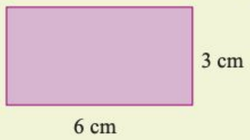
WALT Calculate area of a rectangle
Success Criteria I know the rule to calculate the area of a rectangle.
I know my multiplication tables

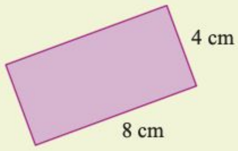
EXAMPLE 1

Find the area of each rectangle.

a



b



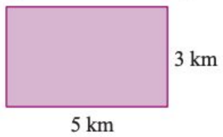
a $A = lb$
$= 6 \times 3 = 18\text{ cm}^2$

b $A = lb$
$= 8 \times 4 = 32\text{ cm}^2$

Exercise 12B

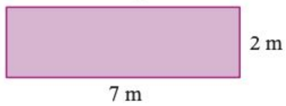
1 Complete the following to find the areas of the rectangles.

a



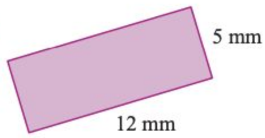
$A = l \times b$
$= 5 \times$ ___
$=$ ___ km^2

b



$A = l \times b$
$=$ ___ $\times 2$
$=$ ___ m^2

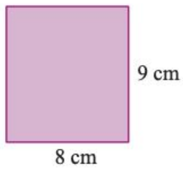
c



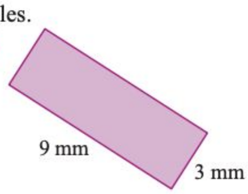
$A = l \times b$
$=$ ___ $\times$ ___
$= 60\text{ mm}^2$

2 Find the areas of the following rectangles.

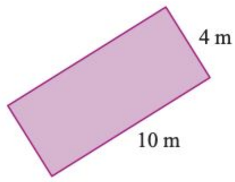
a



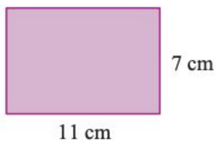
b



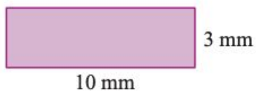
c



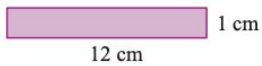
d



e

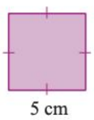


f



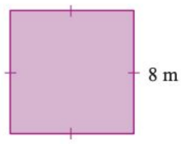
3 A square is a rectangle where length and breadth are equal. Hence the formula is $A = s^2$. Find the areas of the following squares.

a



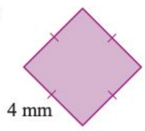
$A = s^2$
$= 5 \times 5$
$=$ ___ cm^2

b

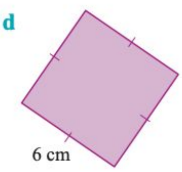


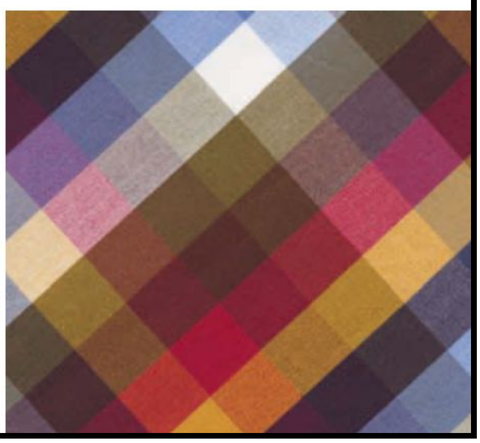
$A = s^2$
$=$ ___ $\times 8$
$=$ ___ m^2

c



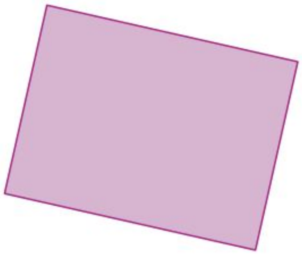
d





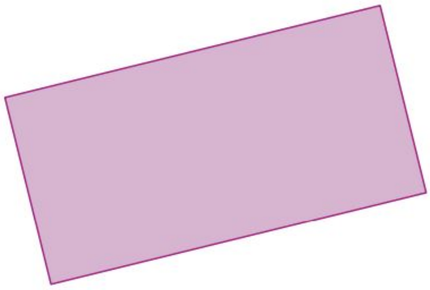
4 By measurement and calculation, find the areas of the following rectangles.

a



b

c

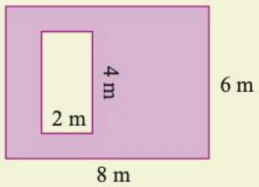


d

Challenge

EXAMPLE 2

Find the shaded area.



