Warm Up Grade 8

Lesson 5

E-learning

Find the volume

13 m
20 m
40 m
25 m

solution

Warm Up Grade 8

Lesson 5

E-learning

Find the volume

$A_\triangle = \dfrac{b \times h}{2}$

$= \dfrac{25m \times 13m}{2}$

$= \dfrac{325m^2}{2}$

20 m

13 m

40 m

25 m

Not on $\triangle$
so H_{prism}

25

13

$A_\triangle = 162.5m^2$

$V_{\triangle prism} = A_\triangle \times H$

$= 162.5m^2 \times 40m$

$= 6500\ m^3$

4a) $A_{base} = 9.2 \, cm^2$ $h = 2.3 \, cm$

$Vol = A_{base} \times h$
$= 9.2 \times 2.3$
$= 21.16 \, cm^3$

$\begin{array}{r} 9.2 \\ \times 2.3 \\ \hline 2\,7\,6 \\ 1\,8\,4\,0 \\ \hline 21.16 \end{array}$

b) $A_{base} = 43.5 \, cm^2$ $h = 5 \, cm$

$Vol = A_{base} \times h$
$= 43.5 \times 5$
$= 217.5 \, cm^3$

c) $A_{base} = 3 \, m^2$ $h = 15 \, m$

$Vol = A_{base} \times h$
$= 3 \times 15$
$= 45 \, m^3$

5.
⭐ a)

$7 = h_\triangle$

$13 = b_\triangle$

$7cm$ $21 cm$

H_{prism}

$13cm$
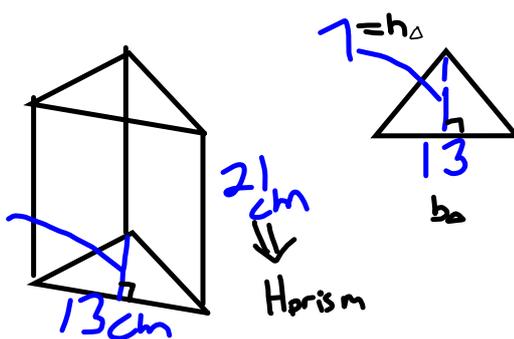
$A_{base} = \dfrac{b \times h_\triangle}{2}$
$= \dfrac{13 \times 7}{2}$
$= \dfrac{91}{2}$
$= 45.5 \, cm^2$

$Vol = A_{base} \times H_{prism}$
$= 45.5 \times 21$
$= 955.5 \, cm^3$

★b) 5 m 12 m 8m

Homework
Solutions

12

7

5
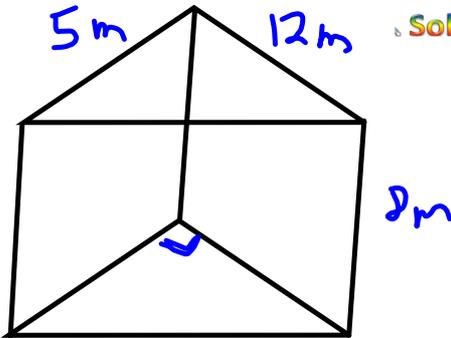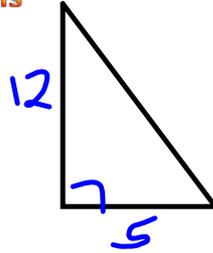
$A_{base} = \dfrac{b \times h}{2}$

$= \dfrac{12 \times 5}{2}$

$= \dfrac{60}{2}$

$= 30 m^2$

$Vol = A_{base} \times h$

$= 30 \times 8$

$= 240 m^3$

★c) 1.75m 2.5m 1.75

1.75

1.75
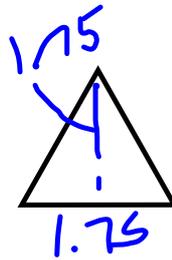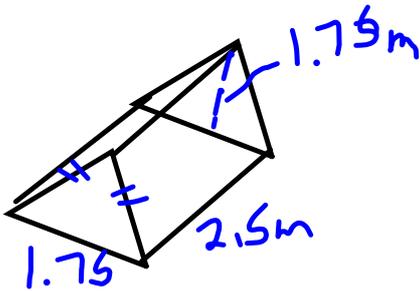
$A_b = \dfrac{b \times h}{2}$

