

Gr 8

Warm Up Grade 8

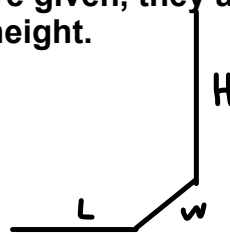
E-Learn
Lesson 2

Ch 4



Whenever 3 dimensions are given, they are in the order:
length, width and height.

Assessment Review



Sarah paints the walls of her bed room. The room measures 8 m by 7 m by 3 m.
One can will cover 35 m^2 .

L w H

a) How much paint should she buy if she needs to put 2 coats on the walls?

Warm Up Grade 8

Solutions



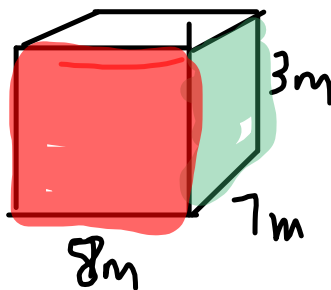
Whenever 3 dimensions are given, they are in the order:
length, width and height.



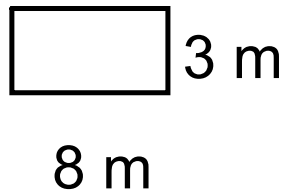
Assessment Review

Sarah paints the walls of her bed room. The room measures 8 m by 7 m by 3 m.
One can will cover 35 m^2 .

a) How much paint should she buy if she needs to put 2 coats on the walls?



Front/Back



Left/Right



$$\begin{aligned} A &= l \times w \\ &= 8 \text{ m} \times 3 \text{ m} \\ &= 24 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} A &= l \times w \\ &= 7 \text{ m} \times 3 \text{ m} \\ &= 21 \text{ m}^2 \end{aligned}$$

One coat

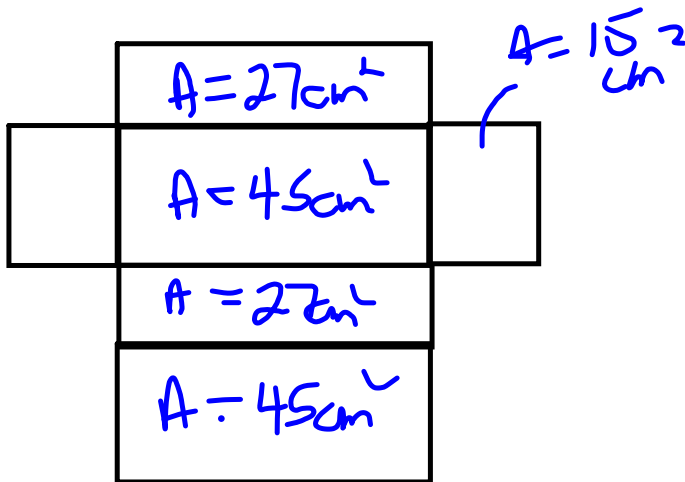
$$\begin{aligned} \text{SA of the walls} &= 2(\text{Front}) + 2(\text{sides}) \\ &= 2(24 \text{ m}^2) + 2(21 \text{ m}^2) \\ &= 48 \text{ m}^2 + 42 \text{ m}^2 \\ &= 90 \text{ m}^2 \end{aligned}$$

x 2 coats

$$= 180 \text{ m}^2$$

$$180 \text{ m}^2 \div 35 \text{ m}^2 = 5.14 \text{ cans} \quad \text{so buy 6 cans}$$

pg 186
4.



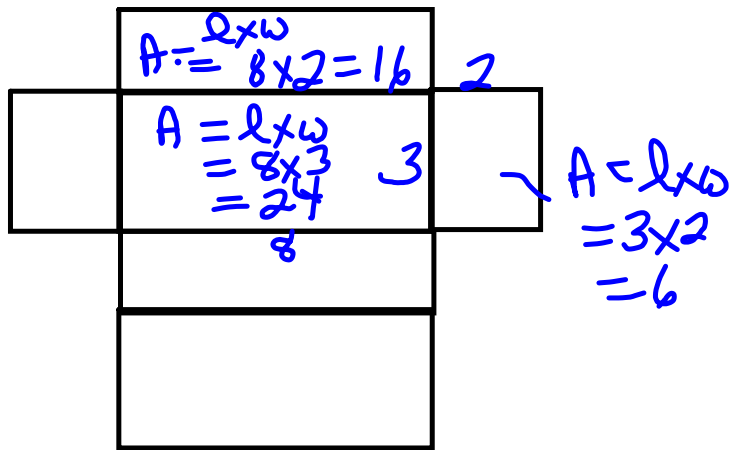
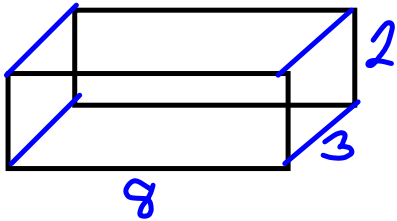
$$\begin{aligned} SA &= 2 \times 15 + 2 \times 45 + 2 \times 27 \\ &= 30 + 90 + 54 \\ &= 174 \text{ cm}^2 \end{aligned}$$

I added all the areas.