The shaded area is found by subtraction.

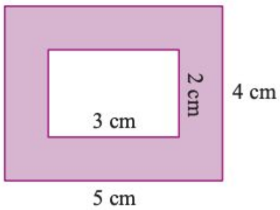
Area of large rectangle $= 8 \times 6 = 48\ \text{m}^2$

Area of unshaded rectangle $= 4 \times 2 = 8\ \text{m}^2$

$\therefore$ Shaded area $= 48 - 8 = 40\ \text{m}^2$

5 Complete the following to find the shaded areas.

a



Area of large rectangle $= 5 \times$ ___

$=$ ___ cm^2

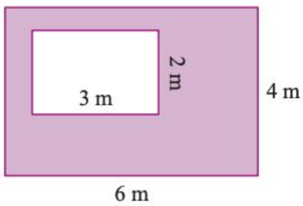
Area of unshaded rectangle $=$ ___ $\times 2$

$=$ ___ cm^2

$\therefore$ Shaded area $=$ ___ $-$ ___

$=$ ___ cm^2

b



Area of large rectangle $= 6 \times$ ___

$=$ ___ m^2

Area of unshaded rectangle $=$ ___ $\times 2$

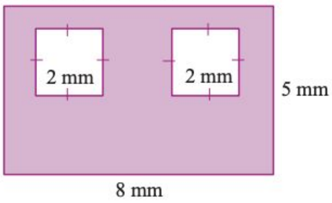
$=$ ___ m^2

$\therefore$ Shaded area $=$ ___ $-$ ___

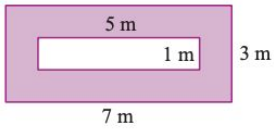
$=$ ___ m^2

6 Find the shaded areas.

a



b

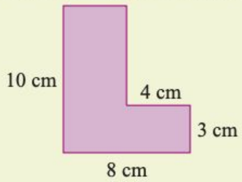


A composite shape is a combination of two or more standard geometric shapes.

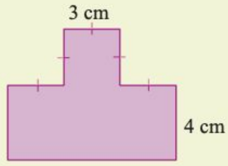
EXAMPLE 3

Find the areas of the following **composite shapes**.

a

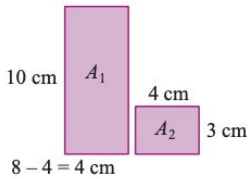


b



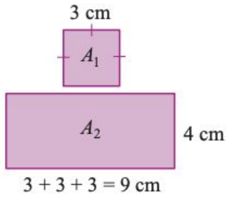
Divide the shapes into separate rectangles. Subtract or add to find any missing measurements. The area of each shape is the area of two rectangles.

a



$A = A_1 + A_2$
$= (10 \times 4) + (4 \times 3)$
$= 40 + 12 = 52\text{ cm}^2$

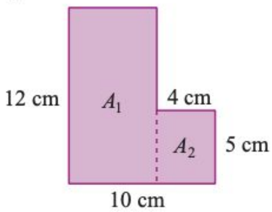
b



$A = A_1 + A_2$
$= (3 \times 3) + (9 \times 4)$
$= 9 + 36 = 45\text{ cm}^2$

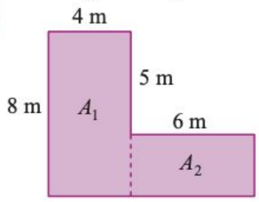
7 Complete to find the area of each composite shape by first dividing the shape into rectangles as shown.

