

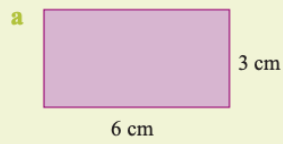
WALT Calculate area of a rectangle

Success Criteria I know the rule to calculate the area of a rectangle.

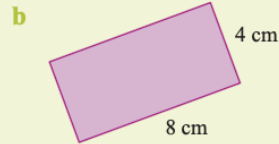
I know my multiplication tables

EXAMPLE 1

Find the area of each rectangle.



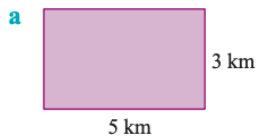
a $A = lb$
 $= 6 \times 3 = 18 \text{ cm}^2$



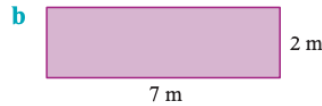
b $A = lb$
 $= 8 \times 4 = 32 \text{ cm}^2$

Exercise 12B

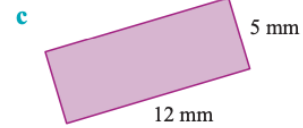
1 Complete the following to find the areas of the rectangles.



$A = l \times b$
 $= 5 \times \underline{\quad}$
 $= \underline{\quad} \text{ km}^2$

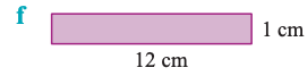
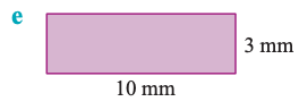
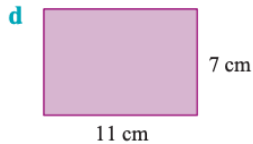
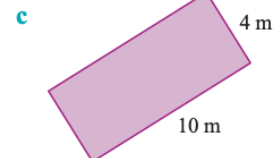
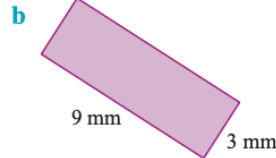
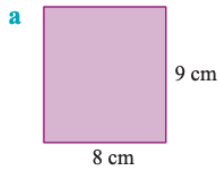


$A = l \times b$
 $= \underline{\quad} \times 2$
 $= \underline{\quad} \text{ m}^2$

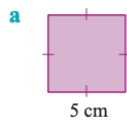


$A = l \times b$
 $= \underline{\quad} \times \underline{\quad}$
 $= 60 \text{ mm}^2$

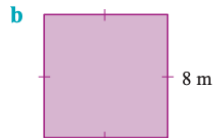
2 Find the areas of the following rectangles.



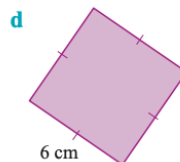
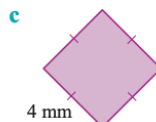
3 A square is a rectangle where length and breadth are equal. Hence the formula is $A = s^2$. Find the areas of the following squares.



$A = s^2$
 $= 5 \times 5$
 $= \underline{\quad} \text{ cm}^2$

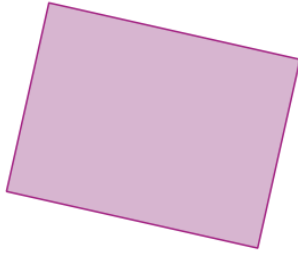


$A = s^2$
 $= \underline{\quad} \times 8$
 $= \underline{\quad} \text{ m}^2$



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

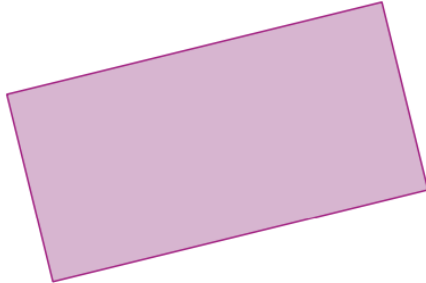
a



b



c



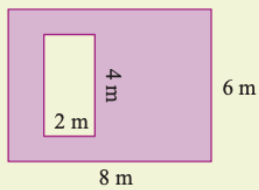
d



Challenge

EXAMPLE 2

Find the shaded area.



The shaded area is found by subtraction.

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

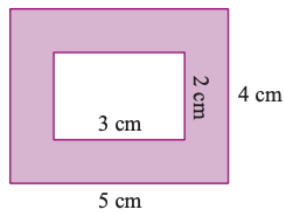
$$\text{Area of unshaded rectangle} = 4 \times 2 = 8 \text{ m}^2$$