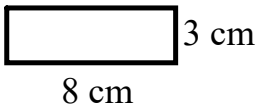
$$\begin{aligned} SA &= 15 + 27 + 45 + 15 + 27 + 45 \\ &= 174 \text{ cm}^2 \end{aligned}$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

★5.

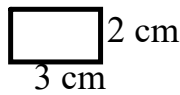


top/bottom



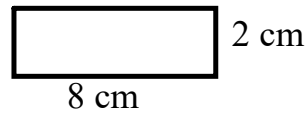
$$\begin{aligned} A &= l \times w \\ &= 8 \text{ cm} \times 3 \text{ cm} \\ &= 24 \text{ cm}^2 \end{aligned}$$

side/side



$$\begin{aligned} A &= l \times w \\ &= 2 \text{ cm} \times 3 \text{ cm} \\ &= 6 \text{ cm}^2 \end{aligned}$$

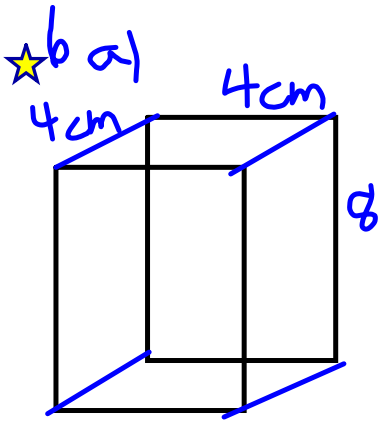
front/back



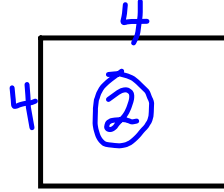
$$\begin{aligned} A &= l \times w \\ &= 2 \text{ cm} \times 8 \text{ cm} \\ &= 16 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} SA &= 2 \times 16 + 2 \times 24 + 2 \times 6 \\ &= 32 + 48 + 12 \\ &= 92 \text{ cm}^2 \end{aligned}$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

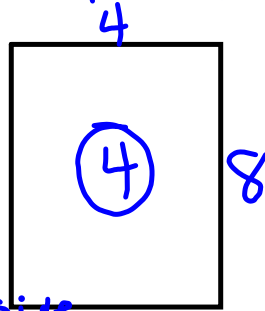


Top and Bottom



$$A = l \times w \\ = 4 \times 4 \\ = 16 \text{ cm}^2$$

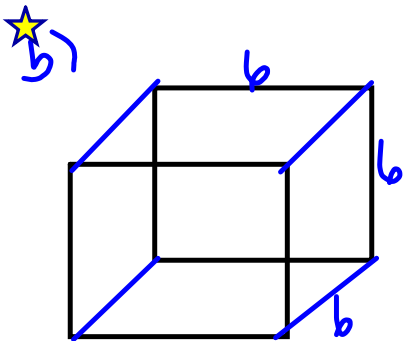
Front, Back, ^{L+R} Sides



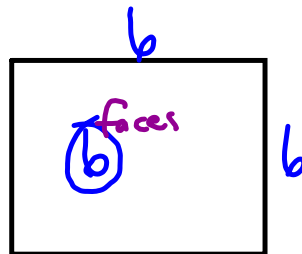
$$A = l \times w \\ = 8 \times 4 \\ = 32 \text{ cm}^2$$

2 x Top + 4 side

$$SA = 2 \times 16 + 4 \times 32 \\ = 32 + 128 \\ = 160 \text{ cm}^2$$



Cube - All faces the same

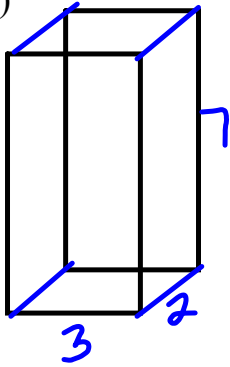


$$A = l \times w \\ = b \times b \\ = 36 \text{ cm}^2$$

$$SA = 6 \times 3b^2 \\ = 216 \text{ cm}^2$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

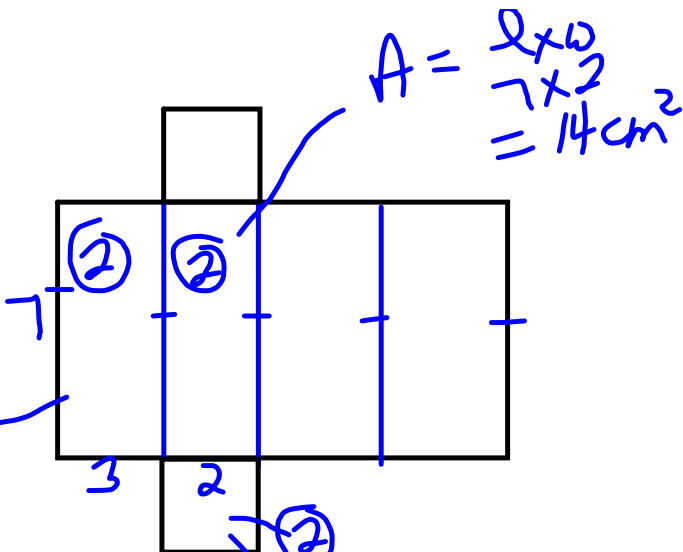
6c)



