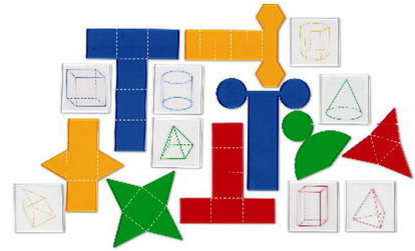


### Warm Up Grade 8



### Assessment Review

1) Write the following as a fraction, decimal and a percent. "6 out of 8 wins"

$$\frac{6}{8} \stackrel{\div 2}{=} \frac{3}{4} = 0.75 = 75\%$$

2) Jim gets paid \$12/hour on weekdays and \$16/hour on weekends. If he works 8 weekly hours and 3 weekend hours, how much will he get paid?

weekday  
 $\$12 \times 8h = \$96$

weekend  
 $\$16 \times 3h = \$48$

Total = 96  
 + 48  
 $\$144$

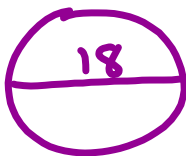
Review from Friday's class

1) Sketch the diagram and find the area for each shape.

a) a triangle with a base of 7m and a height of 6m

$$A_{\Delta} = \frac{b \times h}{2} = \frac{7m \times 6m}{2} = \frac{42m^2}{2} = 21m^2$$

b) a circle with a diameter of 18 cm

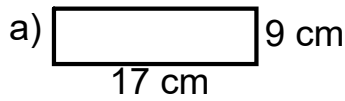


$$r = 9cm$$

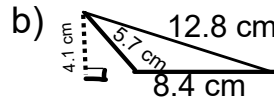
$$\begin{aligned} A_o &= \pi r^2 \\ &= 3.14 (9)^2 \\ &= 3.14 \times 81 \\ &= 254.34cm^2 \end{aligned}$$

Name: \_\_\_\_\_

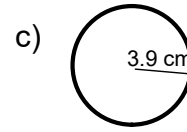
1) Find the area of each shape (Show all work)



$$\begin{aligned} A &= L \times W \\ &= 17\text{cm} \times 9\text{ cm} \\ &= 153\text{ cm}^2 \end{aligned}$$



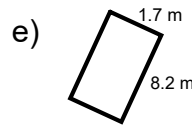
$$\begin{aligned} A &= \frac{B \times H}{2} \\ &= \frac{8.4\text{cm} \times 4.1\text{ cm}}{2} \\ &= \frac{34.44\text{ cm}^2}{2} \\ &= 17.22\text{ cm}^2 \end{aligned}$$



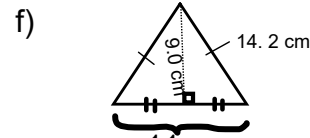
$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times (3.9\text{cm})^2 \\ &= 3.14 \times 15.21\text{ cm}^2 \\ &= 47.76\text{cm}^2 \end{aligned}$$



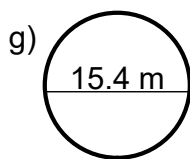
$$\begin{aligned} A &= \frac{B \times H}{2} \\ &= \frac{11\text{cm} \times 7\text{ cm}}{2} \\ &= \frac{77\text{ cm}^2}{2} \\ &= 38.5\text{ cm}^2 \end{aligned}$$



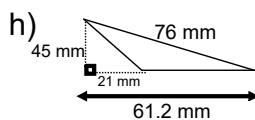
$$\begin{aligned} A &= L \times W \\ &= 1.7\text{ m} \times 8.2\text{ m} \\ &= 13.94\text{ m}^2 \end{aligned}$$



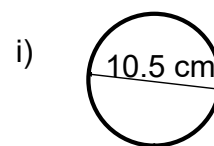
$$\begin{aligned} A &= \frac{B \times H}{2} \\ &= \frac{11\text{ cm} \times 9.0\text{ cm}}{2} \\ &= \frac{99\text{ cm}^2}{2} \\ &= 49.5\text{ cm}^2 \end{aligned}$$



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times (7.7\text{m})^2 \\ &= 3.14 \times 59.29\text{m}^2 \\ &= 186.17\text{ m}^2 \end{aligned}$$