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



5 Complete the following to find the shaded areas.

a



$$\text{Area of large rectangle} = 5 \times \underline{\quad}$$

$$= \underline{\quad} \text{ cm}^2$$

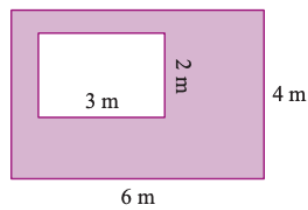
$$\text{Area of unshaded rectangle} = \underline{\quad} \times 2$$

$$= \underline{\quad} \text{ cm}^2$$

$$\therefore \text{Shaded area} = \underline{\quad} - \underline{\quad}$$

$$= \underline{\quad} \text{ cm}^2$$

b



$$\text{Area of large rectangle} = 6 \times \underline{\quad}$$

$$= \underline{\quad} \text{ m}^2$$

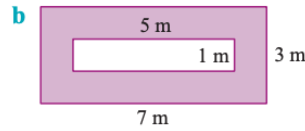
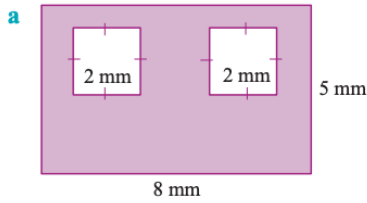
$$\text{Area of unshaded rectangle} = \underline{\quad} \times 2$$

$$= \underline{\quad} \text{ m}^2$$

$$\therefore \text{Shaded area} = \underline{\quad} - \underline{\quad}$$

$$= \underline{\quad} \text{ m}^2$$

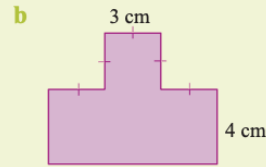
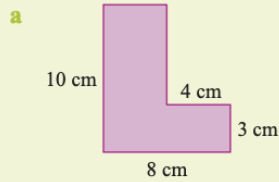
6 Find the shaded areas.



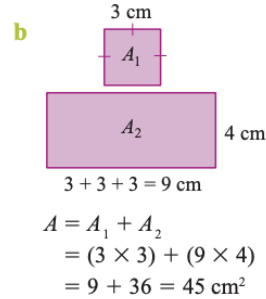
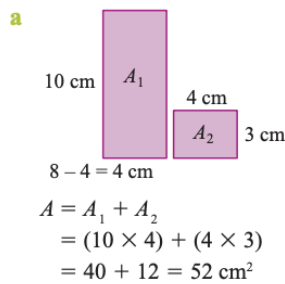
A composite shape is a combination of two or more standard geometric shapes.

EXAMPLE 3

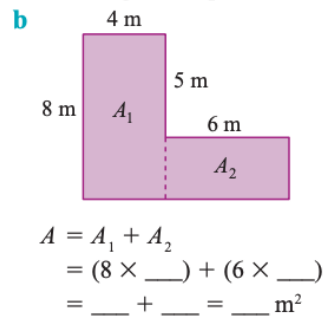
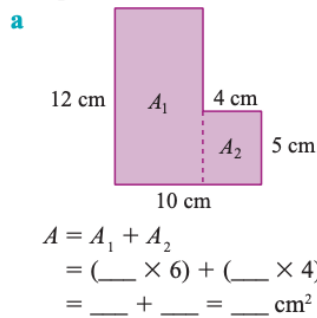
Find the areas of the following composite shapes.



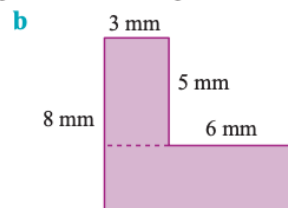
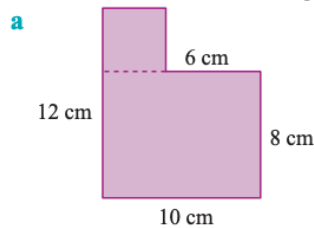
Divide the shapes into separate rectangles. Subtract or add to find any missing measurements. The area of each shape is the area of two rectangles.

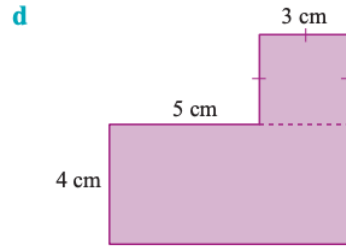
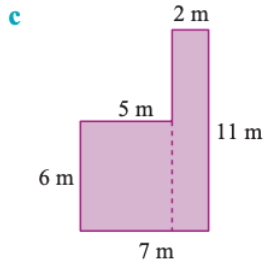


7 Complete to find the area of each composite shape by first dividing the shape into rectangles as shown.

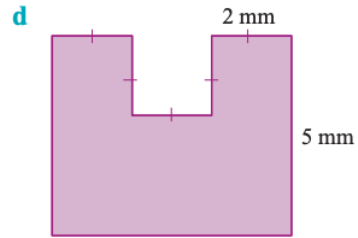
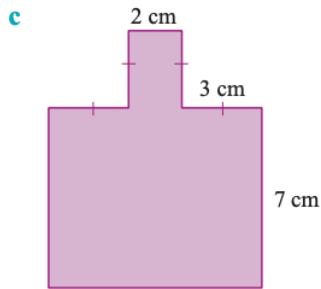
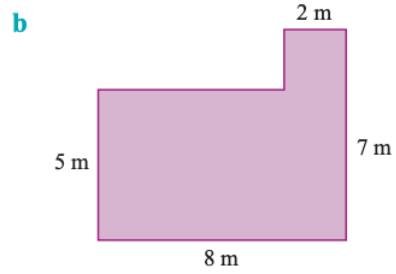
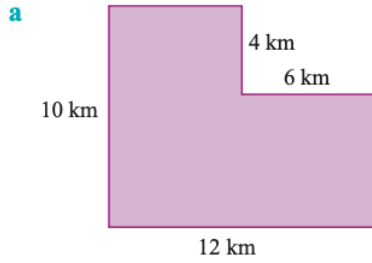


