SMP Interact for GCSE mathematics

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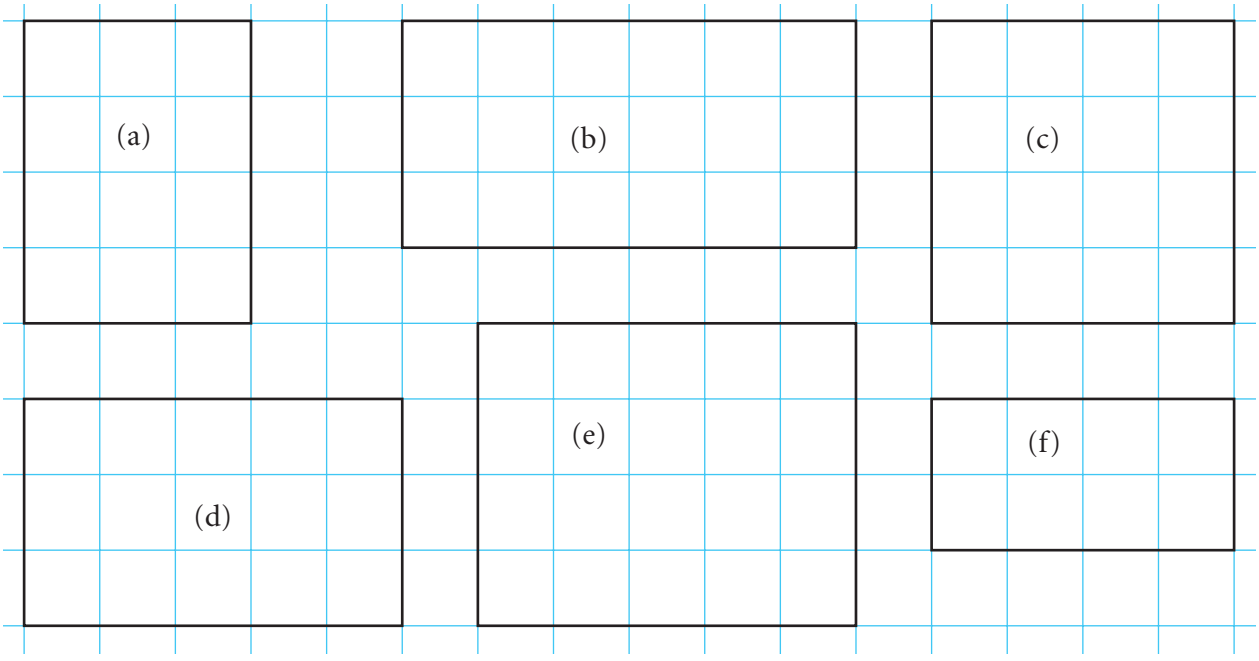
1 Rooms

This work will help you

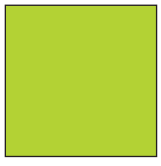
- find areas of rectangles with whole-number or decimal lengths
- find areas of shapes made from rectangles
- change between square centimetres and square metres

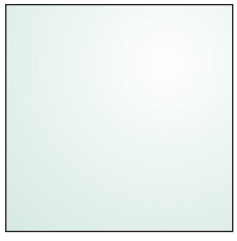
A Tiles

A1 These rectangles have been drawn on centimetre squared paper.
Find the area of each one in cm^2.



A2 These tiles are used to make mosaics.
Measure each tile and find its area.

A 

B 

A3 Sanjay wants to put mosaic tiles on a table top.
The table top measures 60 cm by 90 cm.

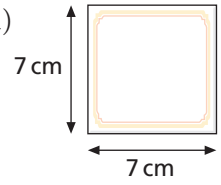
(a) What is the area of the table top?

(b) How many tiles of size A would he need to cover the table top?

(c) How many tiles of size B would he need to cover the table top?

A4 These are different tiles for walls.
Find the area of each tile.