$$A = l \times w$$

$$= 7 \times 3$$

$$= 21 \text{ cm}^2$$



$$A = l \times w$$

$$= 3 \times 2$$

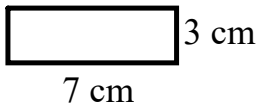
$$= 6 \text{ cm}^2$$

$$SA = 2 \times 21 + 2 \times 14 + 2 \times 6$$

$$= 42 + 28 + 12$$

$$= 82 \text{ cm}^2$$

top/bottom

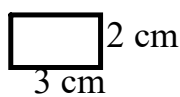


$$A = l \times w$$

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

$$= 21 \text{ cm}^2$$

side/side

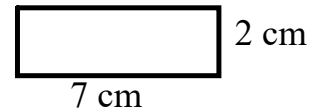


$$A = l \times w$$

$$= 2 \text{ cm} \times 3 \text{ cm}$$

$$= 6 \text{ cm}^2$$

front/back



$$A = l \times w$$

$$= 2 \text{ cm} \times 7 \text{ cm}$$

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

$$\text{Total SA} = 2 (\text{Top}) + 2 (\text{Side}) + 2 (\text{Front})$$

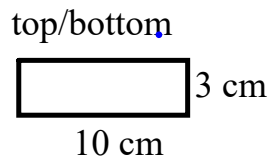
$$= 2 (21 \text{ cm}^2) + 2 (6 \text{ cm}^2) + 2 (14 \text{ cm}^2)$$

$$= 42 \text{ cm}^2 + 12 \text{ cm}^2 + 28 \text{ cm}^2$$

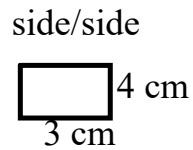
$$= 82 \text{ cm}^2$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

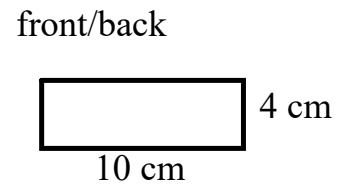
★ 7a)



$$\begin{aligned} A &= l \times w \\ &= 10 \text{ cm} \times 3 \text{ cm} \\ &= 30 \text{ m}^2 \end{aligned}$$



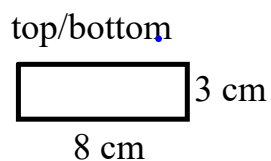
$$\begin{aligned} A &= l \times w \\ &= 4 \text{ cm} \times 3 \text{ cm} \\ &= 12 \text{ m}^2 \end{aligned}$$



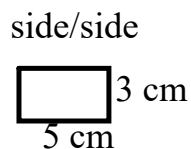
$$\begin{aligned} A &= l \times w \\ &= 10 \text{ cm} \times 4 \text{ cm} \\ &= 40 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Total SA} &= 2 (\text{Top}) + 2 (\text{Side}) + 2 (\text{Front}) \\ &= 2 (30 \text{ m}^2) + 2 (12 \text{ m}^2) + 2 (40 \text{ m}^2) \\ &= 60 \text{ m}^2 + 24 \text{ m}^2 + 80 \text{ m}^2 \\ &= 164 \text{ m}^2 \end{aligned}$$

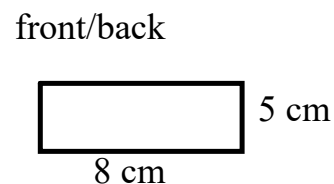
★ 7b)



$$\begin{aligned} A &= l \times w \\ &= 8 \text{ cm} \times 3 \text{ cm} \\ &= 24 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} A &= l \times w \\ &= 5 \text{ cm} \times 3 \text{ cm} \\ &= 15 \text{ cm}^2 \end{aligned}$$



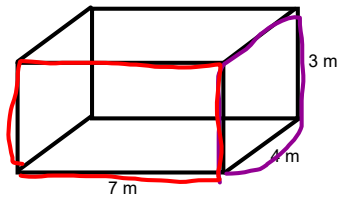
$$\begin{aligned} A &= l \times w \\ &= 5 \text{ cm} \times 8 \text{ cm} \\ &= 40 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Total SA} &= 2 (\text{Top}) + 2 (\text{Side}) + 2 (\text{Front}) \\ &= 2 (24 \text{ cm}^2) + 2 (15 \text{ cm}^2) + 2 (40 \text{ cm}^2) \\ &= 48 \text{ cm}^2 + 30 \text{ cm}^2 + 80 \text{ cm}^2 \\ &= 158 \text{ cm}^2 \end{aligned}$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

Whenever 3 dimensions are given, they are in the order:
length, width and height.

