

(1) How many hectares will the following areas cover?

(a) $66\,000\,000\text{ cm}^2$ (first convert to m^2)

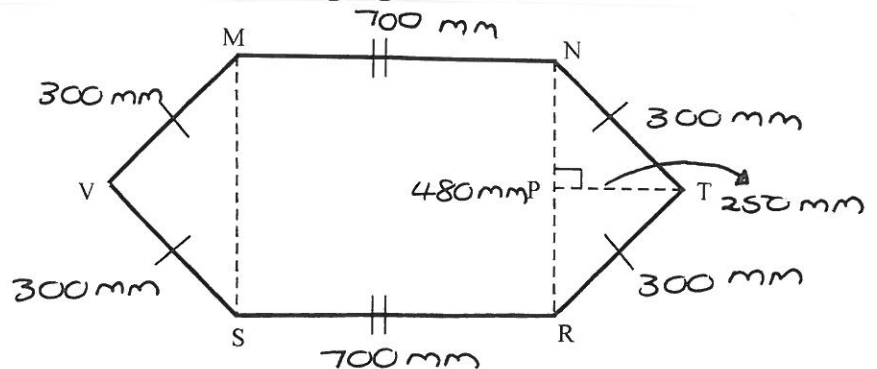
$$\begin{aligned} &\Rightarrow 66\,000\,000 \div (100)^2 \\ &= 6600\text{ m}^2 \Rightarrow 6600 \div 10\,000 \\ &= 0,66\text{ ha} \end{aligned}$$

(b) 63 km^2 (first convert to m^2)

$$\begin{aligned} &\Rightarrow 63 \times (1000)^2 \\ &= 63\,000\,000 \Rightarrow 63\,000\,000 \div 10\,000 \\ &= 6300\text{ ha} \end{aligned}$$

(2) Calculate the perimeter and area of each of the following figures:

- (a) $MN = 700\text{ mm}$
 $NR = 480\text{ mm}$
 $NT = 300\text{ mm}$
 $PT = 250\text{ mm}$
 $\triangle VSM \cong \triangle TNR$
 $MNRS$ is a rectangle.

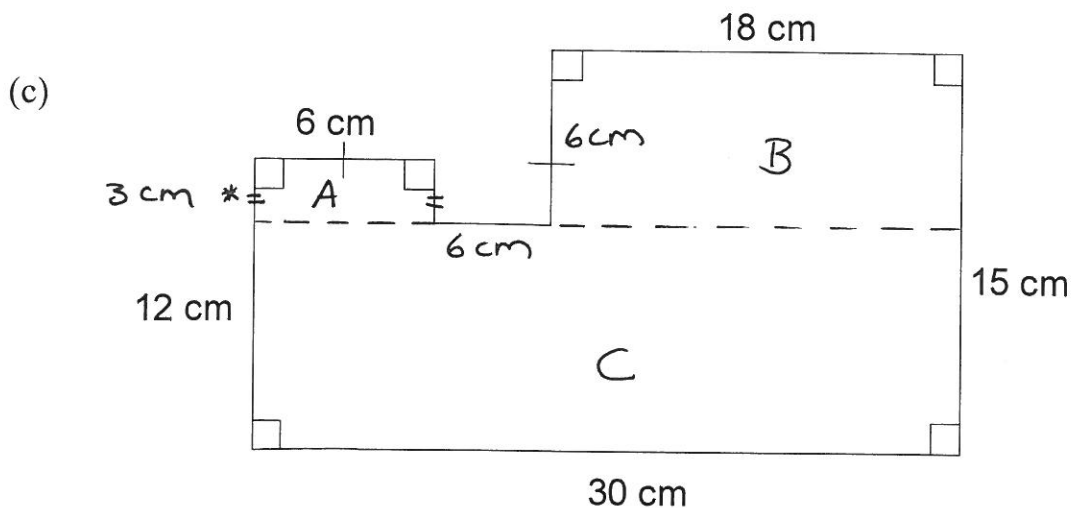


$$\begin{aligned} \text{Perimeter} &= 700\text{ mm} + 300\text{ mm} + 300\text{ mm} + 700\text{ mm} \\ &\quad + 300\text{ mm} + 300\text{ mm} \\ &= 2600\text{ mm} \end{aligned}$$