(a)



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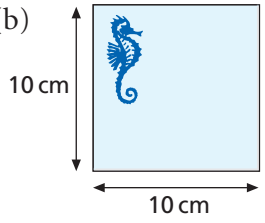

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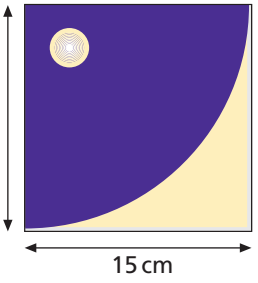

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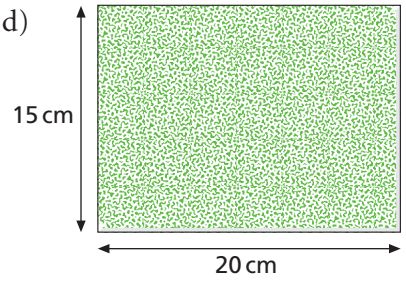
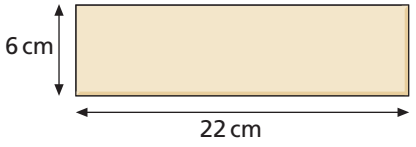


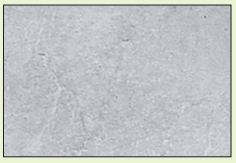
(e)



Floor tiles

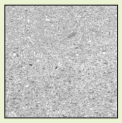
Here is a range of stone tiles which can be used on floors.
Find the area of each of these tiles.

African slate
40 cm by 60 cm
£7.50 each



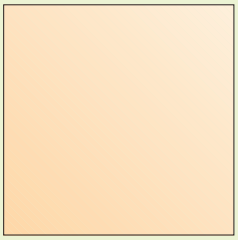
Blue slate
20 cm by 30 cm
£1.45 each

Tuscan stone
20 cm by 20 cm
£2.95 each



Quarry tile
15 cm by 15 cm
90p each

Old brick
10 cm by 20 cm
75p each



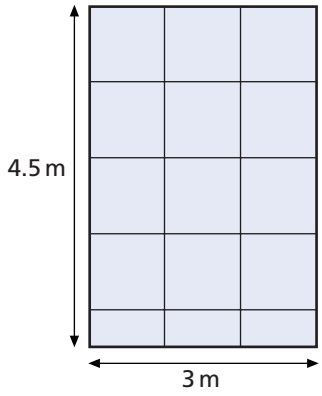
Ceramic tile
30 cm by 30 cm
£1.20 each

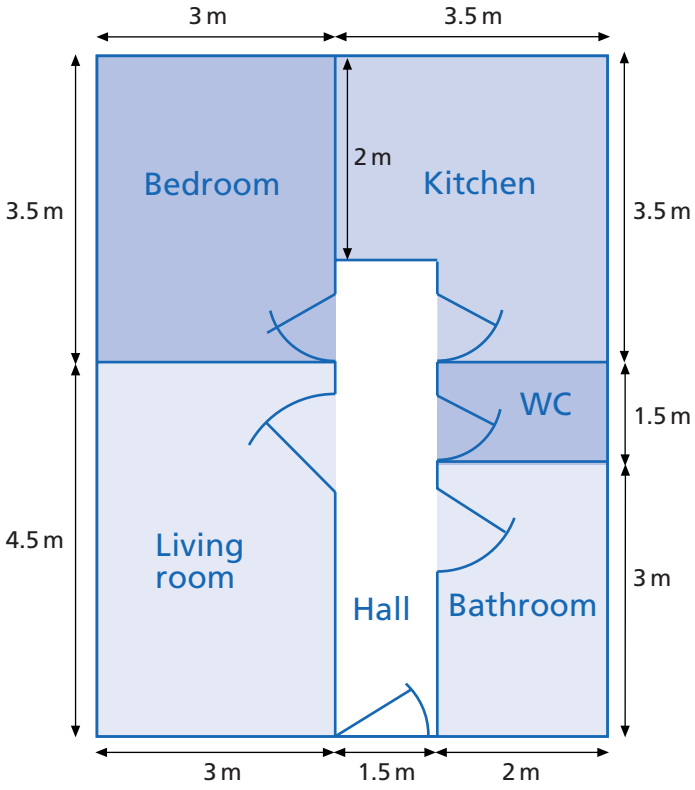
Half ceramic
15 cm by 30 cm
80p each

B *Floor space*

This is the plan of a flat.