$= \dfrac{1.75 \times 1.75}{2}$

$= \dfrac{3.0625}{2}$

$= 1.53125 m^2$

$Vol = A_{base} \times h$

$= 1.53125 \times 2.5$

$= 3.828125 m^3$

or $3.8 m^3$

gr 8 u4 Area_Volume Prism Lesson 5 Surface Area Cylinder Elearn Smart Lesson.notebook

Homework

Solutions

★ 6 a)

4.4

11.7

6.8cm

15.6 cm

15.5 cm

4.4

15.5

$$A_{base} = \frac{b \times h}{2}$$

$$= \frac{15.5 \times 4}{2}$$
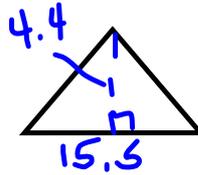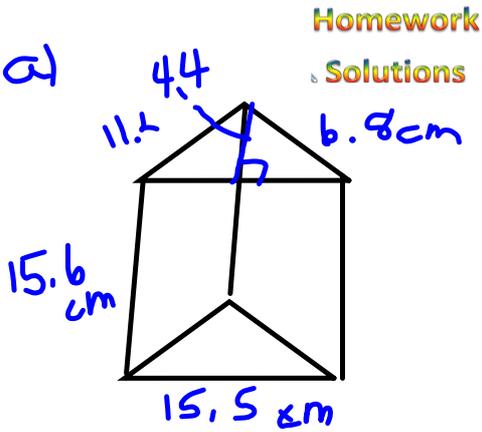
$$= \frac{68.2}{2}$$

$$= 34.1 \, cm^2$$

$$Vol = A_{base} \times h$$

$$= 34.1 \times 15.6$$

$$= 531.96 \, cm^3$$
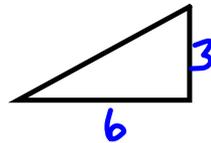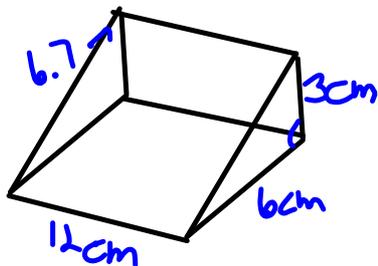
★ b)

6.7

3cm

6cm

12cm

3

6

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

$$= \frac{6 \times 3}{2}$$

$$= \frac{18}{2}$$

$$= 9 \, cm^2$$

$$Vol = A_{base} \times h$$

$$= 9 \times 12$$

$$= 108 \, cm^3$$

7.

2 cm

2 cm

9 cm

2 cm

$A_b = \dfrac{b \times h}{2}$
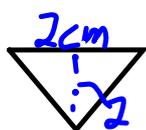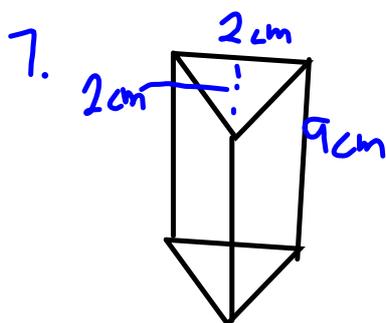
Homework

Solutions

$= \dfrac{2 \times 2}{2}$

$= \dfrac{4}{2}$

$= 2 \, cm^2$

$Vol = A_b \times h$

$= 2 \times 9$

$= 18 \, cm^3$

8. $Vol = 30 \, cm^3$ $A_{base} = 4 \, cm^2$

$h = \dfrac{30}{4}$

$= 7.5 \, cm$

9. . $Vol = A_b \times h$

a) $S = \underline{\quad} \times \underline{\quad}$

$A_b = 1 cm^2 \quad h = 5cm$
$A_b = 2cm^2 \quad h = 2.5 cm$

b) $9m^3 = \underline{\quad} \times \underline{\quad}$

$A_b = 1m^2, \quad h = 9m$
$A_b = 3m^2, \quad h = 3m$
$A_b < 9m^2, \quad h = 1m$

c) $8m^3 = \underline{\quad} \times \underline{\quad}$

$A_b = 1m^2 \quad h = 8m$
$A_b = 2m^2 \quad h = 4m$
$A_b = 4m^2 \quad h = 2m$
$A_b = 8m^2 \quad h = 1m$

d) $18cm^3 = \underline{\quad} \times \underline{\quad}$

$A_b = 2m^2 \quad A = 9m$
$A_b = 3m^2 \quad A = 6m$

b) To find all possibilities, list the factors.

