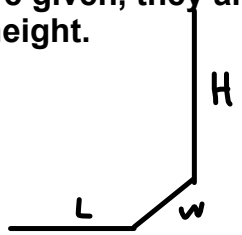
Gr 8

Ch 4

Warm Up Grade 8

E-Learn
Lesson 2

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

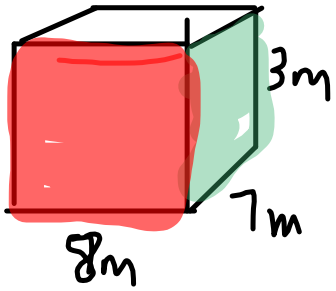
Solutions

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

A = l x w

A = l x w

One coat

SA of the walls =

=

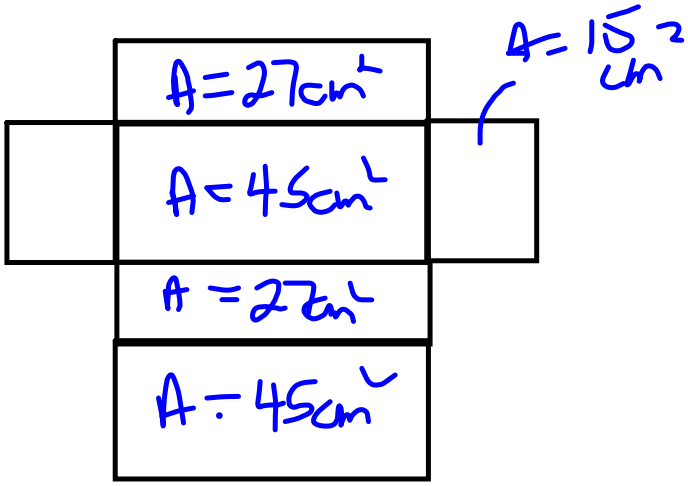
=

=

=

Pg 186

4.



$SA = 2 \times 15 + 2 \times 45 + 2 \times 27$

$= 30 + 90 + 54$

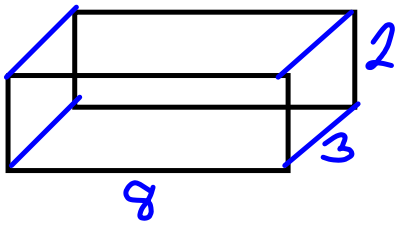
$= 174\ cm^2$

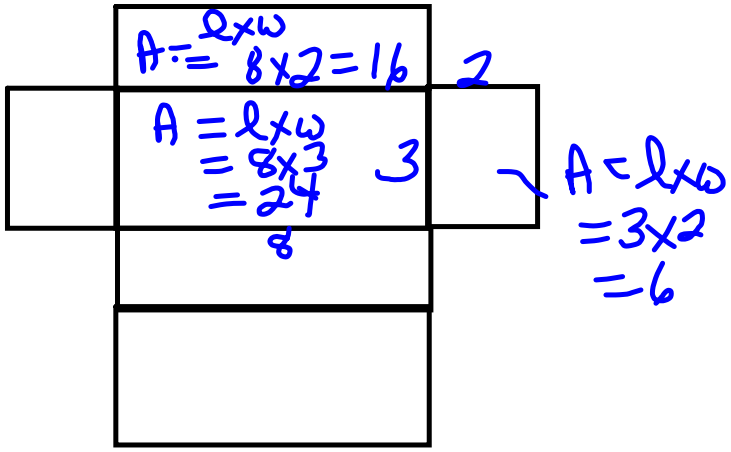
I added all the areas.

$SA = 15 + 27 + 45 + 15 + 27 + 45$

$= 174\ cm^2$

★5.