The area of the living room floor is $4.5 \times 3 = 13.5\,m^2$.





B1 Find the area of floor in

(a) the bathroom

(b) the WC

(c) the bedroom

B2 (a) What is the width of the hall?

(b) Work out the length of the hall.

(c) Find the area of the hall.

B3 The cost of cleaning a carpet is £5 per square metre.
How much would it cost to clean the carpets in

(a) the bedroom (b) the living room (c) the hall

B4 (a) Draw a sketch of the kitchen.
On your sketch draw a line to split the kitchen into two rectangles.

(b) Find the area of each of these rectangles.

(c) What is the area of the floor in the kitchen?

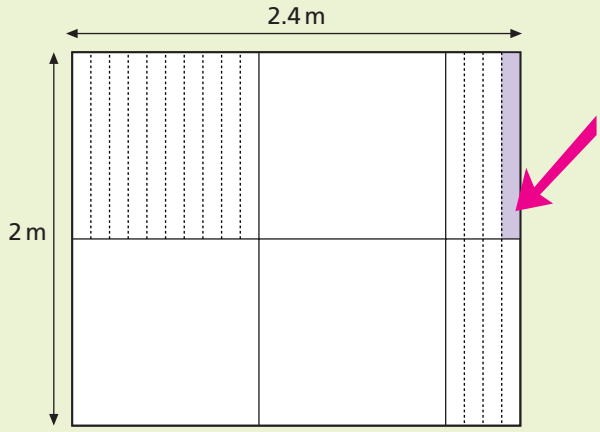
B5 Sanding wooden floors is advertised at £7.50 per square metre.
Find the cost of sanding the floors in

(a) the bathroom (b) the WC (c) the kitchen

***B6** One litre of sealant covers $1.5\,m^2$ of wooden floor.
It can be bought in 2 litre or 5 litre size cans.
A 2 litre can costs £6. A 5 litre can costs £14.

(a) What area will a 5 litre tin of sealant cover?

(b) What is the cheapest way to buy enough sealant to cover the bathroom floor?



This rectangle measures 2 m by 2.4 m.

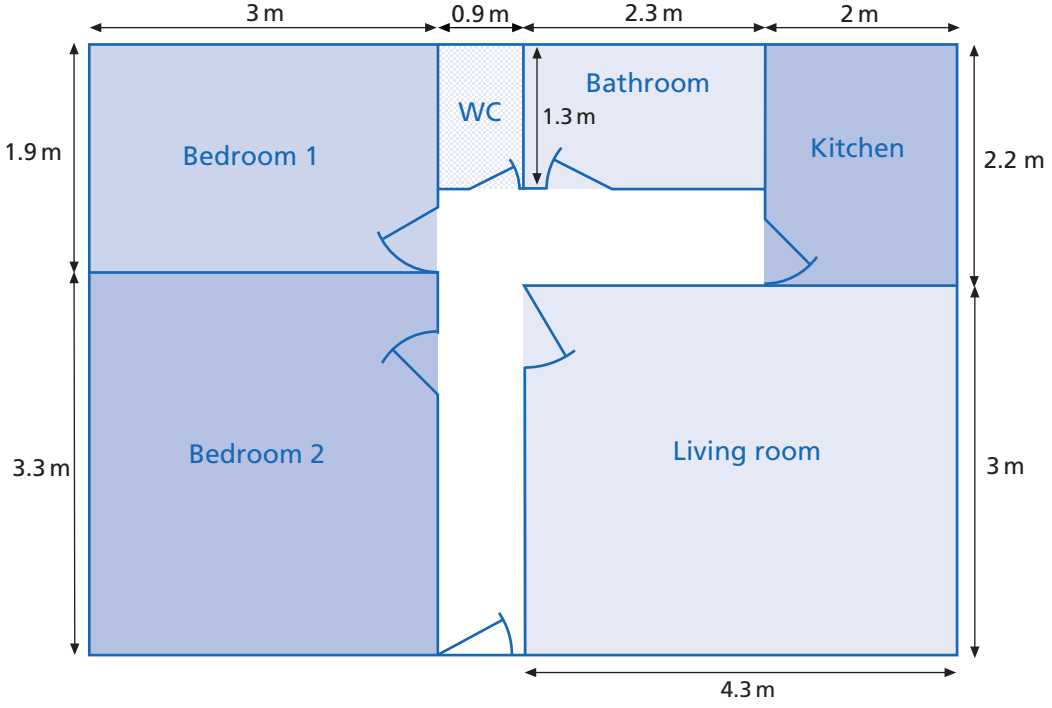
Each of these strips is $\frac{1}{10}$ or 0.1 m^2.