10. Sketch

5cm

12cm
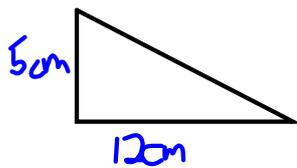
$$A_b = \frac{b \cdot h}{2}$$
$$= \frac{12 \times 5}{2}$$
$$= \frac{60}{2}$$
$$= 30 cm^2$$

$$Vol = A_b \times h$$
$$= 30 \times 4$$
$$= 120 cm^3$$

b) $\frac{120}{20} = 6$ people will be served cheese.

11. $Vol = A_{base} \times h$

$50 = A_{base} \times 5$

$\underline{10 \times 5}$

so A_{base} (or triangular face) is $10m^2$

12.
a) 3m

3m
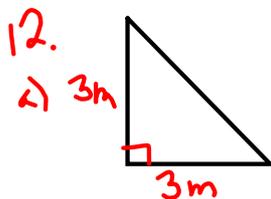
$$A_b = \frac{b \times h}{2}$$
$$= \frac{3 \times 3}{2}$$
$$= \frac{9}{2}$$
$$= 4.5m^2$$

$$Vol = A_{base} \times h$$
$$= 4.5 \times 0.25$$
$$= 1.125m^3$$

b)
6m

6m
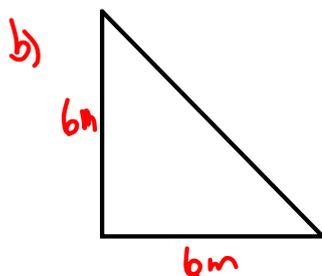
$$A = \frac{b \times h}{2}$$
$$= \frac{6 \times 6}{2}$$
$$= \frac{36}{2}$$
$$= 18m^2$$

$$Vol = A_b \times h$$
$$= 18 \times 0.25$$
$$= 4.5m^3$$

Jackie needs 4 times as much concrete

13. a) Prediction
Prism A
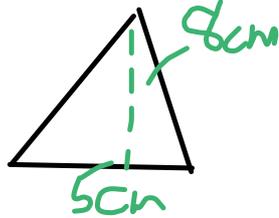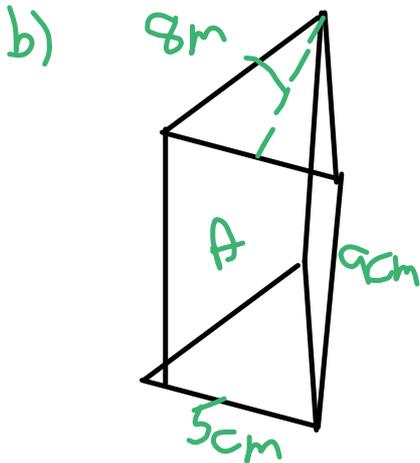
b)

8m 8cm

5cm

$A_b = \dfrac{b \times h}{2}$

$= \dfrac{8 \times 5}{2}$

$= \dfrac{40}{2}$

$= 20 cm^2$

A 9cm

5cm

$Vol = A_b \times h$

$= 20 \times 9$

$= 180 cm^3$

6cm B 7cm

6cm

$A_b = \dfrac{b \times h}{2}$

$= \dfrac{6 \times 6}{2}$

$= \dfrac{36}{2}$

$= 18 cm^2$

$V = A_b \times h$

$= 18 \times 7$
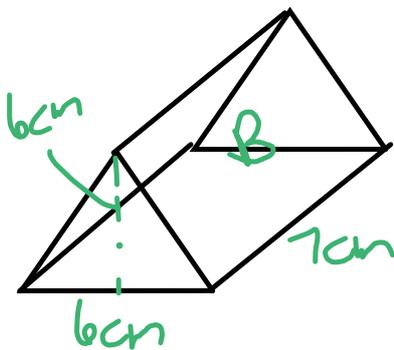
$= 126 cm^3$

Prediction was correct

c) If Prism B had a height of 10cm
it would have the same volume as A.