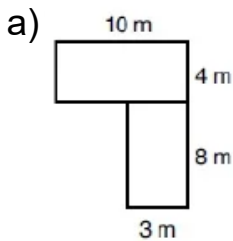


$$\begin{aligned} \text{Base} &= 61.2\text{ mm} - 21\text{ mm} \\ &= 40.2\text{ mm} \\ \text{height} &= 45\text{ mm} \\ A &= \frac{B \times H}{2} \\ &= \frac{40.2\text{mm} \times 45\text{ mm}}{2} \\ &= \frac{1809\text{ mm}^2}{2} \\ &= 904.5\text{ mm}^2 \end{aligned}$$



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times (5.25\text{cm})^2 \\ &= 3.14 \times 27.56\text{ cm}^2 \\ &= 86.55\text{ cm}^2 \end{aligned}$$

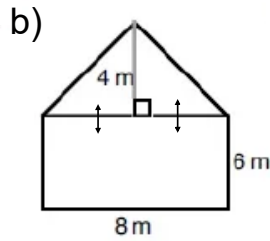
2) Find the total surface area of the combined shapes (Show all work)



$$\begin{aligned}
 A &= L \times W \\
 &= 10\text{m} \times 4\text{m} \\
 &= 40\text{m}^2
 \end{aligned}$$

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

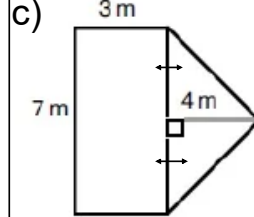
$$\begin{aligned}
 \text{Total Surface area} \\
 &= 40\text{m}^2 + 24\text{m}^2 \\
 &= 64\text{m}^2
 \end{aligned}$$



$$\begin{aligned}
 A &= L \times W \\
 &= 8\text{m} \times 6\text{m} \\
 &= 32\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{B \times H}{2} \\
 &= \frac{8\text{m} \times 4\text{m}}{2} \\
 &= \frac{32\text{m}^2}{2} \\
 &= 16\text{m}^2
 \end{aligned}$$

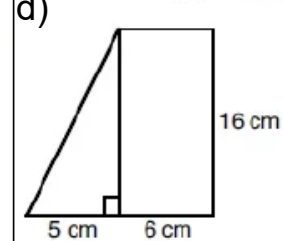
$$\begin{aligned}
 \text{Total Surface area} \\
 &= 32\text{m}^2 + 16\text{m}^2 \\
 &= 48\text{m}^2
 \end{aligned}$$



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

$$\begin{aligned}
 A &= \frac{B \times H}{2} \\
 &= \frac{7\text{m} \times 4\text{m}}{2} \\
 &= \frac{28\text{m}^2}{2} \\
 &= 14\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Surface area} \\
 &= 14\text{m}^2 + 21\text{m}^2 \\
 &= 35\text{m}^2
 \end{aligned}$$



$$\begin{aligned}
 A &= L \times W \\
 &= 6\text{cm} \times 16\text{cm} \\
 &= 96\text{cm}^2
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{B \times H}{2} \\
 &= \frac{5\text{cm} \times 16\text{m}}{2} \\
 &= \frac{80\text{cm}^2}{2} \\
 &= 40\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Surface area} \\
 &= 96\text{cm}^2 + 40\text{cm}^2 \\
 &= 136\text{cm}^2
 \end{aligned}$$

3) Find the surface area of each shape.

a) A triangle with a base of 7 cm and a height of 14 cm.

$$A = \frac{B \times H}{2}$$

$$= \frac{7 \text{ cm} \times 14 \text{ cm}}{2}$$

$$= \frac{98 \text{ cm}^2}{2}$$

b) a circle with a diameter of 34 cm.

$$A = \pi r^2$$

$$= 3.14 \times (17 \text{ cm})^2$$

$$= 3.14 \times 289 \text{ cm}^2$$

$$= 907.46 \text{ cm}^2$$

$$= \frac{98 \text{ cm}^2}{2}$$

$$= 49 \text{ cm}^2$$

c) A Rectangle with a length of 16 cm and the height double that.

$$A = L \times W$$

$$= 16 \text{ cm} \times 32 \text{ cm}$$

$$= 512 \text{ cm}^2$$

$$\text{height} = 2 \text{ base}$$

$$= 2 \times 16 \text{ cm}$$

$$= 32 \text{ cm}$$

d) A square with side length 23 m.  $A = L \times W$

$$= 23 \text{ m} \times 23 \text{ m}$$

$$= 529 \text{ m}^2$$

e) A rectangle with base 42m and height length of 15 m less than base.