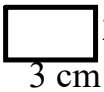
top/bottom

A = l x w

= 8 cm x 3 cm

= 24 cm^2

side/side

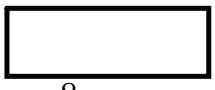


A = l x w

= 2 cm x 3 cm

= 6 cm^2

front/back



A = l x w

= 2 cm x 8 cm

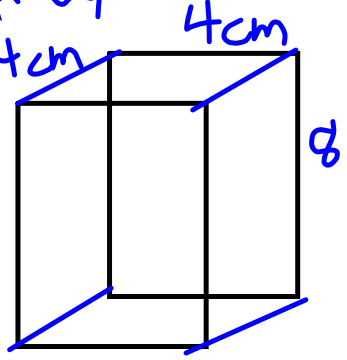
= 166 cm^2

SA = 2x16 + 2x24 + 2x6

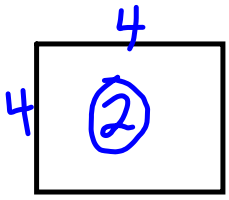
= 32 + 48 + 12

= 92 cm^2

★6 a)

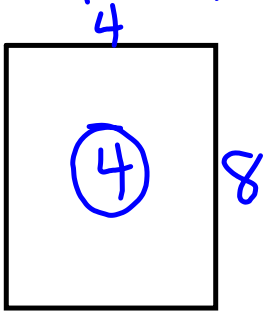


Top and Botton



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

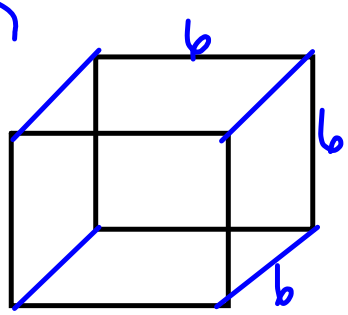
Front, Back, Sides



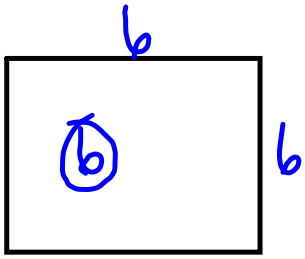
$A = l \times w$
$= 8 \times 4$
$= 32 cm^2$

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

★b)



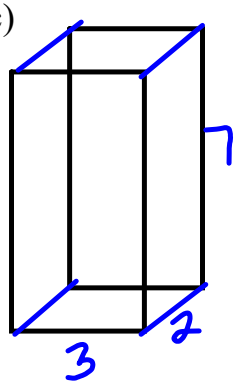
Cube - All faces the same

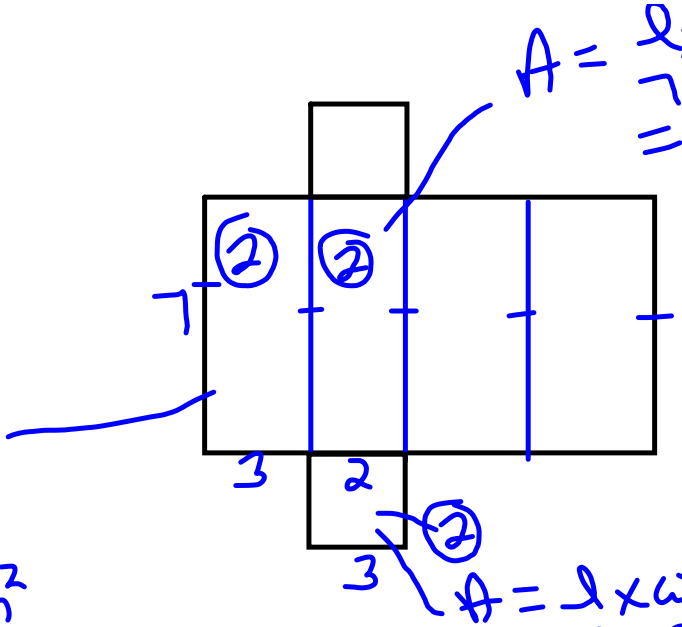


$A = l \times w$
$= 6 \times 6$
$= 36 cm^2$

$SA = 6 \times 36$
$= 216 cm^2$

6c)





$A = l \times w$
$= 7 \times 3$
$= 21 cm^2$

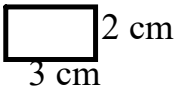
$A = l \times w$
$= 7 \times 2$
$= 14 cm^2$