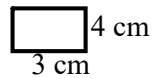
★⁹⁾



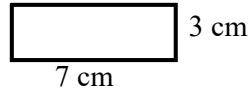
The walls are being painted.

b) Assume you don't include ceiling and floor

side/side



front/back



$$\begin{aligned} A &= l \times w \\ &= 4 \text{ cm} \times 3 \text{ cm} \\ &= 12 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} A &= l \times w \\ &= 7 \text{ cm} \times 3 \text{ cm} \\ &= 21 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Total SA Walls} &= 2 (\text{Side}) + 2 (\text{Front}) \\ &= 2 (12 \text{ m}^2) + 2 (21 \text{ m}^2) \\ &= 24 \text{ m}^2 + 42 \text{ m}^2 \\ &= 66 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Need 2 coats so need to cover twice the area} &= 2 \times 66 \text{ m}^2 \\ &= 132 \text{ m}^2 \end{aligned}$$

1 can covers 40 m²

$$132 / 40 = 3.3 \text{ cans}$$

Need to buy 4 cans

★ 10) All 6 sides of a cube have equal area so

$$\begin{aligned} \text{a) Area of one face of a cube} &= 54 \text{ cm}^2 / 6 \\ &= 9 \text{ cm}^2 \end{aligned}$$

$$\text{b) Area of square} = 9 \text{ cm}^2$$

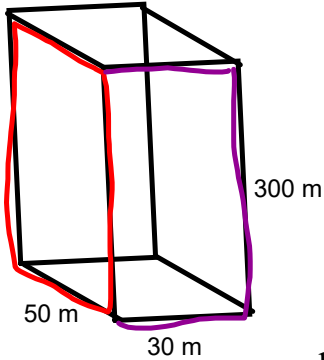
$$\text{side} = \sqrt{9}$$

$$\text{side} = 3 \text{ cm}$$

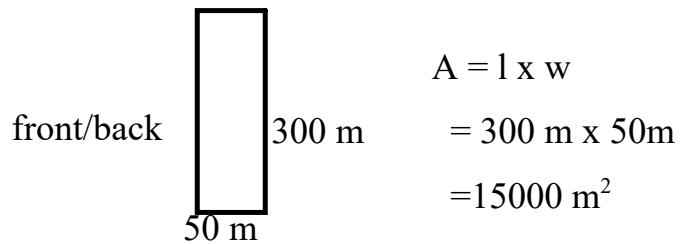
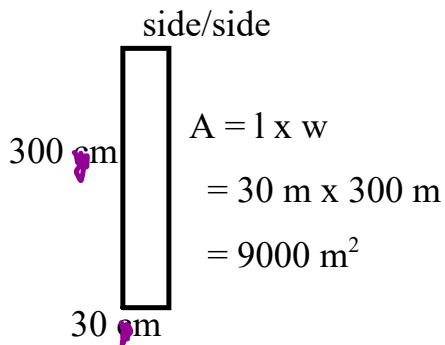
Elearn Gr 8 U4 L2 Surface Area Triangular Prism

Whenever 3 dimensions are given, they are in the order:
length, width and height.

★ 11)



b) Assume you don't include ceiling and floor

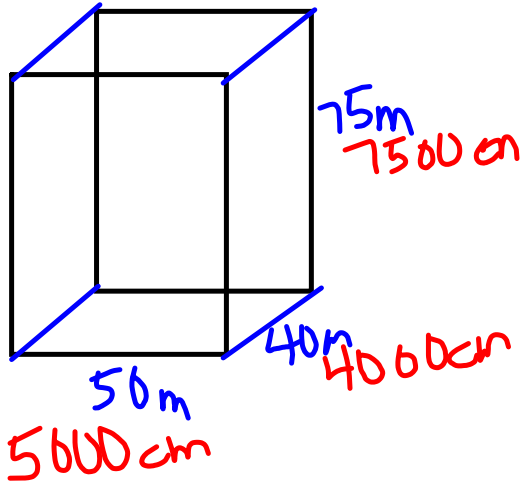


$$\begin{aligned} \text{Total SA Walls} &= 2 (\text{Side}) + 2 (\text{Front}) \\ &= 2 (9000 \text{ m}^2) + 2 (15000 \text{ m}^2) \\ &= 18000 \text{ m}^2 + 30000 \text{ m}^2 \\ &= 48000 \text{ m}^2 \end{aligned}$$

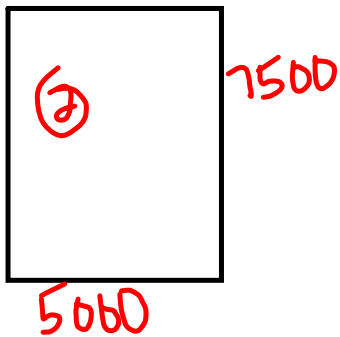
Only 1/4 are windows

$$\frac{48000 \text{ m}^2}{4} = 12000 \text{ m}^2$$

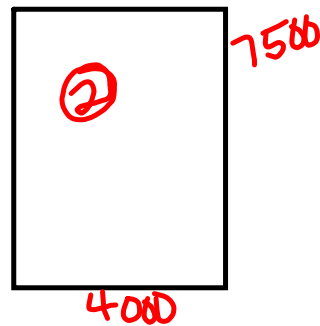
12.