a



$A = A_1 + A_2$
$= (\_\_\_ \times 6) + (\_\_\_ \times 4)$
$= \_\_\_ + \_\_\_ = \_\_\_\text{ cm}^2$

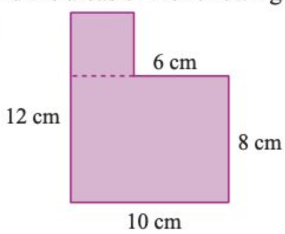
b



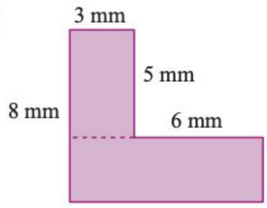
$A = A_1 + A_2$
$= (8 \times \_\_\_) + (6 \times \_\_\_)$
$= \_\_\_ + \_\_\_ = \_\_\_\text{ m}^2$

8 Find the areas of the following shapes by first dividing each into rectangles as shown.

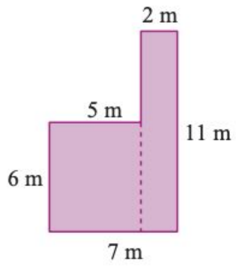
a



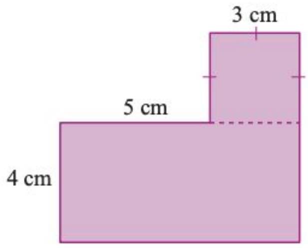
b



c

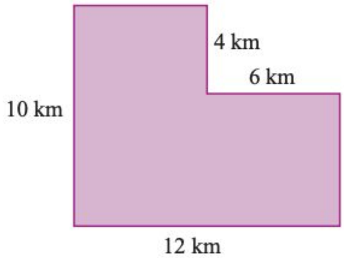


d

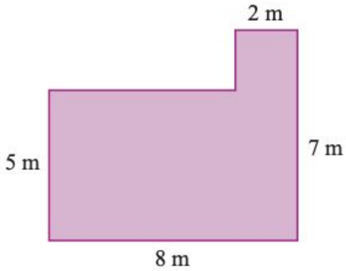


9 Find the areas of the following shapes.

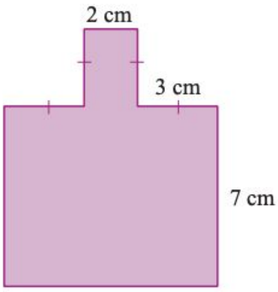
a



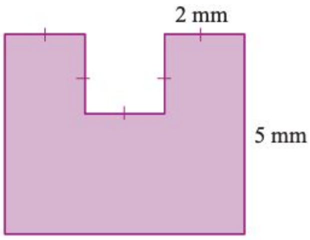
b



c



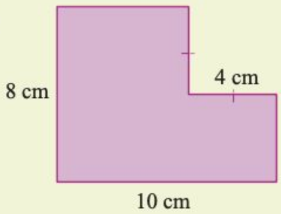
d



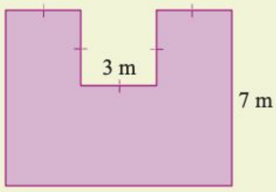
EXAMPLE 4

Find the areas of the following shapes by subtraction.

a

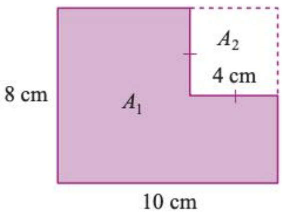


b



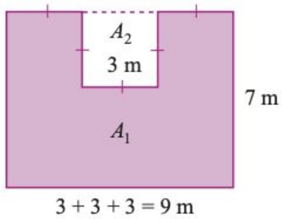
The area of each shape is the area of the largest rectangle minus the area of the missing square. Subtract or add to find any missing measurements.