$$\begin{aligned} \text{Area } \triangle VSM &= \text{Area } \triangle TNR = \frac{1}{2} \times 480 \times 250\text{ mm} \\ &= 60\,000\text{ mm}^2 \end{aligned}$$

$$\text{Area } MNRS = L \times B = 700\text{ mm} \times 480\text{ mm} = 336\,000\text{ mm}^2$$

$$\begin{aligned} \therefore \text{Area } VMNTRS &= 60\,000\text{ mm}^2 + 336\,000\text{ mm}^2 \\ &= 396\,000\text{ mm}^2 \\ &= [396\,000 \div (10)^2]\text{ cm}^2 \\ &= 3960\text{ cm}^2 \end{aligned}$$



$$* 12\text{ cm} + 6\text{ cm} - 15\text{ cm} = 3\text{ cm}$$

$$\bullet 30\text{ cm} - 6\text{ cm} - 18\text{ cm} = 6\text{ cm}$$

$$\begin{aligned} \therefore \text{Perimeter} &= 6\text{ cm} + 3\text{ cm}^* + 6\text{ cm} + 6\text{ cm} + 18\text{ cm} \\ &\quad + 15\text{ cm} + 30\text{ cm} + 12\text{ cm} \\ &= 96\text{ cm} \\ &= 960\text{ mm} \end{aligned}$$

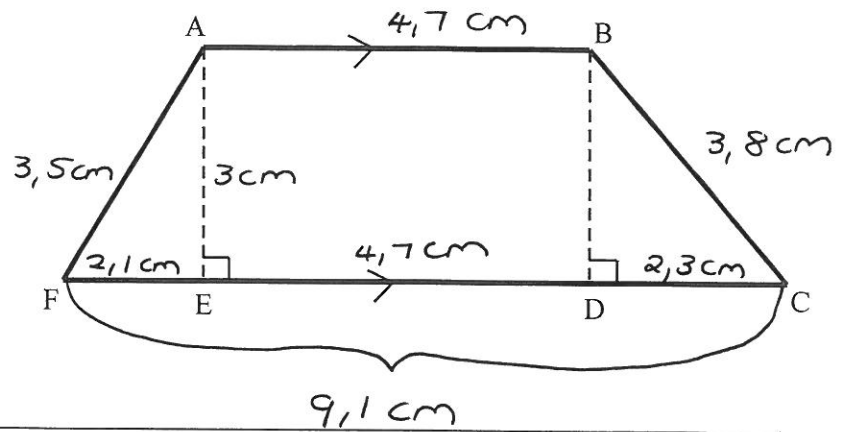
$$\begin{aligned} \text{Area A} &= L \times B = 6\text{ cm} \times 3\text{ cm}^* \\ &= 18\text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area B} &= L \times B = 18\text{ cm} \times 6\text{ cm} \\ &= 108\text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area C} &= L \times B = 30\text{ cm} \times 9\text{ cm} \\ &= 270\text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \therefore \text{Total Area} &= 18\text{ cm}^2 + 108\text{ cm}^2 + 270\text{ cm}^2 \\ &= 396\text{ cm}^2 \end{aligned}$$

- (b) $FC = 9,1 \text{ cm}$
 $EF = 2,1 \text{ cm}$
 $DC = 2,3 \text{ cm}$
 $AE = 3 \text{ cm}$
 $AF = 3,5 \text{ cm}$
 $BC = 3,8 \text{ cm}$



$$ED = 9,1 \text{ cm} - 2,1 \text{ cm} - 2,3 \text{ cm}$$

$$= 4,7 \text{ cm}$$

$ABDE$ is a rectangle

$$\therefore AB = ED = 4,7 \text{ cm}$$

$$\text{and } AE = BD = 3 \text{ cm}$$

$$\text{Perimeter} = 3,5 \text{ cm} + 4,7 \text{ cm} + 3,8 \text{ cm} + 9,1 \text{ cm}$$