Find area of 4 walls.



$$\begin{aligned}
 A &= l \times w \\
 &= 7500 \times 5000 \\
 &= 375\,000\,000 \text{ cm}^2
 \end{aligned}$$



$$\begin{aligned}
 A &= l \times w \\
 &= 7500 \times 4000 \\
 &= 300\,000\,000 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Area} &= 2 \times 375\,000\,000 + 2 \times 300\,000\,000 \\
 &= 750\,000\,000 + 600\,000\,000 \\
 &= 1\,350\,000\,000 \text{ cm}^2
 \end{aligned}$$

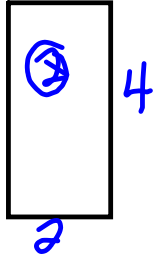
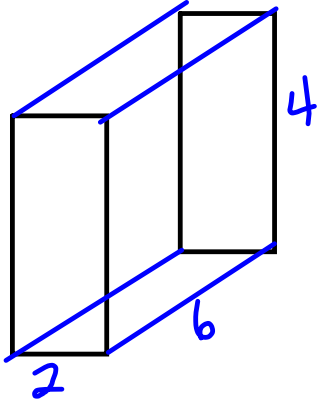
1 Euro per month for every 50 cm²

$$\begin{array}{r}
 1\,350\,000\,000 \\
 \hline
 50
 \end{array}$$

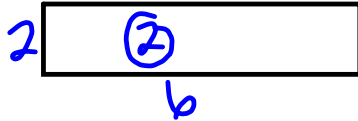
27 000 000 Euros per month for advertising

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

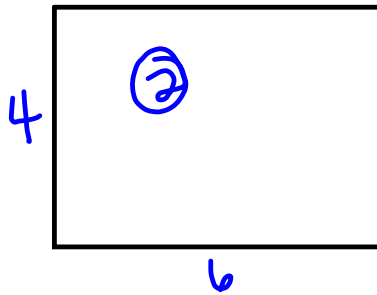
13 a)



$$A = l \times w \\ = 4 \times 2 \\ = 8 \text{ cm}^2$$

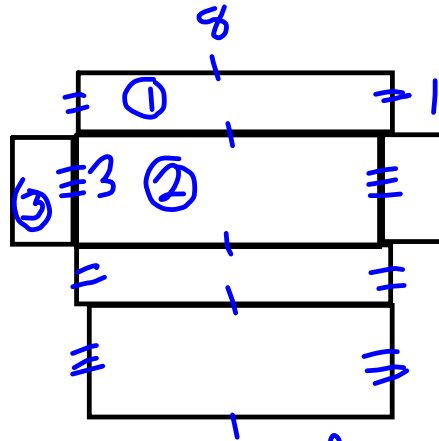
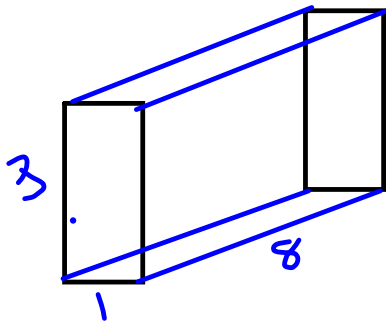


$$A = l \times w \\ = 6 \times 2 \\ = 12 \text{ cm}^2$$



$$A = l \times w \\ = 6 \times 4 \\ = 24 \text{ cm}^2$$

$$SA = 2 \times 8 + 2 \times 12 + 2 \times 24 \\ = 16 + 24 + 48 \\ = 88 \text{ cm}^2$$



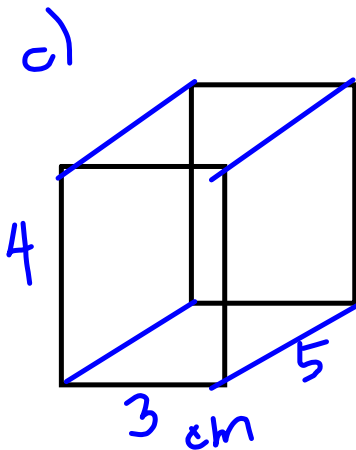
$$A_1 = l \times w \\ = 8 \times 1 \\ = 8 \text{ cm}^2$$

$$A_2 = l \times w \\ = 8 \times 3 \\ = 24 \text{ cm}^2$$

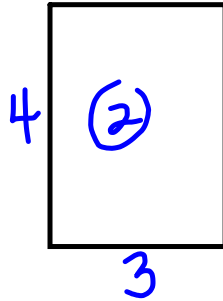
$$A_3 = l \times w \\ = 3 \times 1 \\ = 3 \text{ cm}^2$$

$$SA = 2 \times 8 + 2 \times 24 + 2 \times 3 \\ = 16 + 48 + 6 \\ = 70 \text{ cm}^2$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism



