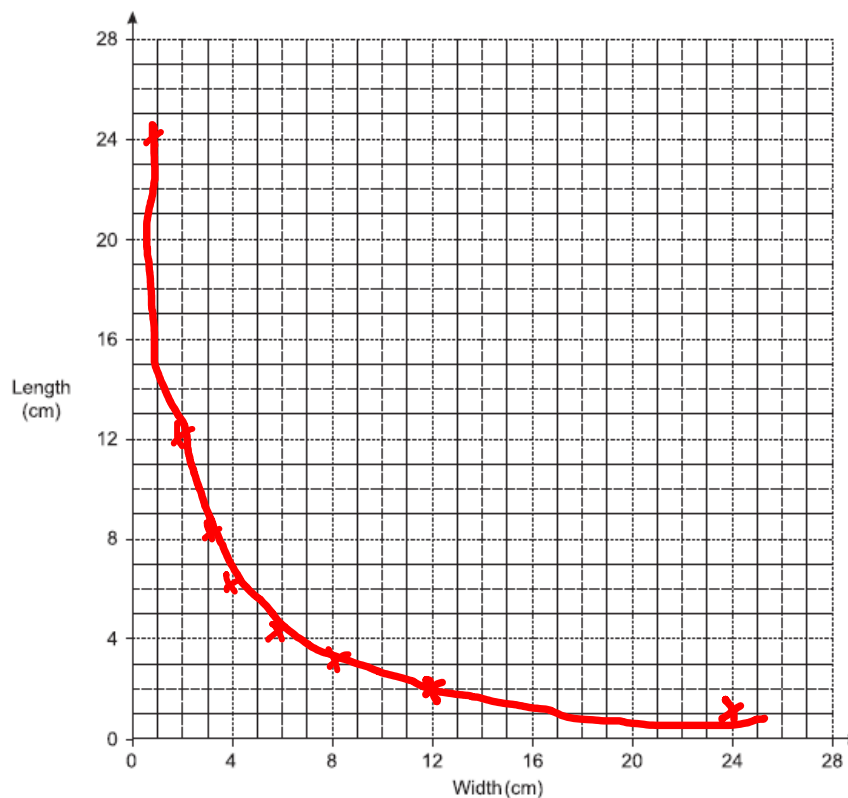
[5]

2. It is possible to draw many rectangles that have area 24 cm².

Here are two of them.



(i) Plot the dimensions of these two rectangles on the grid below.



[1]

(ii) Complete the graph to show the relationship between length and width for rectangles with area 24 cm^2 .

[3]

3. A pattern is made from two similar trapeziums.

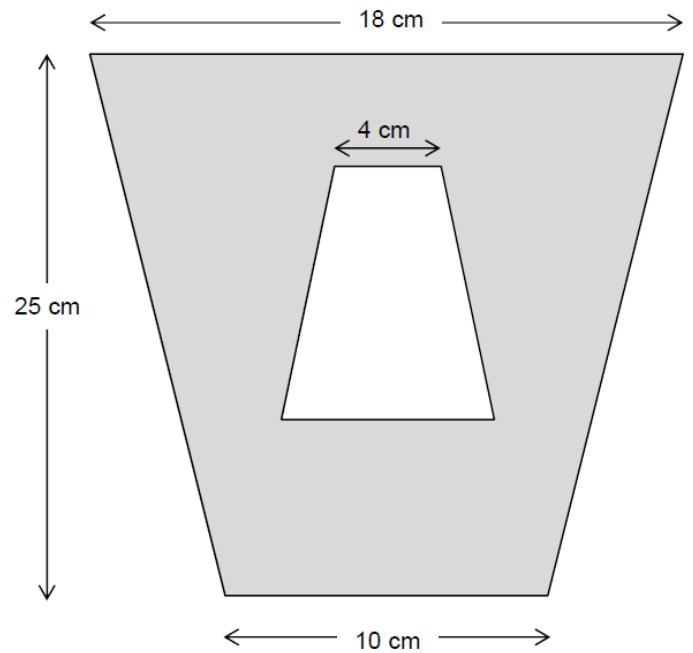
Show that the shaded area is 294 cm^2

$$\frac{18+10}{2} \times 25 = 350$$

$$1st = \frac{4}{10} \quad ASF = \left(\frac{4}{10}\right)^2 = \frac{16}{25}$$

$$350 \times \frac{16}{25} = 224$$

$$350 - 224 = 126$$



[4]

4. The diagram shows a trapezium ABCD and two identical semicircles.

The centre of each semicircle is on DC.

