



Warm Up
May 17, 2016



Rules for Integers

$$\begin{aligned} (-) \times (-) &= + \\ (+) \times (+) &= + \end{aligned}$$

$$\begin{aligned} (-) \times (+) &= - \\ (+) \times (-) &= - \end{aligned}$$

1) Review of integers

- a. $(-15) \times (-3) = +45$
- b. $(-72) \div (8) = -9$
- c. $(-2) \times (7) = -14$

2) Model $(+4) \times (-3)$ with tiles

$$\begin{aligned} \bigcirc &= (-) \\ \bullet &= (+) \end{aligned}$$

$$\underbrace{\bigcirc\bigcirc\bigcirc}_{4 \text{ groups of } (-3)}$$

$$(+4) \times (-3) = -12$$

3) Model $(-2) \times (-3)$ with tiles

(need zero pairs to begin)

(Take away 2 groups of -3)



Remember
 \bigcirc is $(-)$
 \bullet is $(+)$

4) Evaluate (Show all work)

$$\frac{[19 - (-5)] \div (-3)}{2(-2)}$$

BADMAS

Top $[19 + (+5)] \div 3$
 $(+24) \div (-3)$
 -8

Bottom
 $(2)(-2)$
 (-4)

$$\frac{\text{Top } (-8)}{\text{Bott } (-4)} = \boxed{+2}$$

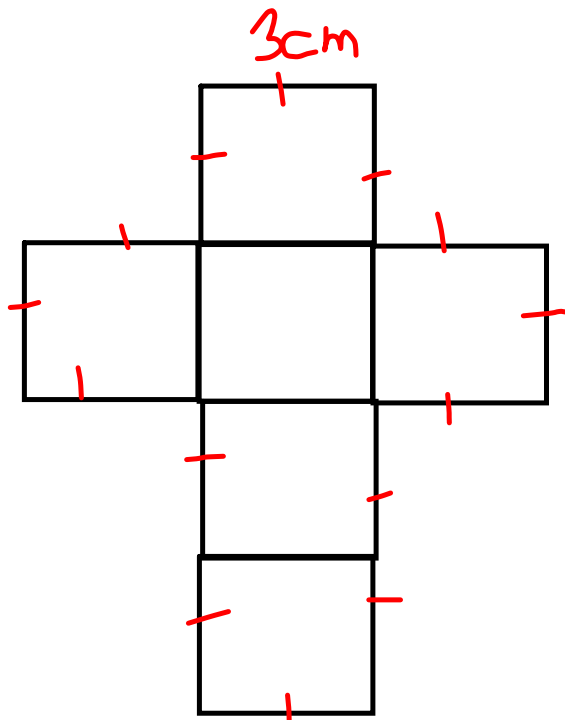
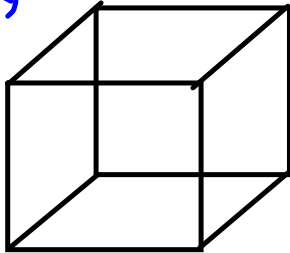
Booklet



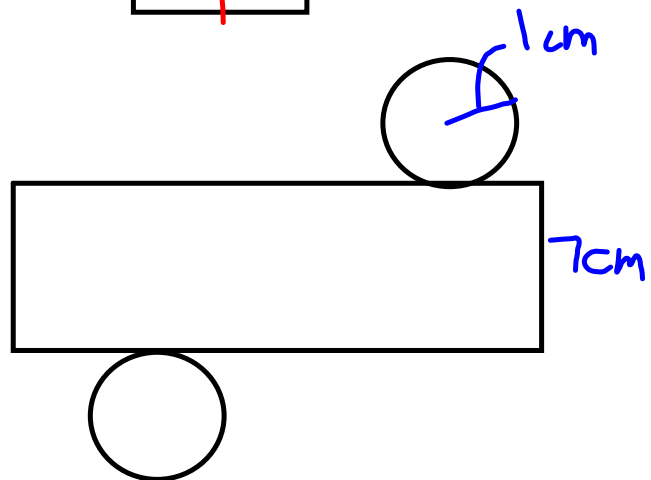
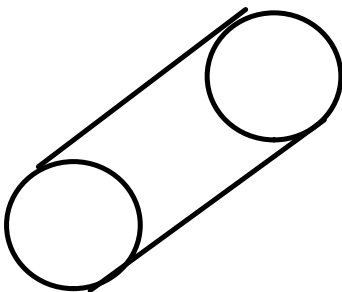
open link