$$\text{length} = 42 - 15$$

$$= 27 \text{ m}$$

$$A = L \times W$$

$$= 27 \text{ m} \times 42 \text{ m}$$

$$= 1134 \text{ m}^2$$

f) A circle with radius 6.2 mm.

$$A = \pi r^2$$

$$= 3.14 \times (6.2 \text{ mm})^2$$

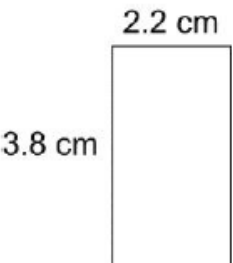
$$= 3.14 \times 38.44 \text{ mm}^2$$

$$= 120.70 \text{ mm}^2$$

## Area of Two-Dimensional Shapes

1) Find the area of each shape.

a)




3.8 cm      2.2 cm

$$A = l \times w$$

$$= 3.8 \text{ cm} \times 2.2 \text{ cm}$$

$$= 8.32 \text{ cm}^2$$

b)



3 m  
12 m

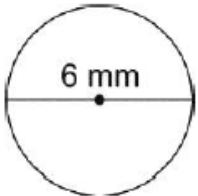
$$A = \frac{b \times h}{2}$$

$$= \frac{12 \text{ m} \times 3 \text{ m}}{2}$$

$$= \frac{36 \text{ m}^2}{2}$$

$$= 18 \text{ m}^2$$

c)



6 mm

$$A = \pi r^2$$

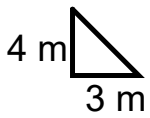
$$= 3.14 \times (3 \text{ mm})^2$$

$$= 3.14 \times (9 \text{ mm}^2)$$

$$= 28.26 \text{ mm}^2$$

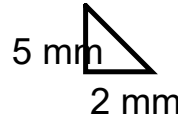
2) Find the area of the each shape and sketch the shape.

a. A triangle with height 3 m and base 4 m



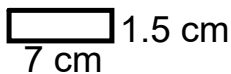
$$\begin{aligned}
 A &= \frac{b \times h}{2} \\
 &= \frac{4 \text{ m} \times 3 \text{ m}}{2} \\
 &= \frac{12 \text{ m}^2}{2} \\
 &= 6 \text{ m}^2
 \end{aligned}$$

b. A triangle with height 2 mm and base 5 mm



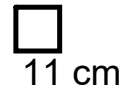
$$\begin{aligned}
 A &= \frac{b \times h}{2} \\
 &= \frac{2 \text{ mm} \times 5 \text{ mm}}{2} \\
 &= \frac{10 \text{ mm}^2}{2} \\
 &= 5 \text{ mm}^2
 \end{aligned}$$

c. A rectangle with length 7 cm and width 1.5 cm



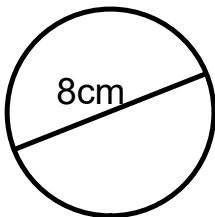
$$\begin{aligned}
 A &= l \times w \\
 &= 7 \text{ cm} \times 1.5 \text{ cm} \\
 &= 10.5 \text{ cm}^2
 \end{aligned}$$

d. A square with side length 11 cm



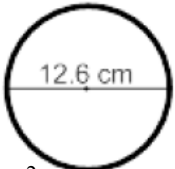
$$\begin{aligned}
 A &= l \times w \\
 &= 11 \text{ cm} \times 11 \text{ cm} \\
 &= 121 \text{ cm}^2
 \end{aligned}$$

e. A circle with diameter 8 cm



$$\begin{aligned}
 A &= \pi r^2 \\
 &= 3.14 \times (4 \text{ cm})^2 \\
 &= 3.14 \times (16 \text{ cm}^2) \\
 &= 50.24 \text{ cm}^2
 \end{aligned}$$

3) Find the surface Area

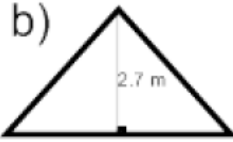
a) 

$$A = \pi r^2$$

$$= 3.14 \times (6.3 \text{ cm})^2$$

$$= 3.14 \times (39.69 \text{ m}^2)$$

$$= 126.6266 \text{ cm}^2$$

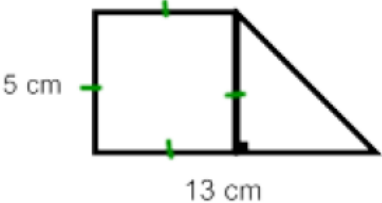
b) 