$A = l \times w$
3×2
$= 6 cm^2$

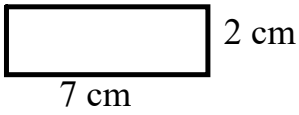
$SA = 2 \times 21 + 2 \times 14 + 2 \times 6$
$= 42 + 28 + 12$
$= 82 cm^2$

top/bottom

side/side



front/back



A = l x w
= 7 cm x 3 cm
= 21 cm^2

A = l x w
= 2 cm x 3 cm
= 6 cm^2

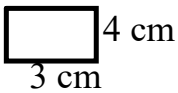
A = l x w
= 2 cm x 7 cm
= 14 cm^2

Total SA = 2 (Top) + 2 (Side) + 2 (Front)
= 2 (21 cm^2) + 2 (6 cm^2) + 2 (14 cm^2)
= 42 cm^2 + 12 cm^2 + 28 cm^2
= 82 cm^2

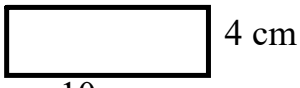
7a)

top/bottom

side/side



front/back



$A = l \times w$

$= 10 \text{ cm} \times 3 \text{ cm}$

$= 30 \text{ m}^2$

$A = l \times w$

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

$= 12 \text{ m}^2$

$A = l \times w$

$= 10 \text{ cm} \times 4 \text{ cm}$

$= 40 \text{ m}^2$

Total SA = 2 (Top) + 2 (Side) + 2 (Front)

$= 2 (30 \text{ m}^2) + 2 (12 \text{ m}^2) + 2 (40 \text{ m}^2)$

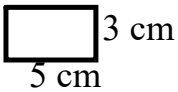
$= 60 \text{ m}^2 + 24 \text{ m}^2 + 80 \text{ m}^2$

$= 164 \text{ m}^2$

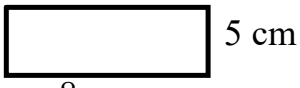
7b)

top/bottom

side/side



front/back



$A = l \times w$

$= 8 \text{ cm} \times 3 \text{ cm}$

$= 24 \text{ cm}^2$

$A = l \times w$

$= 5 \text{ cm} \times 3 \text{ cm}$

$= 15 \text{ cm}^2$

$A = l \times w$

$= 5 \text{ cm} \times 8 \text{ cm}$

$= 40 \text{ cm}^2$

Total SA = 2 (Top) + 2 (Side) + 2 (Front)

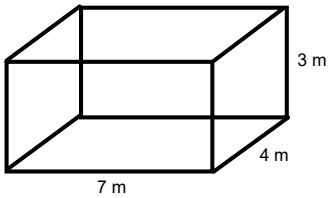
$= 2 (24 \text{ cm}^2) + 2 (15 \text{ cm}^2) + 2 (40 \text{ cm}^2)$

$= 48 \text{ cm}^2 + 30 \text{ cm}^2 + 80 \text{ cm}^2$

$= 158 \text{ cm}^2$

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

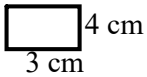
9)



The walls are being painted.

b) Assume you don't include ceiling and floor

side/side



front/back

A = l x w
= 4 cm x 3 cm
= 12 m^2

A = l x w
= 7 cm x 3 cm
=21 m^2

Total SA Walls = 2 (Side) + 2 (Front)
= 2 (12 m^2) + 2 (21 m^2)
= 24 m^2 + 42 m^2
= 66 m^2

Need 2 coats so need to cover twice the area = 2 x 66 m^2
= 132 m^2

1 can covers 40 m^2

132 / 40 = 3.3 cans

Need to buy 4 cans

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

a) Area of one face of a cube = 54 cm^2 / 6
= 9 cm^2

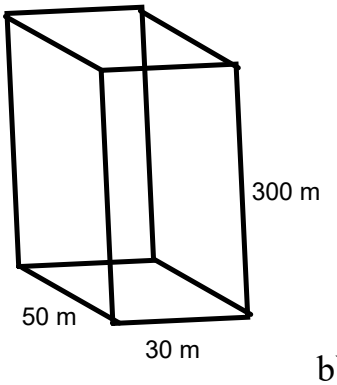
b) Area of square = 9 cm^2

side = $\sqrt{9}$

side = 3 cm

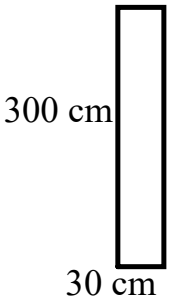
Whenever 3 dimensions are given, they are in the order: length, width and height.