Homework
Solutions

pg 194
1a)



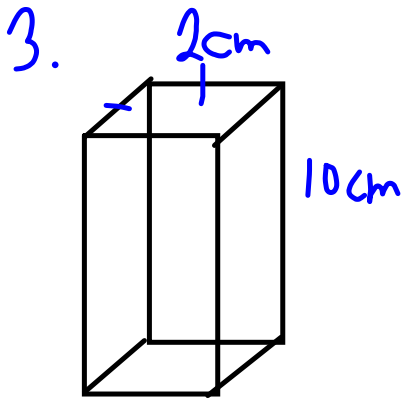
b)



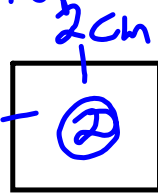
2a) Net - of a triangular pyramid

b) Is not a net, one face will overlap

c) Net of a pentagonal prism.



Top & Bottom



4 sides



Homework
Solutions

$$A = l \times w$$

$$= 2 \times 2$$

$$= 4 \text{ cm}^2$$

$$A = l \times h$$

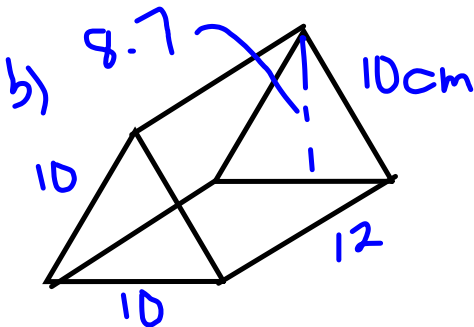
$$= 10 \times 2$$

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

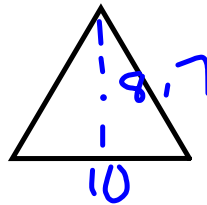
$$SA = 2 \times 4 + 4 \times 20$$

$$= 8 + 80$$

$$= 88 \text{ cm}^2$$



Bases



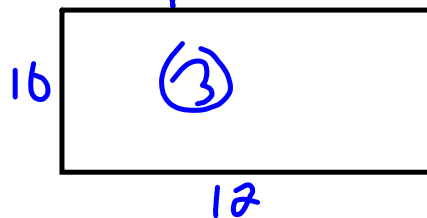
$$A = \frac{b \times h}{2}$$

$$= \frac{10 \times 8.7}{2}$$

$$= \frac{87}{2}$$

$$= 43.5 \text{ cm}^2$$

3 equal Faces



$$A = l \times w$$

$$= 12 \times 10$$

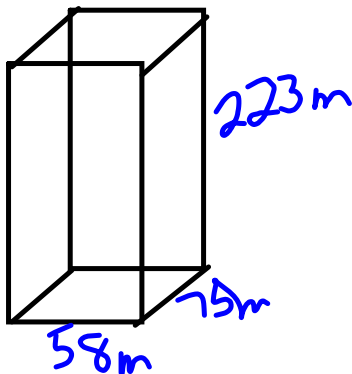
$$= 120 \text{ cm}^2$$

$$SA = 2 \times 43.5 + 3 \times 120$$

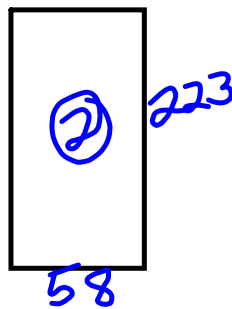
$$= 87 + 360$$

$$= 447 \text{ cm}^2$$

4.