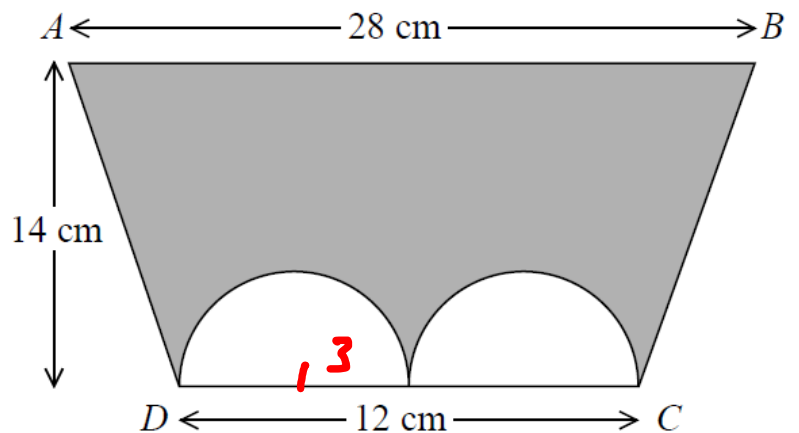
Work out the area of the shaded region.

Give your answer correct to 3 significant figures.

$$20 \times 14 = 280$$

$$3^2 \times \pi = 9\pi = 28.26$$

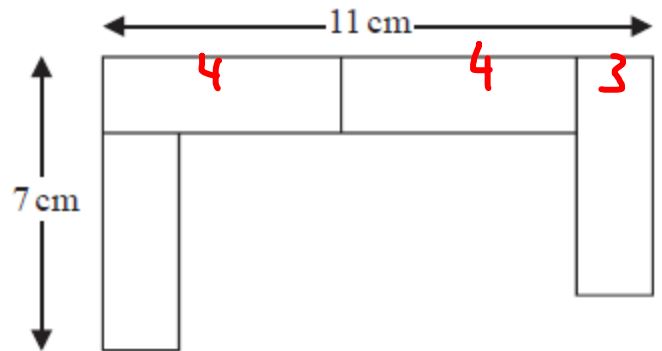
$$280 - 28.26 = 251.74 = 252$$



..... cm^2 [4]

5. A pattern is made using identical rectangular tiles.

Find the total area of the pattern.



$$2x + 7 = 11$$

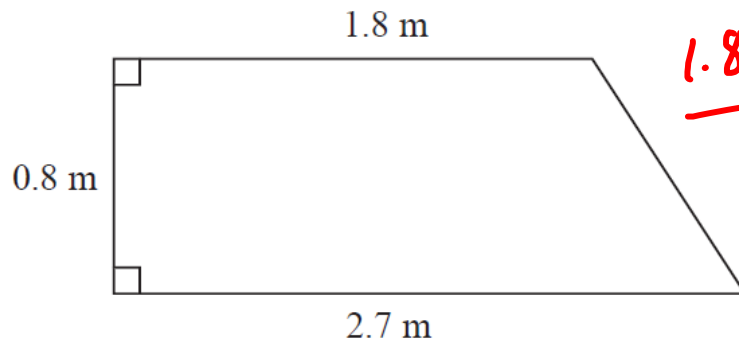
$$x = 11 - 7 = 4$$

$$4 \times 3 = 12$$

$$12 \times 4 = 48 \text{ cm}^2$$

[4]

6. The diagram shows part of a wall in the shape of a trapezium.



$$\frac{1.8 + 2.7}{2} \times 0.8 = 1.8$$

$$1.8 \times 100^2 = 18000$$

Karen is going to cover this part of the wall with tiles.

Each rectangular tile is 15 cm by 7.5 cm **112.5**

Tiles are sold in packs.

There are 9 tiles in each pack.

Karen divides the area of the wall by the area of a tile to work out an estimate for the number of tiles she needs to buy.

a) Use Karen's method to work out an estimate for the number of packs of tiles she needs to buy.

$$18000 \div 112.5 = 160 \text{ packs tiles}$$

$$160 \div 9 = 17.7 = 18 \text{ packs}$$

..... [5]

Karen is advised to buy 10% more tiles than she estimated.

Buying 10% more tiles will affect the number of the tiles Karen needs to buy.

She assumes she will need to buy 10% more packs of tiles.

b) Is Karen's assumption correct?

You must show your working.