a



$$A = A_1 - A_2$$
$$= (10 \times 8) - (4 \times 4)$$
$$= 80 - 16 = 64 \text{ cm}^2$$

b

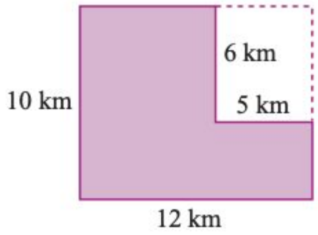


$$A = A_1 - A_2$$
$$= (9 \times 7) - (3 \times 3)$$
$$= 63 - 9 = 54 \text{ m}^2$$

Extension

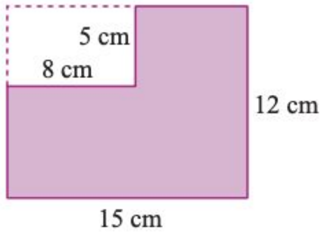
10 Complete to find the area of each shape by subtraction.

a



A = area largest − area smallest
= (12 × ___) − (6 × ___)
= ___ − ___ = ___ km²

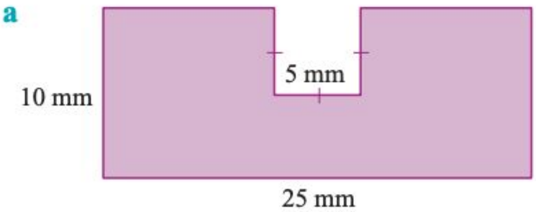
b



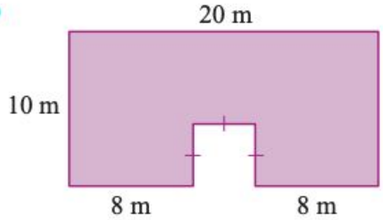
A = area largest − area smallest
= (15 × ___) − (8 × ___)
= ___ − ___ = ___ cm²

11 Find the areas of the following shapes by subtraction.

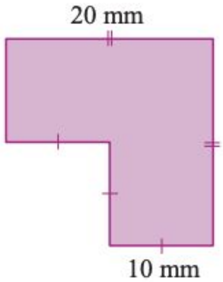
a



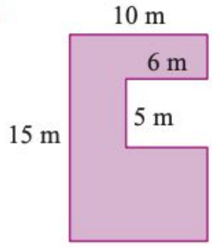
b



c



d



Check your answers

Exercise 12B

1 **a** $A = 5 \times 3 = 15$ km² **b** $A = 7 \times 2 = 14$ m²
c $A = 12 \times 5 = 60$ mm²

2 **a** 72 cm² **b** 27 mm² **c** 40 m²
d 77 cm² **e** 30 mm² **f** 12 cm²

3 **a** $A = 5 \times 5 = 25\text{ cm}^2$ **b** $A = 8 \times 8 = 64\text{ m}^2$
c 16 mm^2 **d** 36 cm^2

4 **a** 12 cm^2 **b** 20 cm^2 **c** 18 cm^2 **d** 10 cm^2

5 **a** Area of large rectangle $= 5 \times 4 = 20\text{ cm}^2$
Area of unshaded rectangle $= 3 \times 2 = 6\text{ cm}^2$
$\therefore$ Shaded area $= 20 - 6 = 14\text{ cm}^2$
b Area of large rectangle $= 6 \times 4 = 24\text{ m}^2$
Area of unshaded rectangle $= 3 \times 2 = 6\text{ m}^2$
$\therefore$ Shaded area $= 24 - 6 = 18\text{ m}^2$

6 **a** 32 mm^2 **b** 16 m^2

7 **a** $A = (12 \times 6) + (5 \times 4) = 72 + 20 = 92\text{ cm}^2$
b $A = (8 \times 4) + (6 \times 3) = 32 + 18 = 50\text{ m}^2$

8 **a** 96 cm^2 **b** 42 mm^2
c 52 m^2 **d** 41 cm^2

9 **a** 96 km^2 **b** 44 m^2
c 62 cm^2 **d** 38 mm^2

10 **a** $A = (12 \times 10) - (6 \times 5) = 120 - 30 = 90\text{ km}^2$
b $A = (15 \times 12) - (8 \times 5) = 180 - 40 = 140\text{ cm}^2$

11 **a** 225 mm^2 **b** 184 m^2
c 300 mm^2 **d** 120 m^2