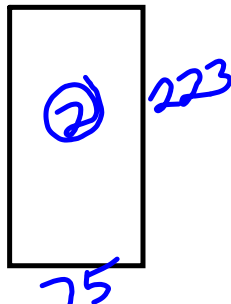
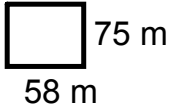
Front & Back

Homework
Solutions

$$\begin{aligned}
 A &= l \times w \\
 &= 223 \times 58 \\
 &= 12934 \text{ m}^2
 \end{aligned}$$

Sides

don't need top/bottom

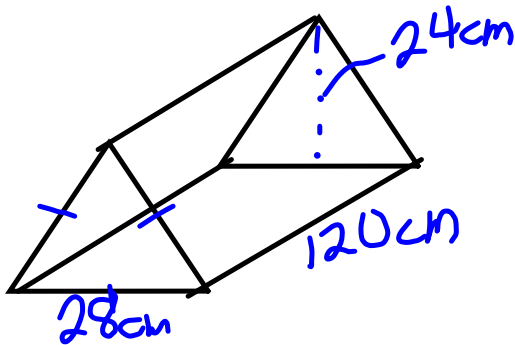


$$\begin{aligned}
 A &= l \times w \\
 &= 223 \times 75 \\
 &= 16725 \text{ m}^2
 \end{aligned}$$

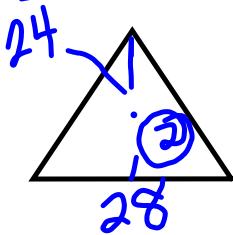
SA of glass = 2(side) + 2(front)

$$\begin{aligned}
 SA &= 2 \times 12934 + 2 \times 16725 \\
 &= 25868 + 33450 \\
 &= 59318 \text{ m}^2
 \end{aligned}$$

5

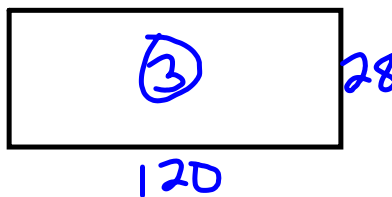
Homework
Solutions

Bases



$$\begin{aligned}
 A &= \frac{b \times h}{2} \\
 &= \frac{28 \times 24}{2} \\
 &= \frac{672}{2} \\
 &= 336 \text{ cm}^2
 \end{aligned}$$

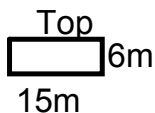
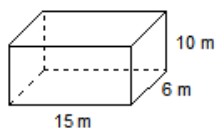
3 sides



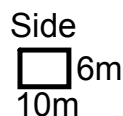
$$\begin{aligned}
 A &= l \times w \\
 &= 120 \times 28 \\
 &= 3360 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 SA &= 2 \times 336 + 3 \times 3360 \\
 &= 672 + 10080 \\
 &= 10752 \text{ cm}^2
 \end{aligned}$$

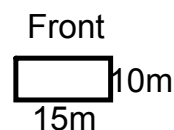
2. Find the surface area of this right rectangular prism.



$$\begin{aligned} A &= l \times w \\ &= 15\text{m} \times 6\text{m} \\ &= 90\text{ m}^2 \end{aligned}$$



$$\begin{aligned} A &= l \times w \\ &= 10\text{m} \times 6\text{m} \\ &= 60\text{ m}^2 \end{aligned}$$

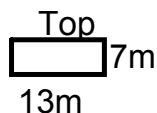
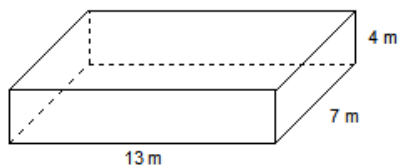


$$\begin{aligned} A &= l \times w \\ &= 10\text{m} \times 15\text{m} \\ &= 150\text{ m}^2 \end{aligned}$$

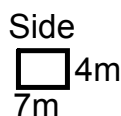
Homework
Solutions

$$\begin{aligned} \text{Total SA} &= 2(\text{Top}) + 2(\text{Side}) + 2(\text{Front}) \\ &= 2(90\text{m}^2) + 2(60\text{m}^2) + 2(150\text{m}^2) \\ &= 180\text{m}^2 + 120\text{m}^2 + 300\text{m}^2 \\ &= 600\text{ m}^2 \end{aligned}$$