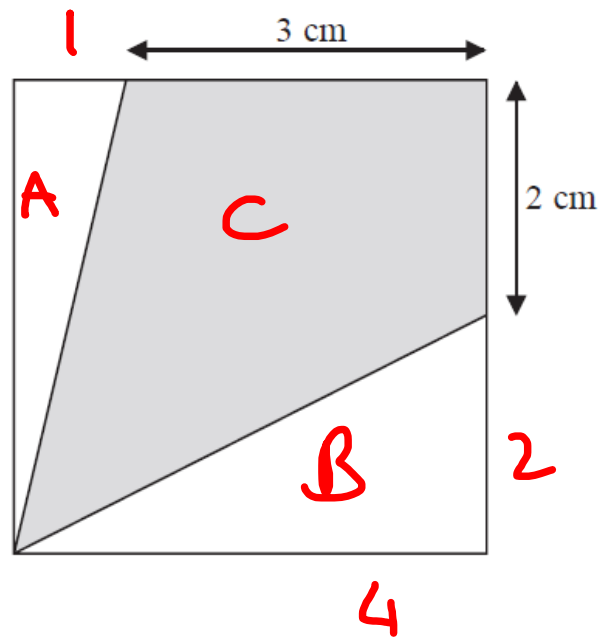
10% of 100 = 10 = 2 packs (18)
 10% of 18 = 1.8 = 2 whole packs

it is the same

[2]

7. The diagram shows a square with perimeter 16 cm.

Work out the proportion of the area inside the square that is shaded.



$16 \div 4 = 4$

$A = \frac{4 \times 1}{2} = 2$ $B = \frac{4 \times 2}{2} = 4$

$4 \times 4 = 16$

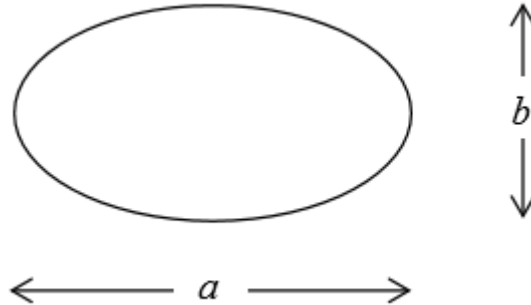
$16 - 6 = 10$

$\frac{10}{16} = \frac{5}{8}$

..... [5]

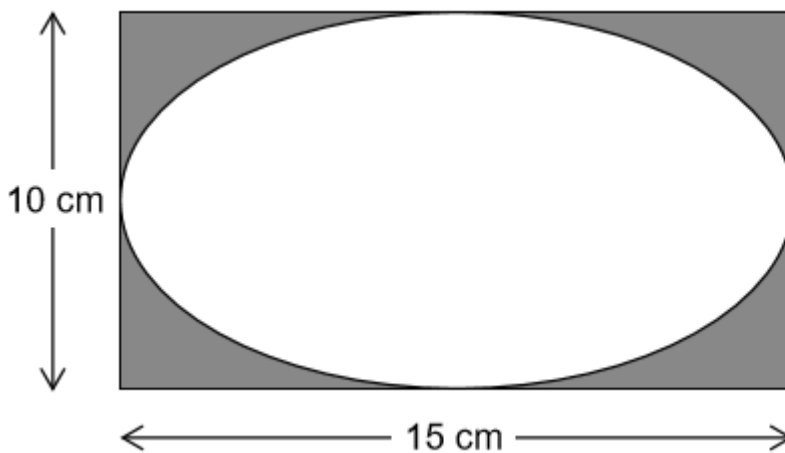
8. The area of an ellipse, width a and height b , is given by

$$\frac{\pi ab}{4}$$



A rectangular photograph measures 15 cm by 10 cm

It is put into a frame as shown.



$$\frac{150\pi}{4} = 37.5\pi$$

Not drawn accurately

The part of the photograph that can be seen is an ellipse.

Work out the percentage of the photograph that can be seen.

$$\frac{37.5\pi}{150} \times 100 = \frac{1}{4} \pi \times 100 = 25\pi = 78.5\% \quad [3]$$

CREDITS AND NOTES

Question	Awarding Body	Question	Awarding Body
1	WJEC Eduqas	8	AQA
2	OCR		
3	AQA		
4	Pearson Edexcel		
5	Pearson Edexcel		
6	Pearson Edexcel		
7	Pearson Edexcel		

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board's (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA <http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300>

OCR <http://ocr.org.uk/gcsemaths>

Pearson Edexcel <http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html>

WJEC Eduqas <http://www.eduqas.co.uk/qualifications/mathematics/gcse/>

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material