11)



b) Assume you don't include ceiling and floor

side/side

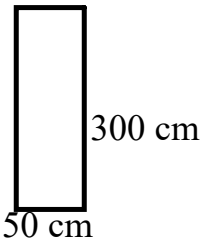


A = l x w

= 30 cm x 300 cm

= 9000 m^2

front/back



A = l x w

= 300 cm x 50cm

=15000 m^2

Total SA Walls = 2 (Side) + 2 (Front)

= 2 (9000 m^2) + 2 (15000 m^2)

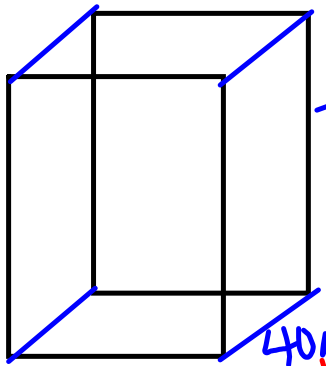
= 18000 m^2 + 30000 m^2

= 48 000 m^2

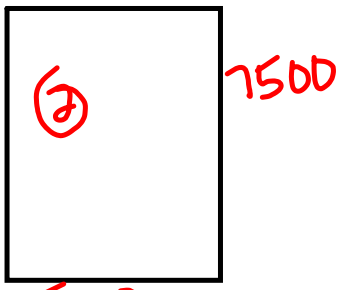
Only 1/4 are windows

$$\frac{48\ 000\ m^2}{4} = 12\ 000\ m^2$$

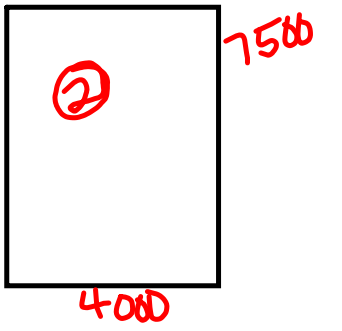
12.



Find area of 4 walls.



$A = l \times w$
$= 7500 \times 5000$
$= 375\,000\,000\ cm^2$



$A = l \times w$
$= 7500 \times 4000$
$= 300\,000\,000\ cm^2$

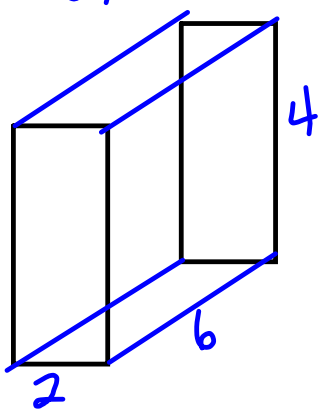
Total Area $= 2 \times 375\,000\,000 + 2 \times 300\,000\,000$
$= 750\,000\,000 + 600\,000\,000$
$= 1\,350\,000\,000\ cm^2$

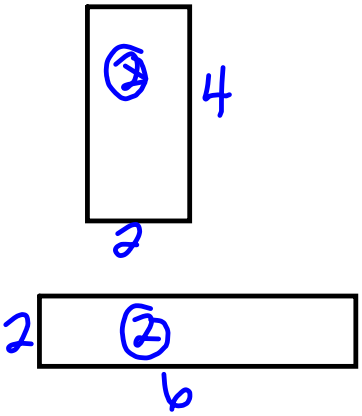
1 Euro per month for every $50\ cm^2$

$$\frac{1\,350\,000\,000}{50}$$

27 000 000 Euros per month for advertising

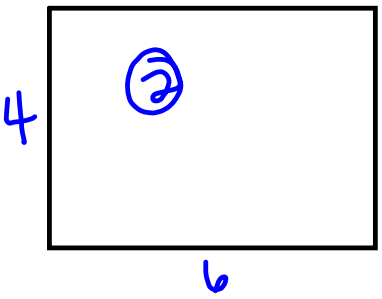
13 a)





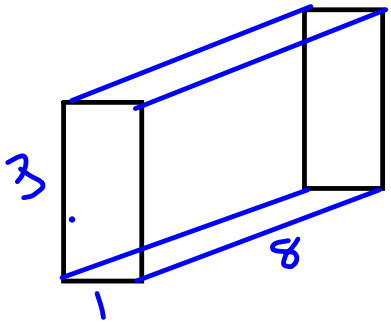
$A = l \times w$
$= 4 \times 2$
$= 8\ cm^2$