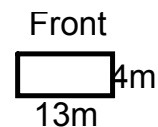
3. The Drama Club plans to paint the outside walls of this box to be used as a second level to their stage. Find the surface area of the box.



$$\begin{aligned} A &= l \times w \\ &= 13\text{m} \times 7\text{m} \\ &= 91\text{ m}^2 \end{aligned}$$



$$\begin{aligned} A &= l \times w \\ &= 7\text{m} \times 4\text{m} \\ &= 28\text{ m}^2 \end{aligned}$$



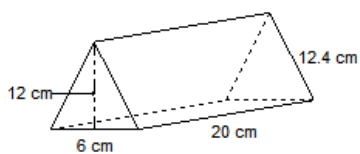
$$\begin{aligned} A &= l \times w \\ &= 13\text{m} \times 4\text{m} \\ &= 52\text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Total SA} &= 2(\text{Side}) + 2(\text{Front}) \\ &= 2(28\text{m}^2) + 2(52\text{m}^2) \\ &= 56\text{m}^2 + 104\text{m}^2 \\ &= 160\text{ m}^2 \end{aligned}$$

4. The 2 triangular faces of this prism are isosceles triangles with base length 6 cm and height 12 cm. Calculate the surface area of the prism.

Homework

Solutions



$$A = l \times w$$

$$= 12.4 \times 20$$

$$= 248 \text{ cm}^2$$

$$A = l \times w$$

$$= 12.4 \times 20$$

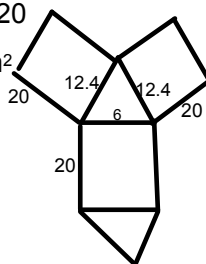
$$= 248 \text{ cm}^2$$

$$A_{\text{tri}} = (bxh)/2$$

$$= (6 \times 12) / 2$$

$$= (72) / 2$$

$$= 36 \text{ cm}^2$$



$$A = l \times w$$

$$= 6 \times 20$$

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

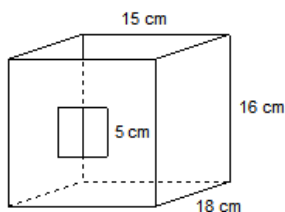
$$\text{Total SA} = 2 \text{ Tri} + \text{rec} + \text{rec} + \text{rec}$$

$$= 2(36) + 120 + 248 + 248$$

$$= 72 + 120 + 248 + 248$$

$$= 688 \text{ cm}^2$$

5. The diagram shows an open box in the shape of a right rectangular prism. A square hole of side 5 cm is cut out of the front face. What is the total surface area of the box? Show your work.



hole

$$A = l \times w$$

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

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

Top

$$A = l \times w$$

$$= 15 \text{ cm} \times 18 \text{ cm}$$

$$= 270 \text{ cm}^2$$

side

$$A = l \times w$$

$$= 18 \text{ cm} \times 16 \text{ cm}$$

$$= 256 \text{ cm}^2$$

front

$$A = l \times w$$

$$= 16 \text{ cm} \times 15 \text{ cm}$$

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

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

$$= 2(270 \text{ cm}^2) + 2(256 \text{ cm}^2) + 2(240 \text{ cm}^2)$$

$$= 540 \text{ cm}^2 + 512 \text{ cm}^2 + 480 \text{ cm}^2$$

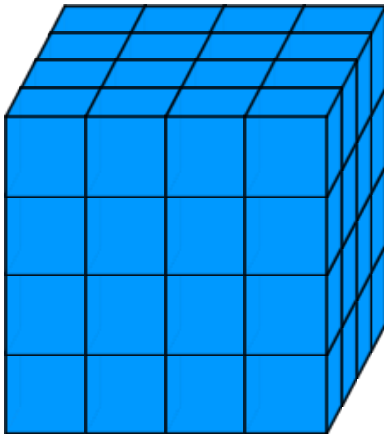
$$= 1532 \text{ cm}^2$$

$$1532 \text{ cm}^2 - 25 \text{ cm}^2$$

$$= 1507 \text{ cm}^2$$

Volume

Volume is the amount of space an object occupies. It is measured in cubic units, such as, mm^3 , cm^3 , m^3 , ...