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

$$= \frac{7.6 \text{ m} \times 2.7 \text{ m}}{2}$$

$$= \frac{20.52 \text{ m}^2}{2}$$

$$= 10.26 \text{ m}^2$$

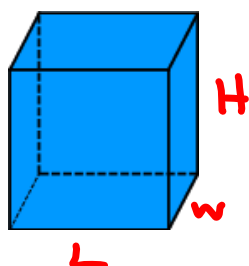
c) 

$A = l \times w$	$A = \frac{b \times h}{2}$
$= 5 \text{ cm} \times 5 \text{ cm}$	$= \frac{8 \text{ cm} \times 5 \text{ cm}}{2}$
$= 25 \text{ cm}^2$	$= \frac{40 \text{ cm}^2}{2}$
	$= 20 \text{ cm}^2$

$$A_{\text{total}} = 20 + 25 = 45$$

## Surface Area of Right Rectangular Prisms

**Surface Area** is the sum of the area of all the faces of a 3D object.



Square units (for example:  $m^2$ ,  $cm^2$ ) are used to measure area and surface area and **MUST** be included!

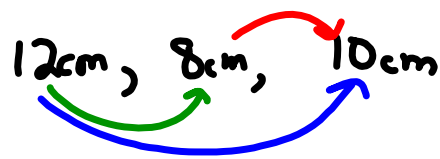
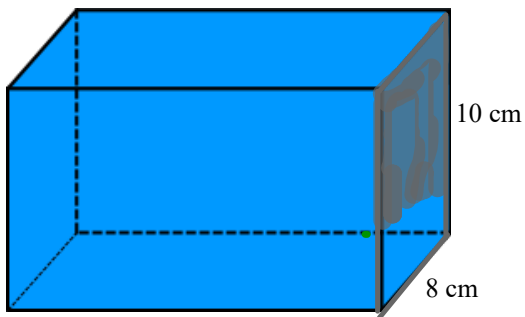


### How to Find Surface Area of 3D Objects

To find surface area:

1. Draw all of the faces (or you can draw a net).
2. Find the area of each face.
3. Then add up the areas of all of the faces.

Draw each face or the net



Faces

Top/Bott

12cm

8cm

$$A_{\square} = L \times W$$

$$= 12\text{cm} \times 8\text{cm}$$

$$= 96\text{cm}^2$$

$\times 2$  Top Bott

$$192\text{cm}^2$$

Fr/Back

10cm

12cm

$$A_{\square} = L \times W$$

$$= 12\text{cm} \times 10\text{cm}$$

$$= 120\text{cm}^2$$

$\times 2$  Fr Back

$$240\text{cm}^2$$

Left/Right

10cm

8cm

$$A_{\square} = L \times W$$

$$= 8\text{cm} \times 10\text{cm}$$

$$= 80\text{cm}^2$$

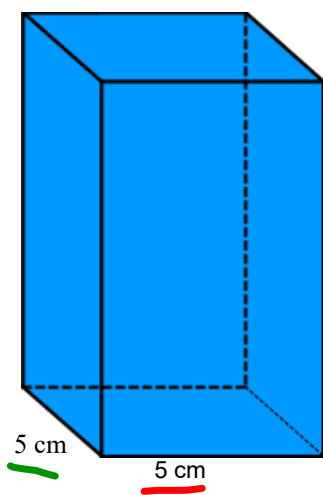
$\times 2$  Left Right

$$160\text{cm}^2$$

$$\text{Total SA} = 192\text{cm}^2 + 240\text{cm}^2 + 160\text{cm}^2$$

$$= 592\text{cm}^2$$

What is the surface area of this rectangular prism?