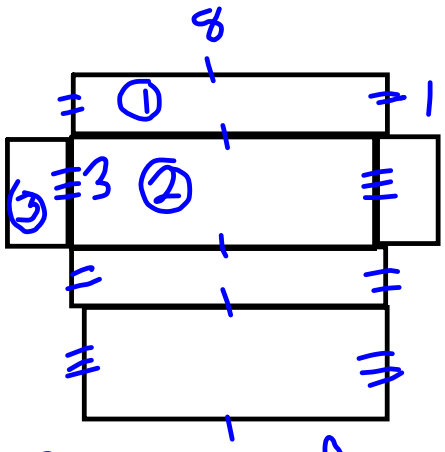
$A = l \times w$
$= 6 \times 2$
$= 12\ cm^2$



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

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





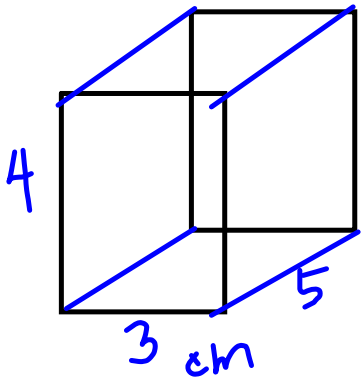
$A_① = l \times w$
$= 8 \times 1$
$= 8\ cm^2$

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

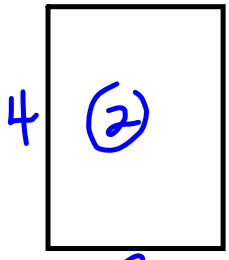
$A_③ = l \times w$
$= 3 \times 1$
$= 3\ cm^2$

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

c)

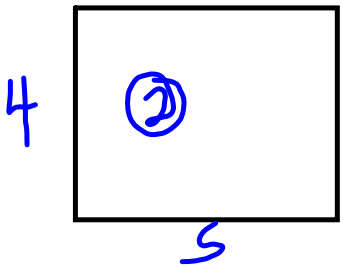


Front & Back



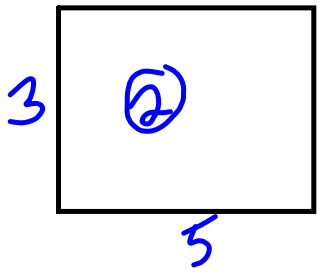
$A = l \times w$
$= 4 \times 3$
$= 12 cm^2$

Sides



$A = l \times w$
$= 4 \times 5$
$= 20 cm^2$

Top and Bottom



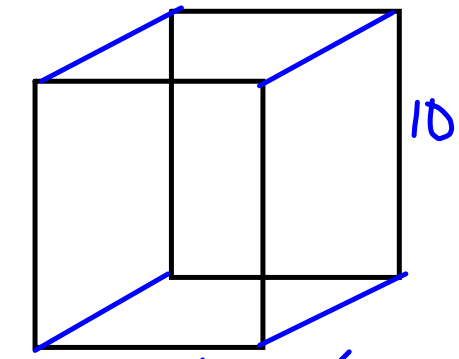
$A = l \times w$
$= 5 \times 3$
$= 15 cm^2$

$SA = 2 \times 12 + 2 \times 20 + 2 \times 15$
$= 24 + 40 + 30$
$= 94 cm^2$

Greatest SA $3 \times 4 \times 5$ Prism R

Least SA $1 \times 3 \times 8$ Prism Q

14.



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

A - Sides
$10 \times 5 = 50$

A Front & Back
$10 \times 2 = 20$

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

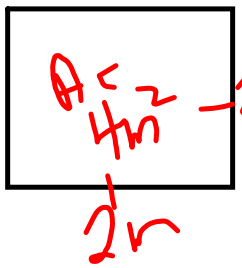
a) Double the length $\rightarrow$ 4cm
Area of sides stayed the same $\rightarrow$ 50 cm^2
Top & Bottom $\rightarrow 4 \times 5 = 20 cm^2$
Front & Back $\rightarrow 4 \times 10 = 40 cm^2$
$SA = 2 \times 50 + 2 \times 20 + 2 \times 40$
$= 100 + 40 + 80 = 220 cm^2$

b) Half the length
Area of Sides $\rightarrow$ same 50 cm^2
T & B $\rightarrow 1 \times 5 = 5 cm^2$
F & B $\rightarrow 1 \times 10 = 10 cm^2$

