# Let's Practice!

EXERCISE 2

Use the formulae on p. 150 to answer the following questions:

1. Mr Handyman wants to build a kennel for his puppy, Canin. The measurements for the kennel are given alongside.

   1.1 Determine the *dimensions* of the large plywood sheet that Mr Handyman will need in order to cut out all the panels shown on the diagram? Give your answer in both mm and in m.

   1.2 Calculate the area of the side panels in m².

   1.3 If the height of the kennel is 900 mm and the height of the side panel is 500 mm, find the length of H on the diagram.

   1.4 Calculate the area of the back panel of the kennel in m².

   1.5 Calculate the area of the door (in m²) that needs to be cut out from the front panel.
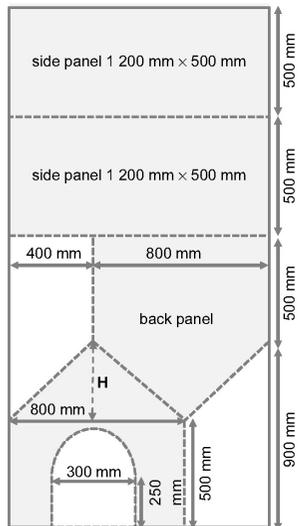
   HINT: *The door is made up of a rectangle and a semicircle.*

   1.6 Calculate the area of the front panel in m² *(the front panel is the panel with the door).*

   1.7 Calculate the total area of the kennel in m² *(the shaded area on the drawing).*

   1.8 Calculate the area of the sheet of plywood that will not be used *(the unshaded area on the drawing).*

side panel 1 200 mm × 500 mm — 500 mm
side panel 1 200 mm × 500 mm — 500 mm
back panel — 500 mm
400 mm | 800 mm
H
800 mm
300 mm | 250 mm | 500 mm | 900 mm

Answers

EXERCISE 2

1.1 Dimensions
$$= (800 + 400) \times (500 + 500 + 500 + 900)$$
$$= 1\,200 \text{ mm} \times 2\,400 \text{ mm}$$
$$= 1,2 \text{ m} \times 2,4 \text{ m}$$

2 400 mm (2,4 m) / 1 200 mm (1,2 m)
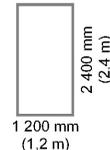
1.2 Side panels:
$$A = \ell \times b$$
$$= (1,2 \times 0,5) \times 2 \text{ panels}$$
$$= 0,6 \times 2$$
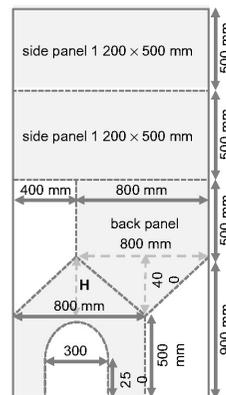$$= 1,2 \text{ m}^2$$

500 mm = 500 ÷ 1 000 = 0,5 m

1.3 $H = 900 - 500 = 400$ mm

1.4 Back panel
$$= \text{rectangle} + \text{triangle}$$
$$= (\ell \times b) + \left(\frac{1}{2}.b.h\right)$$
$$= (800 \times 500) + \left(\frac{1}{2}.800.400\right)$$

800 mm = 0,8 m
400 mm = 0,4 m
500 mm = 0,5 m

$$= (0,8 \times 0,5) + \left(\frac{1}{2}.0,8.0,4\right)$$
$$= 0,4 \text{ m} + 0,16 \text{ m}$$
$$= 0,56 \text{ m}^2$$

side panel 1 200 × 500 mm — 500 mm
side panel 1 200 × 500 mm — 500 mm
400 mm | 800 mm
back panel 800 mm
H
800 mm | 400
300 | 250 | 500 mm | 900 mm

1.5 Door $= \text{rectangle} + \frac{1}{2}$ circle
$$= (\ell \times b) + \left(\frac{1}{2}.\pi r^2\right)$$
$$= (0,30 \times 0,25) + \left(\frac{1}{2} \times 3,142 \times 0,15^2\right)$$
$$= 0,075 + 0,0353$$
$$= 0,11 \text{ m}^2$$

250 mm = 0,25 m
300 mm = 0,3 m
diameter = $\frac{0,3}{2}$ = 0,15 m

1.6 Area front panel = area back panel - area door
$$= 0,56 - 0,11 = 0,45 \text{ m}^2$$

1.7 TSA = front + back + side panels
$$= 0,45 + 0,56 + 1,2 = 2,21 \text{ m}^2$$

1.8 Unshaded area = (total area of plywood - used area)
$$= (1,2 \times 2,4) - 2,21$$
$$= 2,88 - 2,21 = 0,67 \text{ m}^2$$