Front & Back

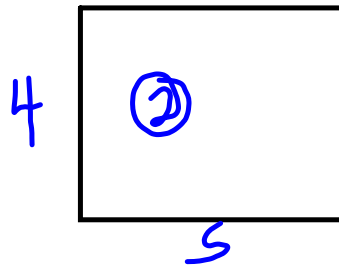


$$A = l \times w$$

$$= 4 \times 3$$

$$= 12 \text{ cm}^2$$

Sides

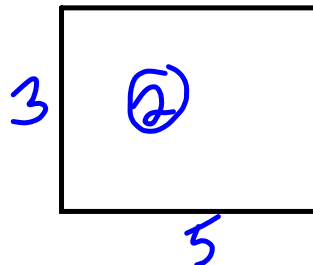


$$A = l \times w$$

$$= 4 \times 5$$

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

Top and Bottom



$$A = l \times w$$

$$= 5 \times 3$$

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

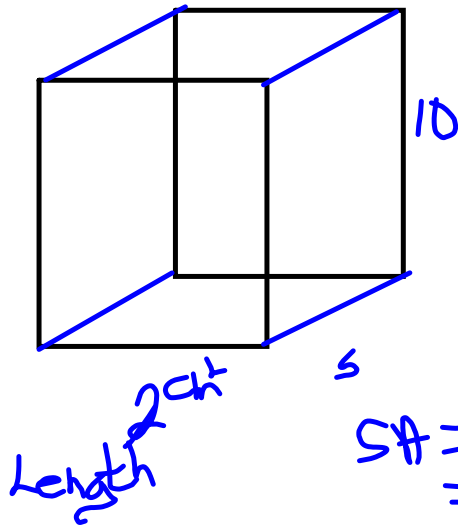
$$SA = 2 \times 12 + 2 \times 20 + 2 \times 15$$

$$= 24 + 40 + 30$$

$$= 94 \text{ cm}^2$$

Greatest SA	$3 \times 4 \times 5$	Prism P
Least SA	$1 \times 3 \times 8$	Prism Q

14.



$$A - \text{Top \& Bottom} = 2 \times 5 = 10$$

$$A - \text{Sides} = 10 \times 5 = 50$$

$$A - \text{Front \& Back} = 10 \times 2 = 20$$

$$SA = 2 \times 10 + 2 \times 50 + 2 \times 20 = 20 + 100 + 40 = 160 \text{ cm}^2$$

a) Double the length $\rightarrow 4 \text{ cm}$

Area of sides stayed the same $\rightarrow 50 \text{ cm}^2$

$$\text{Top \& Bottom} \rightarrow 4 \times 5 = 20 \text{ cm}^2$$

$$\text{Front \& Back} \rightarrow 4 \times 10 = 40 \text{ cm}^2$$

$$SA = 2 \times 50 + 2 \times 20 + 2 \times 40 = 100 + 40 + 80 = 220 \text{ cm}^2$$

b) Half the length

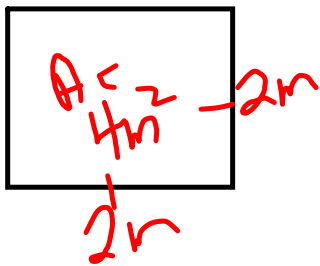
Area of Sides \rightarrow same 50 cm^2

$$T \& B \rightarrow 1 \times 5 = 5 \text{ cm}^2$$

$$F \& B \rightarrow 1 \times 10 = 10 \text{ cm}^2$$

$$SA = 2 \times 50 + 2 \times 5 + 2 \times 10 = 100 + 10 + 20 = 130 \text{ cm}^2$$

16. Square Base $4m^2$
Surface Area $48m^2$



Both bases $\rightarrow 8m^2$

4 sides \rightarrow have an area $40m^2$
($48 - 8$)

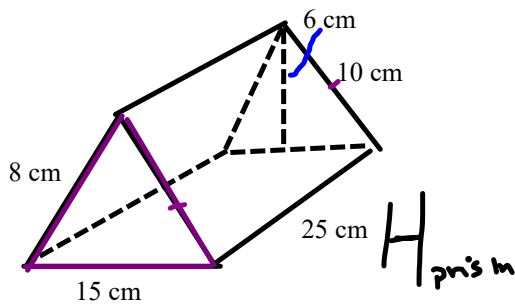
one of lengths $2cm$

Each of rectangles is the same
so area of each rectangle $\frac{40}{4} = 10cm^2$

$$2 \times \underline{\quad} = 10$$

Dimensions $2 \times 2 \times 5$

Surface Area of Triangular Prism



The Surface Area of a Triangular Prism =
 areas of the 3 rectangular faces + 2 (the area of the triangular bases)

Sketch the faces (HINT start with the Triangle)

$A = L \times w$
 $A = 25 \text{ cm} \times 8 \text{ cm}$
 $= 200 \text{ cm}^2$

$A = L \times w$
 $A = 25 \text{ cm} \times 10 \text{ cm}$
 $= 250 \text{ cm}^2$

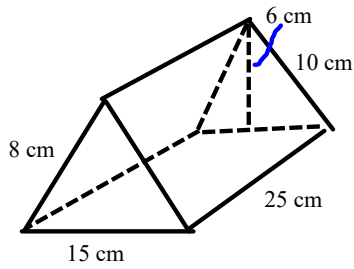
$A = L \times w$
 $A = 15 \text{ cm} \times 25 \text{ cm}$
 $= 375 \text{ cm}^2$

$A_{\Delta} = \frac{b \times h}{2}$
 $= \frac{15 \text{ cm} \times 6 \text{ cm}}{2}$
 $= \frac{90 \text{ cm}^2}{2}$
 $= 45 \text{ cm}^2$

$$\begin{aligned}
 \text{Total SA}_{\text{Tri Prism}} &= 2(\text{triangles}) + \text{rec} + \text{rec} + \text{rec} \\
 &= 2(45 \text{ cm}^2) + 200 \text{ cm}^2 + 250 \text{ cm}^2 + 375 \text{ cm}^2 \\
 &= 90 \text{ cm}^2 + 200 \text{ cm}^2 + 250 \text{ cm}^2 + 375 \text{ cm}^2 \\
 &= 915 \text{ cm}^2
 \end{aligned}$$