8 Find the areas of the following shapes by first dividing each into rectangles as shown.



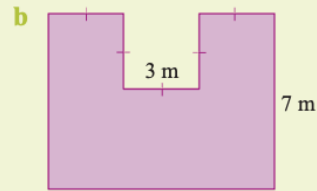
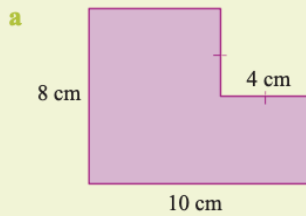


9 Find the areas of the following shapes.

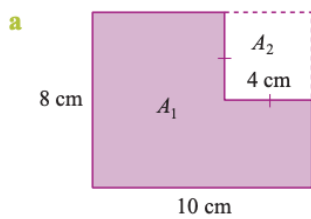


EXAMPLE 4

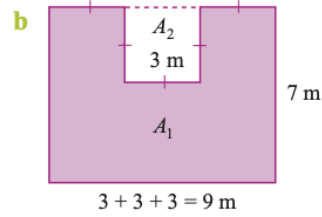
Find the areas of the following shapes by subtraction.



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.



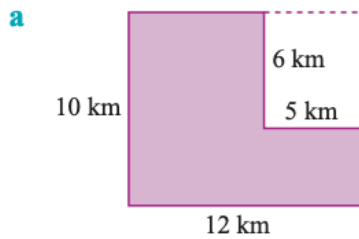
$$\begin{aligned}
 A &= A_1 - A_2 \\
 &= (10 \times 8) - (4 \times 4) \\
 &= 80 - 16 = 64 \text{ cm}^2
 \end{aligned}$$



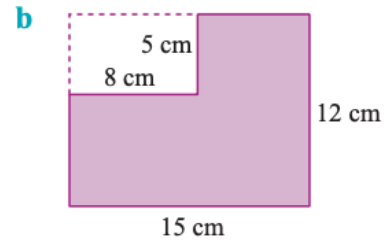
$$\begin{aligned}
 A &= A_1 - A_2 \\
 &= (9 \times 7) - (3 \times 3) \\
 &= 63 - 9 = 54 \text{ m}^2
 \end{aligned}$$

Extension

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

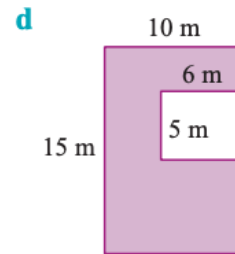
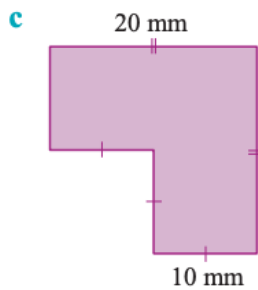
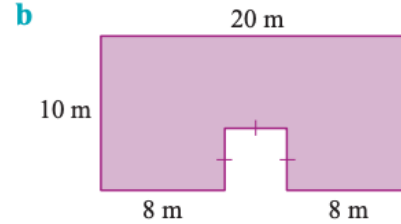
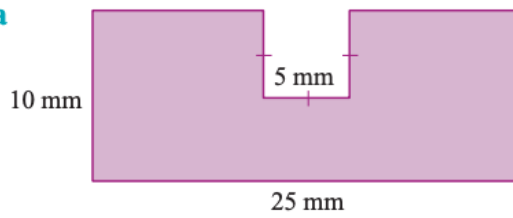


$$\begin{aligned}
 A &= \text{area largest} - \text{area smallest} \\
 &= (12 \times \underline{\quad}) - (6 \times \underline{\quad}) \\
 &= \underline{\quad} - \underline{\quad} = \underline{\quad} \text{ km}^2
 \end{aligned}$$



$$\begin{aligned}
 A &= \text{area largest} - \text{area smallest} \\
 &= (15 \times \underline{\quad}) - (8 \times \underline{\quad}) \\
 &= \underline{\quad} - \underline{\quad} = \underline{\quad} \text{ cm}^2
 \end{aligned}$$

11 Find the areas of the following shapes by subtraction.



Check your answers

1 a $A = 5 \times 3 = 15 \text{ km}^2$ **b** $A = 7 \times 2 = 14 \text{ m}^2$

c $A = 12 \times 5 = 60 \text{ mm}^2$

2 a 72 cm^2

b 27 mm^2

c 40 m^2

d 77 cm^2

e 30 mm^2

f 12 cm^2

- 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