There are 4 whole square metres and 8 strips of 0.1 m^2.

The area of the rectangle is therefore 4.8 m^2.

B7 Use your calculator to check the area of the rectangle above.

B8 Here is the plan of another flat.



Use a calculator to find the area of the floor in these rooms.

(a) Bedroom 1 (b) Bedroom 2 (c) The living room (d) The kitchen

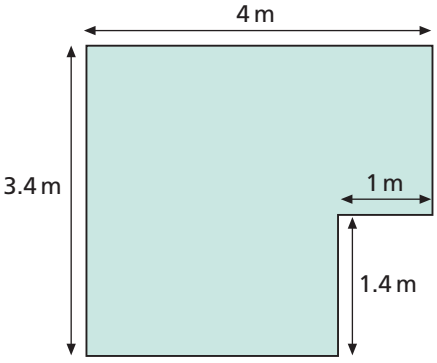
B9 (a) The WC is 0.9 m by 1.3 m.
Estimate the area of the WC.

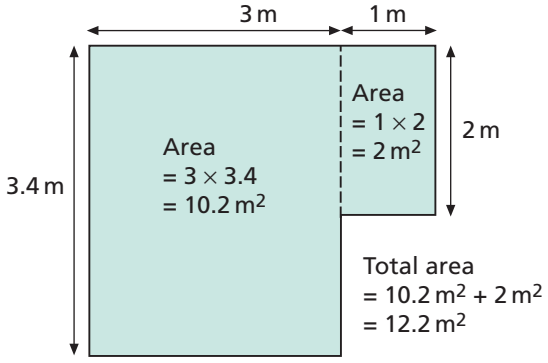
(b) Use your calculator to find the area of the WC exactly.

B10 Use your calculator to find the area of the bathroom.

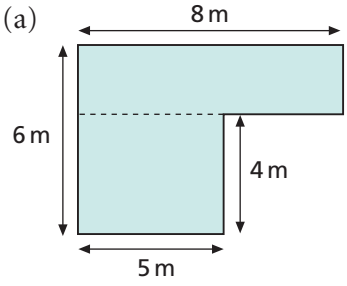
C *Composite shapes*

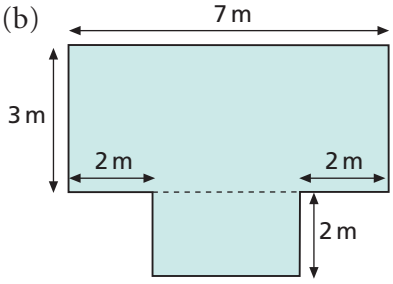
The area of this floor can be found by splitting the shape into rectangles.