14 sketch
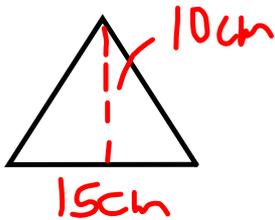
15cm

$A_b = \dfrac{b \times h}{2}$

$= \dfrac{15 \times 10}{2}$

$= \dfrac{150}{2}$

$= 75 cm^2$

$Vol = A_b \times h$

$= 75 \times 30$

$= 2250 cm^3$

b) Contains 1350 ml of water

depth = ?

$1350 ml = \underline{1350} \ cm^3$

$Vol = A_{base} \times h$

$1350 = 75 \times h$

$\dfrac{1350}{75} = 18$

The depth would be 18cm

c) $\dfrac{1350}{2250} = 0.6$ or 60% water

15. Volume = 198 cm^3

$A_{base} = 18$

Vol = $A_{base} \times h$

$198 = 18 \times h$

$\dfrac{198}{18} = h$

$\boxed{11 = h}$

$18 = \dfrac{b \times h}{2}$

$36 = b \times h$

Base of △ , Height o△ , Height of Prism

| Base of △	Height o△	Height of Prism
1	36	11
2	18	11
3	12	11
4	9	11
6	6	11
9	4	11
⋮		11

182 cm

Surface Area of a Cylinder

When finding the surface area of a cylinder, you still have to find the area of the faces then add them. However, what are the shapes of the faces?

radius

height
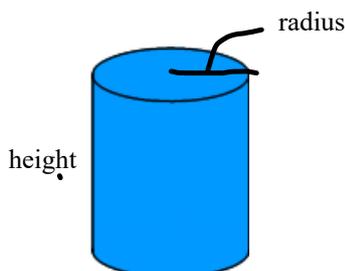
The top and bottom are both_____

If you unroll the curved face of the cylinder, you will get a _____
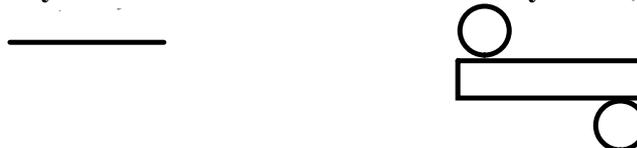
One side of the_____is the_____of the cylinder, and

the other side of the_____is the_____ of the circle

 Step 1) Find the area of the circle
Step 2) Find the circumference of the circle
Step 3) Find the area of the rectangle   A = bxh

= circumference x h

Step 4) Find the Total SA = 2Circles +Rectangle

Total SA$_{cyl}$ =   2Circles   +   Rectangle

= $2 \pi r^2$ + $2 \pi r H$

= [2 x 3.14 x r x r] + [2 x 3.14 x r x H]

8 cm

12 cm

Total SA$_{cyl}$ =   2Circles   +   Rectangle

=   2 π r^2 +   2 π r H

= [2 x 3.14 x r x r] + [2 x 3.14 x r x H]

Fill in the radius and the Height of the cylinder

=

Use a calculator and

=

=

=

Find the surface area

Your Turn

25 cm

15 cm
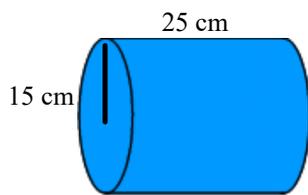
Total SA$_{cyl}$ =

=

Use a calculator

=

=

Class/Homework

page 212-213
  # 6(b, c) MAKE sure to use radius NOT diameter
  #9

6 b)

10 cm

3 cm

c)

2 m

20 m
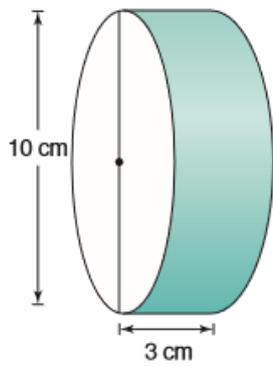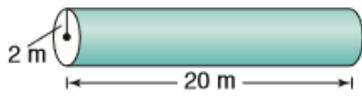
9. A cylindrical tank has diameter 3.8 m and length 12.7 m. What is the surface area of the tank?