$$= 21,1 \text{ cm} = 211 \text{ mm}$$

$$\text{Area } \triangle AFE = \frac{1}{2} b \times h = \frac{1}{2} \times 2,1 \text{ cm} \times 3 \text{ cm}$$

$$= 3,15 \text{ cm}^2$$

$$\text{Area } \triangle BDC = \frac{1}{2} b \times h = \frac{1}{2} \times 2,3 \times 3$$

$$= 3,45 \text{ cm}^2$$

$$\text{Area } ABDE = L \times B$$

$$= 4,7 \text{ cm} \times 3 \text{ cm}$$

$$= 14,1 \text{ cm}^2$$

$$\text{Area } ABCF = 3,15 \text{ cm}^2 + 3,45 \text{ cm}^2 + 14,1 \text{ cm}^2$$

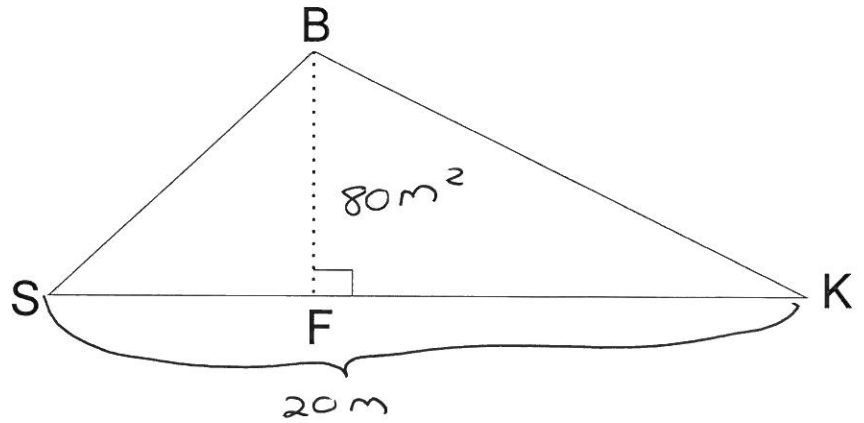
$$= 20,7 \text{ cm}^2$$

(3) In the adjacent sketch:

$$SK = 20 \text{ m}$$

$$\text{Area } \triangle SKB = 80 \text{ m}^2$$

Calculate the length of BF.



$$\text{Area } \triangle SKB = \frac{1}{2} b \times h$$

$$80 \text{ m}^2 = \frac{1}{2} \times 20 \text{ m} \times BF$$

$$80 \text{ m}^2 = 10 \text{ m} \times BF$$

$$\frac{80 \text{ m}^2}{10 \text{ m}} = \frac{10 \text{ m} \times BF}{10 \text{ m}}$$