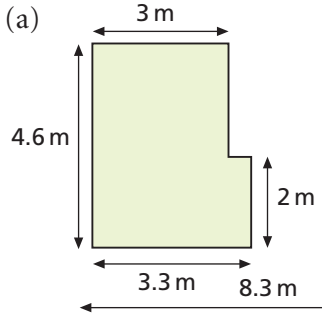


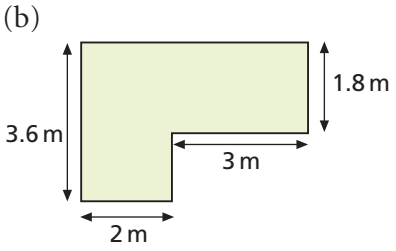
C1 Work out the area of each of these floors.

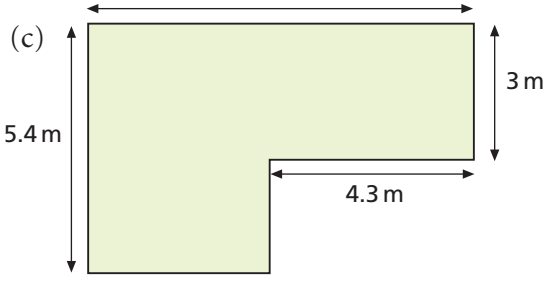


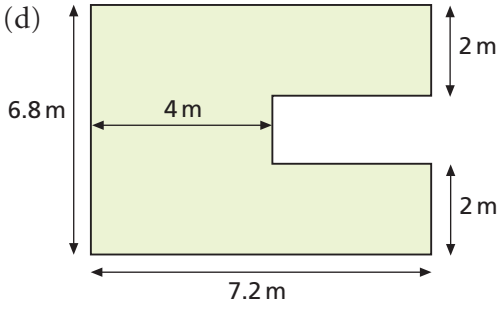


C2 Draw a sketch of these floors with lines splitting them into rectangles.
Work out the area of each floor, showing all your working.









C3 A carpenter is going to put skirting board around the edge of the rooms in C2.
Find the total length of skirting board needed for each of these floors.

A decorator wants to know how much paint she needs to paint a wall with a window.

This plan shows the measurements of the wall.

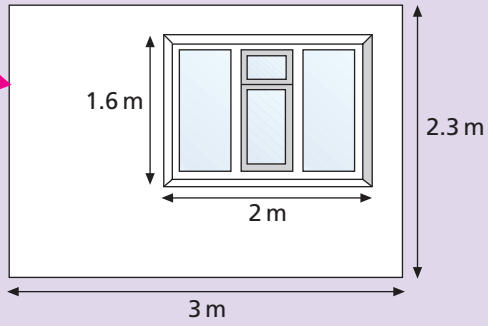
The area of this rectangle is
$3\,\text{m} \times 2.3\,\text{m} = 6.9\,\text{m}^2$

However, the area of the window is

$2\,\text{m} \times 1.6\,\text{m} = 3.2\,\text{m}^2$

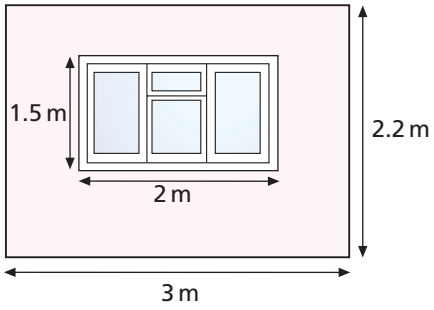
So the area of the wall that needs to be painted is

$6.9\,\text{m}^2 - 3.2\,\text{m}^2 = 3.7\,\text{m}^2$



C4 Find the area that needs painting on each of these walls.