How do you find volume?

<http://illuminations.nctm.org/ActivityDetail.aspx?ID=6>



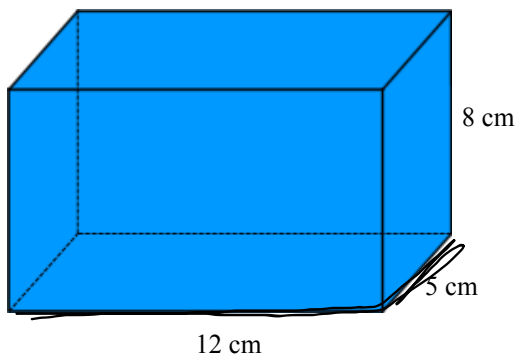
How do we find the volume of this rectangular prism?


Sometimes students say $V = \underbrace{l \times w \times h}$,

Instead of using this, we will use

$$\text{Volume} = \text{Area of a base} \times \text{height}$$

First determine the base of the prism, then find its area, finally multiply this area by the height of the prism.

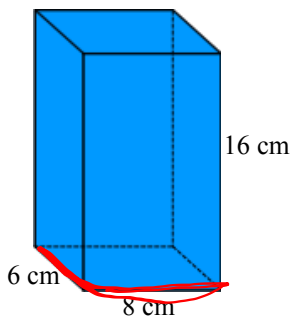



$$\begin{aligned} A_{\text{base}} &= L \times W \\ &= 12 \text{ cm} \times 5 \text{ cm} \\ &= 60 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Volume} &= A_{\text{base}} \times h \\ &= 60 \text{ cm}^2 \times 8 \text{ cm} \\ &= 480 \text{ cm}^3 \end{aligned}$$

Find the area and show all work.

a)

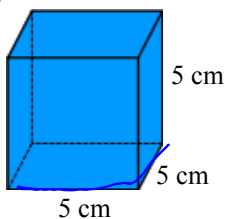


$$\begin{aligned} A_{\text{base}} &= L \times W \\ &= 6\text{cm} \times 8\text{cm} \\ &= 48\text{cm}^2 \end{aligned}$$

Your Turn

$$\begin{aligned} \text{Volume} &= A_{\text{base}} \times h \\ &= 48\text{cm}^2 \times 16\text{cm} \\ &= 768\text{cm}^3 \end{aligned}$$

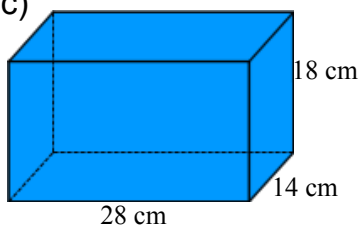
b)



$$\begin{aligned} A_{\text{base}} &= L \times W \\ &= 5\text{cm} \times 5\text{cm} \\ &= 25\text{cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Volume} &= A_{\text{base}} \times h \\ &= 25\text{cm}^2 \times 5\text{cm} \\ &= 125\text{cm}^3 \end{aligned}$$

c)



$$\begin{aligned} A_{\text{base}} &= L \times W \\ &= 28\text{cm} \times 14\text{cm} \\ &= 392\text{cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Volume} &= A_{\text{base}} \times h \\ &= 392\text{cm}^2 \times 18\text{cm} \\ &= 7056\text{cm}^3 \end{aligned}$$

Class/Homework

pg. 197
4, #5, #6, #7, #9 Already did?

Go Back to Page 186 and instead of finding SA use the dimensions to find VOLUME

Page 186-187 #5, #6, #7, #13

$$A_{\text{base}} = L \times w \quad \text{Volume} = A_{\text{base}} \times h$$

Surface Area of Triangular Prisms Solutions.notebook