$$8 \text{ m} = BF$$

(4) In the adjacent sketch

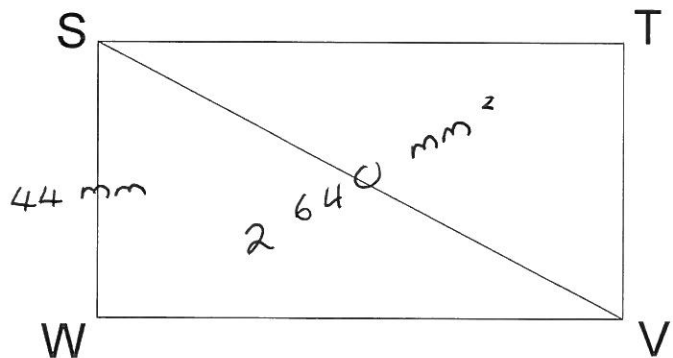
STVW is a rectangle

$$SW = 44 \text{ mm}$$

$$\text{Area STVW} = 2\,640 \text{ mm}^2$$

Calculate: (a) the length of VW

(b) the area of $\triangle SWV$



$$(a) \text{Area STVW} = L \times B$$

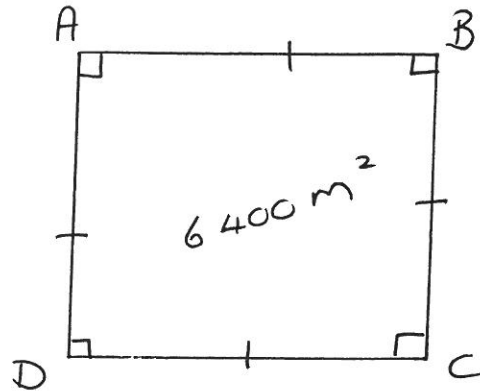
$$2\,640 \text{ mm}^2 = L \times 44 \text{ mm}$$

$$\frac{2\,640 \text{ mm}^2}{44 \text{ mm}} = \underline{\underline{VW}}$$

$$60 \text{ mm} = VW$$

$$(b) \text{Area } \triangle SWV = \frac{1}{2} b \times h = \frac{1}{2} \times 60 \text{ mm} \times 44 \text{ mm} \\ = 1\,320 \text{ mm}^2$$

- (5) A square piece of land has to be fenced in. The area of the piece of land is $6\,400\text{ m}^2$. Fencing of the land will cost R45 per meter. First draw a sketch and fill in the information.
- (a) Calculate the length of the piece of land.
- (b) Calculate the perimeter of the piece of land.
- (c) Calculate the cost to fence the entire piece of land.



$$(a) \text{ Area } ABCD = L^2 \quad (L \times L)$$

$$6\,400\text{ m}^2 = L^2$$

$$(80\text{ m})^2 = L^2$$

$$\therefore 80\text{ m} = L$$

$\therefore$ The length of the piece of land is 80 m.

$$(b) \text{ Perimeter } ABCD = 4 \times L$$

$$= 4 \times 80\text{ m}$$

$$= 320\text{ m}$$

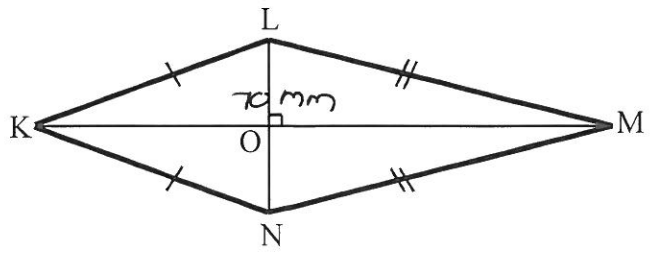
$$(c) \text{ Cost of the fence} = 320\text{ m} \times R45$$
$$= R14\,400$$

(6) You have to make a kite. See the adjacent sketch.

The length of the kite, KM has to be 70 cm and the width, LN 30 cm.

KO = LN

Calculate: (a) the length of OM
(b) the lengths of LO and ON
(c) the area of the kite.



$$\begin{aligned}(a) \quad OM &= KM - KO \\ &= KM - 30 \text{ cm}\end{aligned}$$

$$OM = 70 \text{ cm} - 30 \text{ cm}$$

$$\therefore OM = 40 \text{ cm}$$

$$(b) \quad LO = ON = \frac{1}{2} (30 \text{ cm})$$

$$\therefore LO = ON = 15 \text{ cm}$$

$$\begin{aligned}(c) \quad \text{Area } \triangle KLM &= \frac{1}{2} B \times H \\ &= \frac{1}{2} \times 70 \text{ cm} \times 15 \text{ cm} \\ &= 525 \text{ cm}^2\end{aligned}$$

$$\text{but Area } \triangle KLM = \text{Area } \triangle KNM$$

[The same measurements]

$$\therefore \text{Area } \triangle KNM = 525 \text{ cm}^2$$

$$\begin{aligned}\therefore \text{Area Kite} &= \text{Area } \triangle KLM + \text{Area } \triangle KNM \\ &= 525 \text{ cm}^2 + 525 \text{ cm}^2 \\ &= 1050 \text{ cm}^2\end{aligned}$$