(a)



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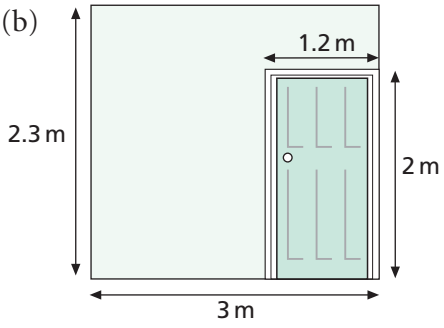

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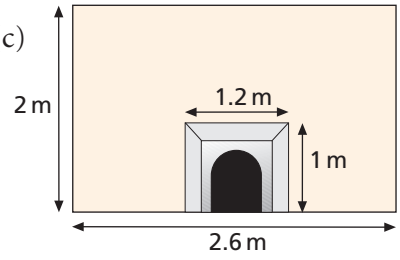
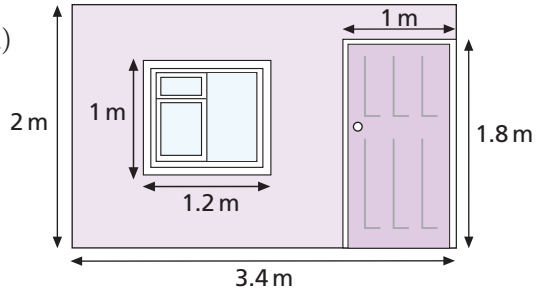


(d)



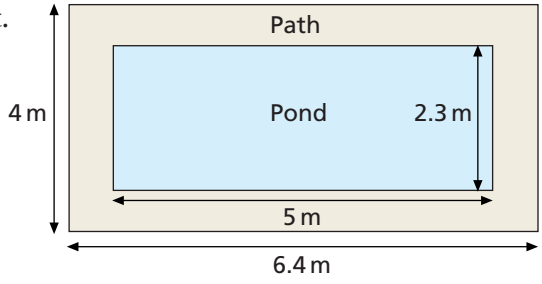
C5 A tin of paint covers an area of $8\,\text{m}^2$ with one coat.

Which of the walls in C4 could be covered by a tin of paint if two coats were given?

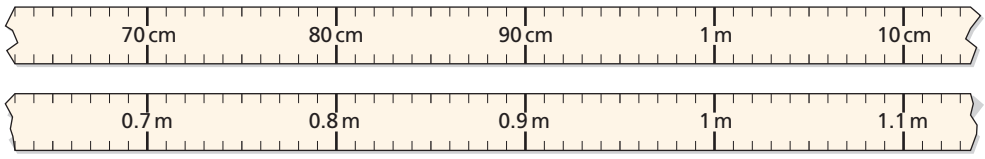
C6 This garden pond has a path all round it.

(a) Find the area of the pond.

(b) Find the area of the path.



D *Mixed measurements*



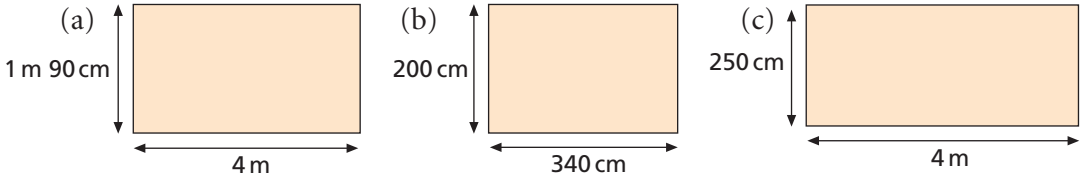
D1 These measurements are in centimetres.
Write them as decimals of a metre.

(a) 70 cm (b) 90 cm (c) 95 cm (d) 1 m 10 cm
(e) 150 cm (f) 240 cm (g) 29 cm (h) 1 m 25 cm
(i) 2 m 84 cm (j) 5 cm (k) 1 m 5 cm (l) 2 m 8 cm

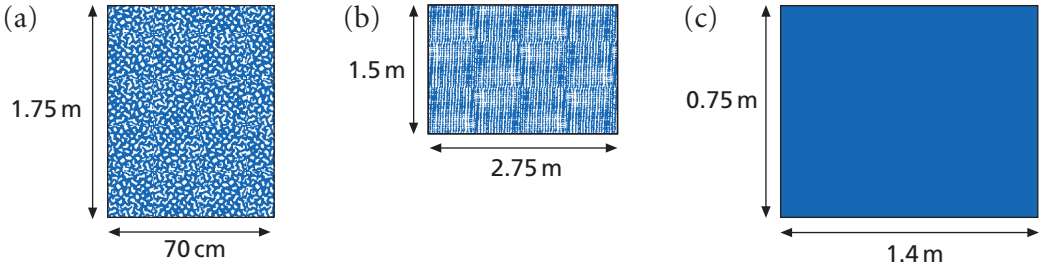
D2 Write these measurements in metres and centimetres without decimals.