Surface Area of Triangular Prism

Solution

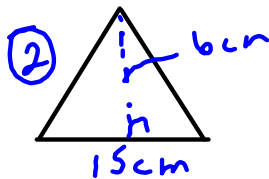


The Surface Area of a Triangular Prism =
 areas of the 3 rectangular faces + 2 (the area of the triangular bases)

Sketch the faces (HINT start with the Triangle)



Front and Back

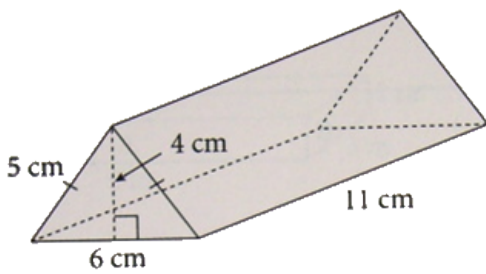


$$\begin{aligned}
 A &= \frac{b \times h}{2} \\
 &= \frac{15 \times 6}{2} \\
 &= \frac{90}{2} \\
 &= 45\text{cm}^2
 \end{aligned}$$

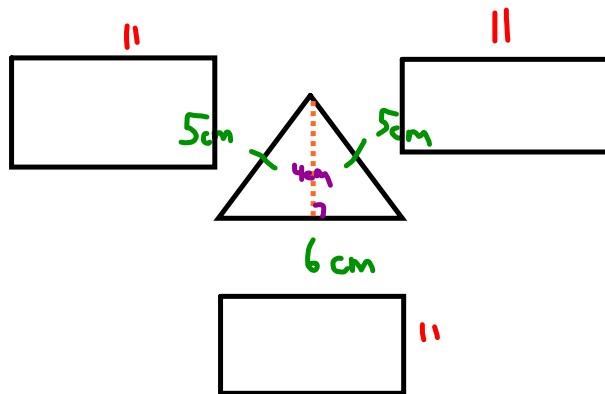
$$\begin{aligned}
 \text{Total SA}_{\text{Tri Prism}} &= (2 \times \text{tri}) + \text{rec} + \text{rec} + \text{rec} \\
 &= (2 \times 45\text{cm}^2) + 250\text{cm}^2 + 200\text{cm}^2 + 375\text{cm}^2 \\
 &= 90\text{cm}^2 + 250\text{cm}^2 + 200\text{cm}^2 + 375\text{cm}^2 \\
 &= 915\text{cm}^2
 \end{aligned}$$

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

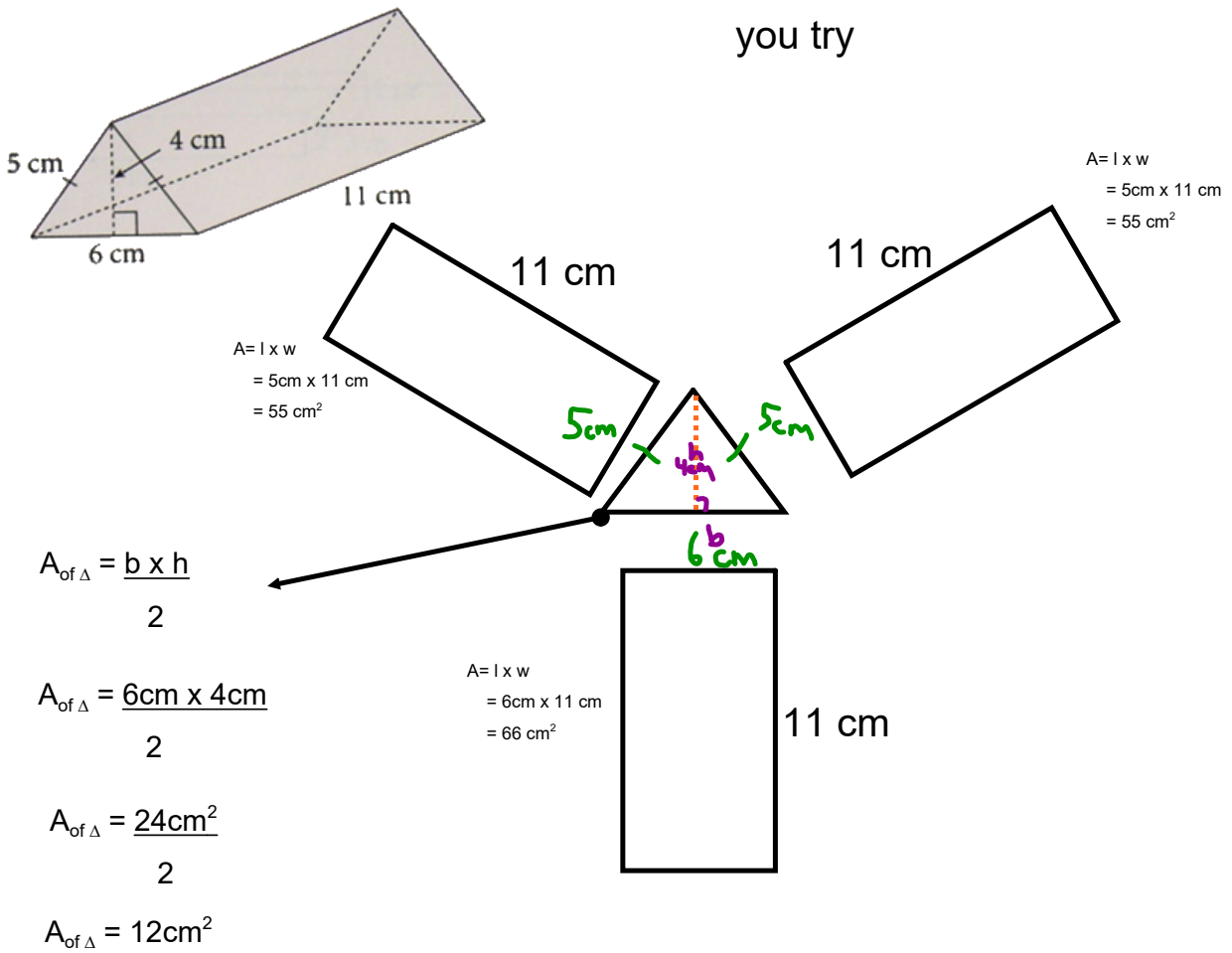
Sketch a net of this right triangular prism.
What is its surface area?