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

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

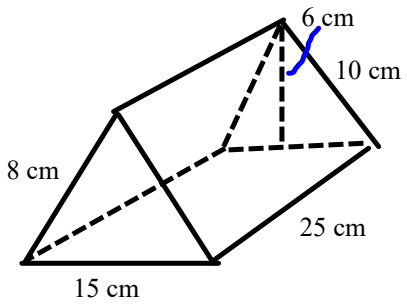
Each of rectangles is the same,

so area of each rectangle $\frac{40}{4} = 10cm^2$

$2 \times 5 = 10$

Dimensions $2 \times 2 \times 5$

Surface Area of Triangular Prism

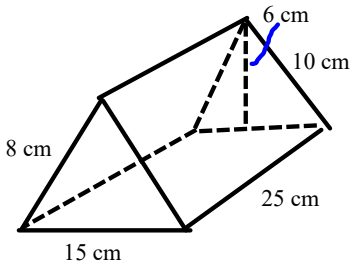


The Surface Area of a Triangular Prism=
areas of the 3 rectangular faces + 2 (the area of the triangular bases)

Sketch the faces (HINT start with the Triangle)

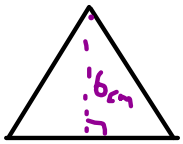
Surface Area of Triangular Prism

Solution

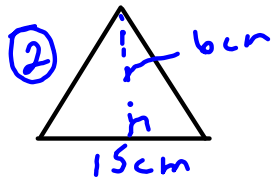


The Surface Area of a Triangular Prism=
areas of the 3 rectangular faces + 2 (the area of the triangular bases)

Sketch the faces (HINT start with the Triangle)



Front and Back



$A = \frac{b \times h}{2}$

$= \frac{15 \times 6}{2}$

$= \frac{90}{2}$

$= 45cm^2$

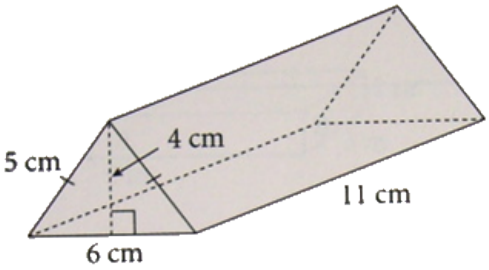
Total $SA_{Tri\ Prism}$ = (2 x tri) + rec + rec +rec

= (2 x $45cm^2$)+ $250cm^2$ + $200cm^2$ + $375cm^2$

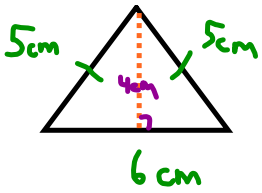
= 90 cm^2 + $250cm^2$ + $200cm^2$ + $375cm^2$