(a) 0.8 m (b) 0.6 m (c) 0.25 m (d) 1.5 m
(e) 3.75 m (f) 2.84 m (g) 0.04 m (h) 5.08 m

D3 By changing measurements into decimals of metres, find the areas of these walls in m^2.



D4 Work out the areas of these carpet remnants in cm^2.



D5 The carpets in D4 are to have tape around the edges.
What length of tape is needed for each carpet in centimetres?

D6 Write the lengths of tape in D5 in metres.

Test yourself

T1 This is the floor plan of Justin's bedroom.
The position of the door is marked.

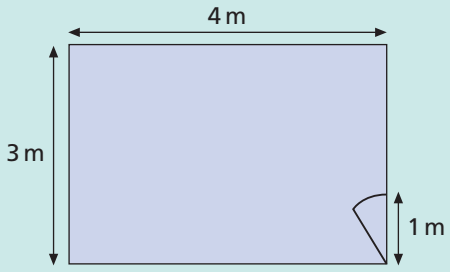
(a) Work out the area of the floor.

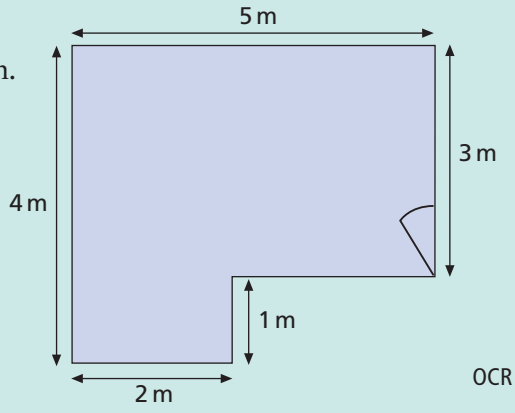
(b) The room has a skirting board at the bottom of the walls.
It goes all round the room but not across the door.

How long is the skirting board?

(c) This is a floor plan of Tammy's bedroom.

Work out the area of the floor.





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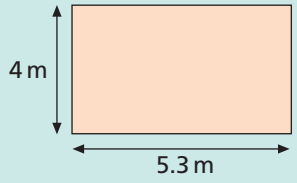
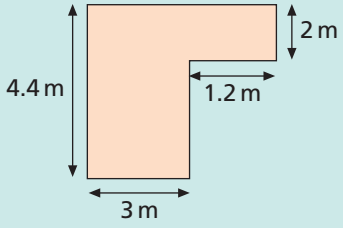
T2 Find the shaded areas.

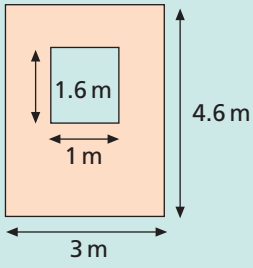
(a)



(b)

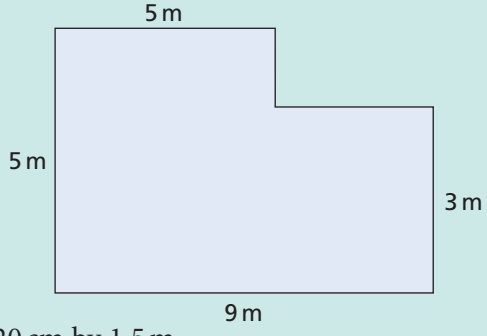


(c)



T3 This diagram shows the floor plan of a room.

Work out the area of the floor.
Give the units with your answer.



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T4 A rectangular carpet measures 120 cm by 1.5 m.

(a) Find the area of the carpet in cm^2.

(b) Find the area of the carpet in m^2.