you try



Solution
 Sketch a net of this right triangular prism.
 What is its surface area?



$$\begin{aligned} \text{Total SA}_{\text{Tri Prism}} &= (2 \times \text{tri}) + \text{rec} + \text{rec} + \text{rec} \\ &= (2 \times 12\text{ cm}^2) + 55\text{ cm}^2 + 55\text{ cm}^2 + 66\text{ cm}^2 \\ &= 24\text{ cm}^2 + 55\text{ cm}^2 + 55\text{ cm}^2 + 66\text{ cm}^2 \\ &= 200\text{ cm}^2 \end{aligned}$$

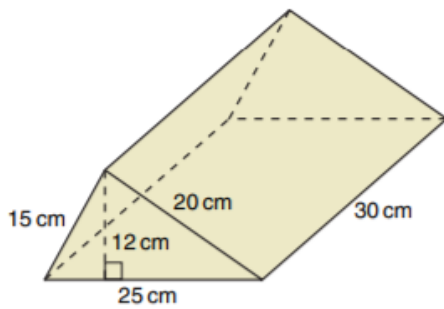
Class/Homework

Page 191

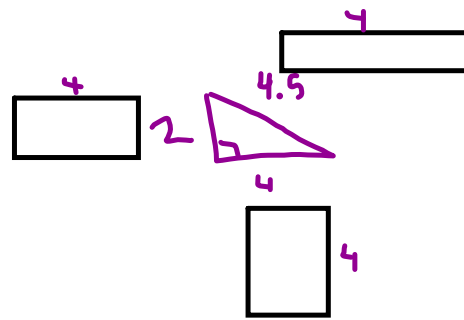
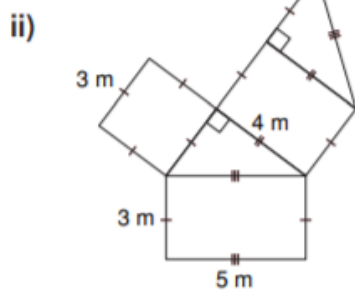
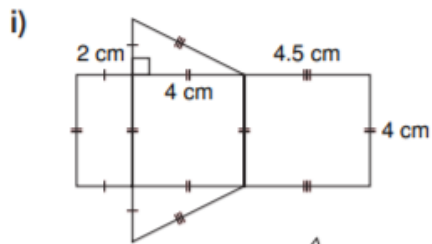
#6 #7a i, 9

Elearn Gr 8 U4 L2 Surface Area Triangular Prism

6. Sketch a net of this triangular prism.
What is its surface area?



7. a) Calculate the area of each net.

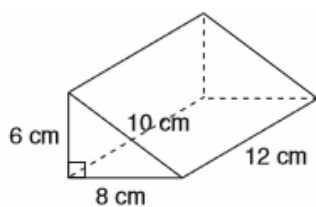


- b) How does the area of each net compare to the surface area of the prism formed by the net?

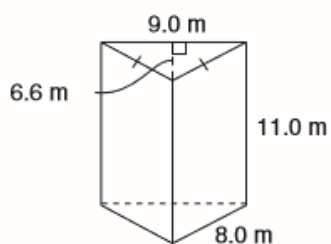
Elearn Gr 8 U4 L2 Surface Area Triangular Prism

9. Find the surface area of each triangular prism.

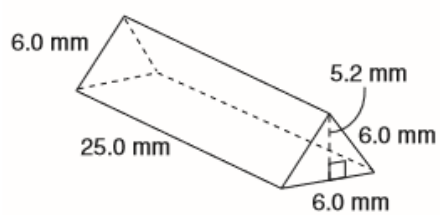
a)



b)



c)



Elearn Gr 8 U4 L2 Surface Area Triangular Prism

Attachments

Review of Surface area of 2D Shape Grade 8 Unit 4 PDF.pdf