= $915cm^2$

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



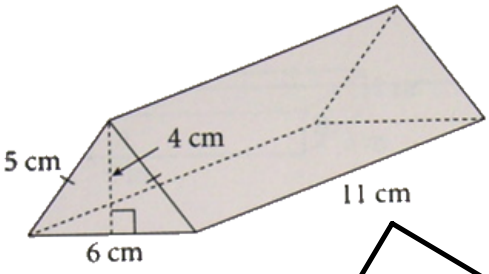
you try

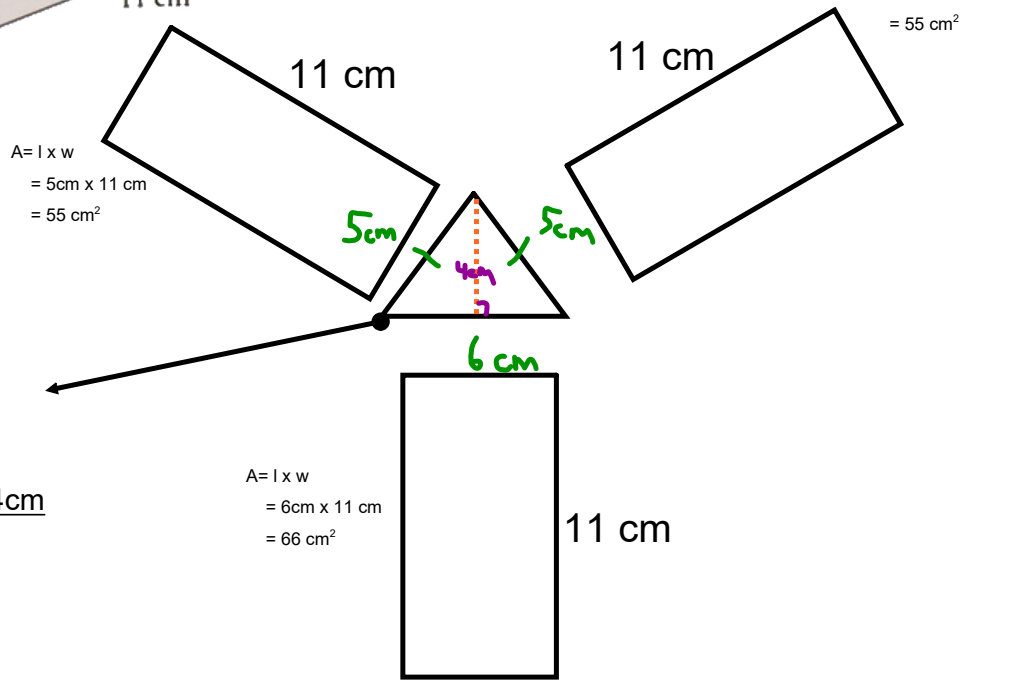


Solution

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

you try





$A_{of\ \Delta} = \frac{b \times h}{2}$

$A_{of\ \Delta} = \frac{6cm \times 4cm}{2}$

$A_{of\ \Delta} = \frac{24cm^2}{2}$

$A_{of\ \Delta} = 12cm^2$

$\text{Total SA}_{\text{Tri Prism}} = (2 \times \text{tri}) + \text{rec} + \text{rec} + \text{rec}$

$= (2 \times 12cm^2) + 55cm^2 + 55cm^2 + 66cm^2$

$= 24\ cm^2 + 55cm^2 + 55cm^2 + 66cm^2$

$= 200\ cm^2$

Class/Homework

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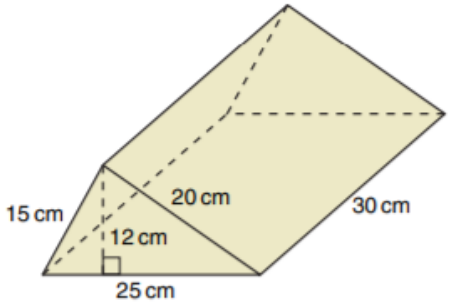
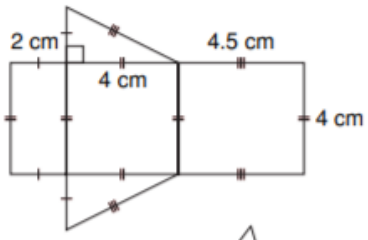
#6 #7a i, 9

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

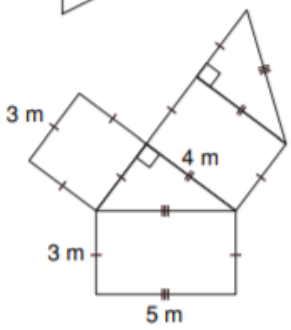


7. **a)** Calculate the area of each net.

i)



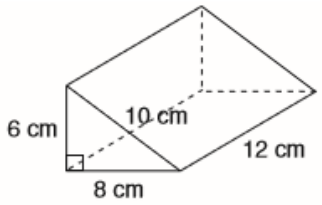
ii)



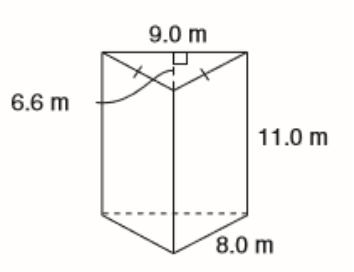
b) How does the area of each net compare to the surface area of the prism formed by the net?

9. Find the surface area of each triangular prism.

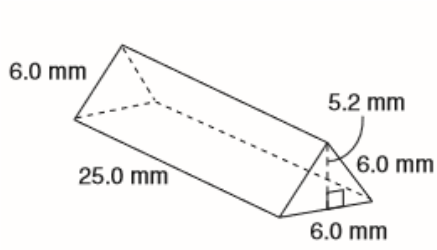
a)



b)



c)



Attachments

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