sketch nets or the faces

12 cm, 5 cm, 5 cm

12 cm

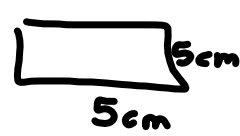


$$A = L \times w$$

$$= 12 \text{ cm} \times 5 \text{ cm}$$

$$= 60 \text{ cm}^2$$

$$\begin{array}{r} \times 2 \\ \hline 120 \text{ cm}^2 \end{array}$$



$$A = L \times w$$

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

$$= 25 \text{ cm}^2$$

$$\begin{array}{r} \times 2 \\ \hline 50 \text{ cm}^2 \end{array}$$



$$A = L \times w$$

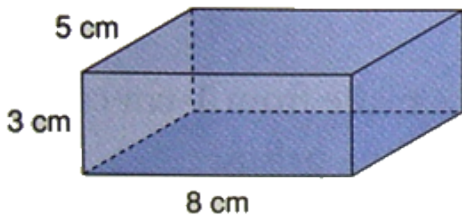
$$= 12 \text{ cm} \times 5 \text{ cm}$$

$$= 60 \text{ cm}^2$$

$$\begin{array}{r} \times 2 \\ \hline 120 \text{ cm}^2 \end{array}$$

$$\begin{aligned} \text{Total SA} &= 120 \text{ cm}^2 + 50 \text{ cm}^2 + 120 \text{ cm}^2 \\ &= 290 \text{ cm}^2 \end{aligned}$$

What is the surface area of this prism?



Top/Bottom

8  
5

$$A = L \times W$$

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

$$= 40 \text{ cm}^2$$

$$\underline{\times 2}$$

$$80 \text{ cm}^2$$

L/R

3  
5

$$A = L \times W$$

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

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

$$\underline{\times 2}$$

$$30 \text{ cm}^2$$

Fr/Back

8  
3

$$A = L \times W$$

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

$$= 24 \text{ cm}^2$$

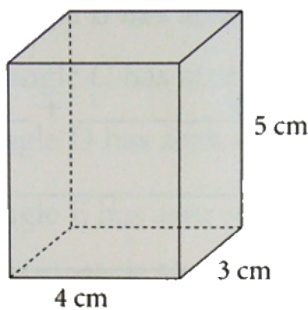
$$\underline{\times 2}$$

$$48 \text{ cm}^2$$

$$\text{Total S.A} = 80 \text{ cm}^2 + 30 \text{ cm}^2 + 48 \text{ cm}^2$$

$$= 158 \text{ cm}^2$$

What is the surface area of this prism?

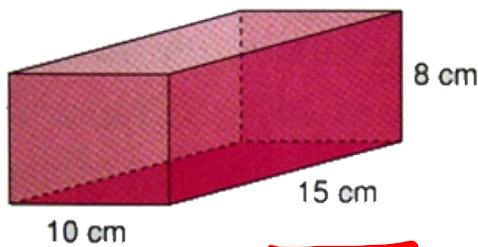


<p>Top/Bottom</p> <p>4      3</p> $A = L \times W$ $= 4 \text{ cm} \times 3 \text{ cm}$ $= 12 \text{ cm}^2$ $\underline{\quad \times 2}$ $24 \text{ cm}^2$	<p>3      5</p> $A = L \times W$ $= 3 \text{ cm} \times 5 \text{ cm}$ $= 15 \text{ cm}^2$ $\underline{\quad \times 2}$ $30 \text{ cm}^2$	<p>4      5</p> $A = L \times W$ $= 4 \text{ cm} \times 5 \text{ cm}$ $= 20 \text{ cm}^2$ $\underline{\quad \times 2}$ $40 \text{ cm}^2$
------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------

$$\text{Total SA} = 24 \text{ cm}^2 + 30 \text{ cm}^2 + 40 \text{ cm}^2$$

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

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



8 cm, 15 cm, 10 cm

$$\begin{array}{l}
 \text{15 cm} \\
 \text{8 cm} \\
 A = L \times W \\
 = 8 \text{ cm} \times 15 \text{ cm} \\
 = 120 \text{ cm}^2 \\
 \underline{\times 2} \\
 240 \text{ cm}^2
 \end{array}$$

$$\begin{array}{l}
 \text{10 cm} \\
 \text{8 cm} \\
 A = L \times W \\
 = 8 \text{ cm} \times 10 \text{ cm} \\
 = 80 \text{ cm}^2 \\
 \underline{\times 2} \\
 160 \text{ cm}^2
 \end{array}$$

$$\begin{array}{l}
 \text{10 cm} \\
 \text{15 cm} \\
 A = L \times W \\
 = 15 \text{ cm} \times 10 \text{ cm} \\
 = 150 \text{ cm}^2 \\
 \underline{\times 2} \\
 300 \text{ cm}^2
 \end{array}$$

$$\begin{aligned}
 \text{Total SA} &= 240 \text{ cm}^2 + 160 \text{ cm}^2 + 300 \text{ cm}^2 \\
 &= 700 \text{ cm}^2
 \end{aligned}$$

Practice Questions

Page 186 #4, #5, #6

**Extra help after school!!**

## Attachments

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