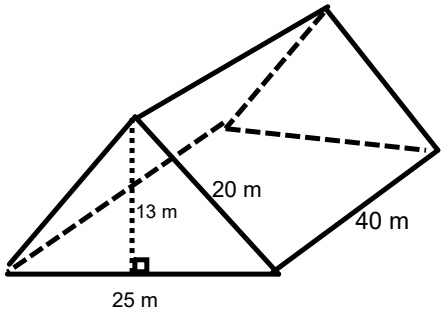
Warm Up Grade 8

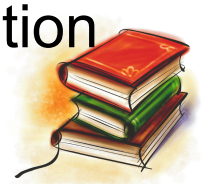
Lesson 5

E-learning

Find the volume



solution



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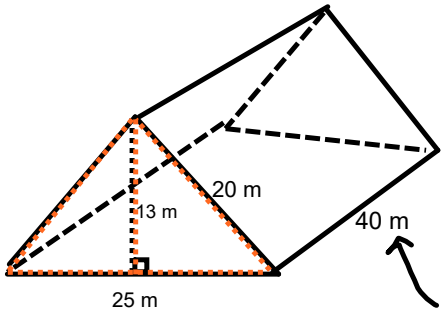
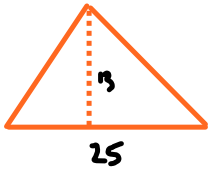


Not on Δ
so H prism



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

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

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

$A_\Delta = 162.5m^2$

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

$= 162.5m^2 \times 40m$

$= 6500\ m^3$

Homework Solutions

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

$Vol = A_{base} \times h$

$= 9.2 \times 2.3$

$= 21.16\,cm^3$

9.2
×2.3
276
1840
21.16

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

$Vol = A_{base} \times h$

$= 43.5 \times 5$

$= 217.5\,cm^3$

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

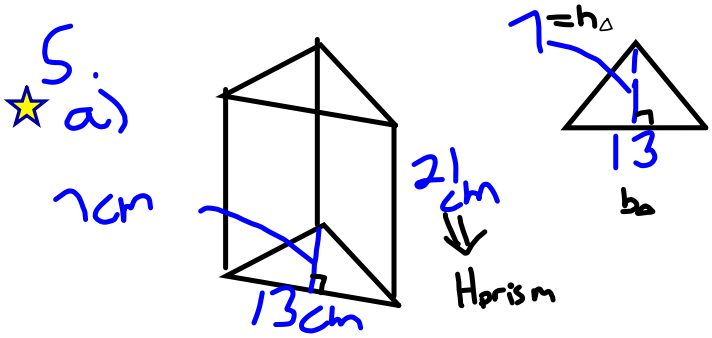
$Vol = A_{base} \times h$

$= 3 \times 15_3$

$= 45\,m^3$

5.

☆ a)



$A_{base} = \frac{b \times h_{\triangle}}{2}$

$= \frac{13 \times 7}{2}$

$= \frac{91}{2}$

$= 45.5\,cm^2$

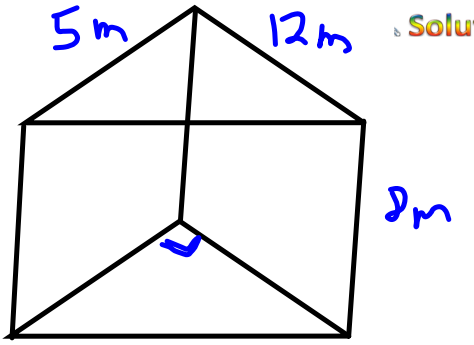
$Vol = A_{base} \times H_{prism}$

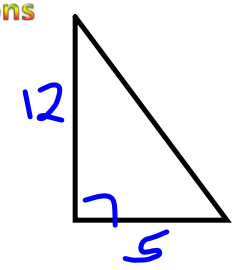
$= 45.5 \times 21$

$= 955.5\,cm^3$

Homework Solutions

b)





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

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

$= \frac{60}{2}$

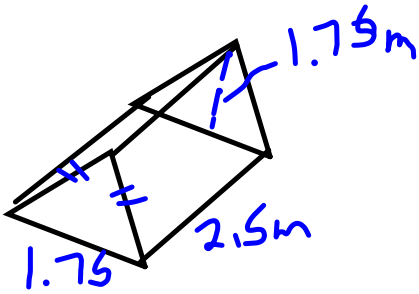
$= 30 m^2$

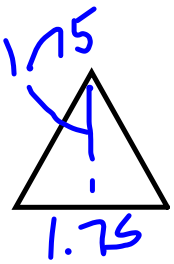
$Vol = A_{base} \times h$

$= 30 \times 8$

$= 240 m^3$

c)





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

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

$= \frac{3.0625}{2}$

$= 1.53125 m^2$

$Vol = A_{base} \times h$

$= 1.53125 \times 2\frac{5}{8}$

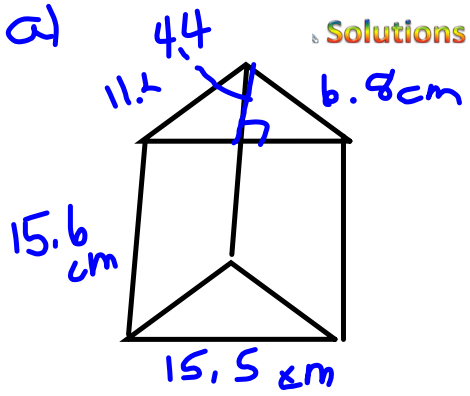
$= 3.828125 m^3$

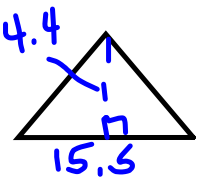
or $3.8 m^3$

Homework

Solutions

6 a)





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

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

$= \frac{68.2}{2}$

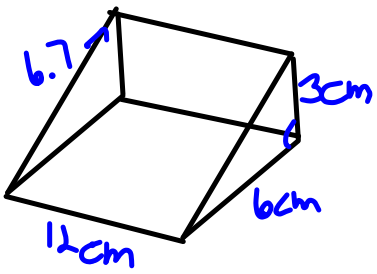
$= 34.1 cm^2$

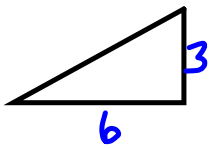
$Vol = A_{base} \times h$

$= 34.1 \times 15.6$

$= 531.96 cm^3$

b)





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

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

$= \frac{18}{2}$

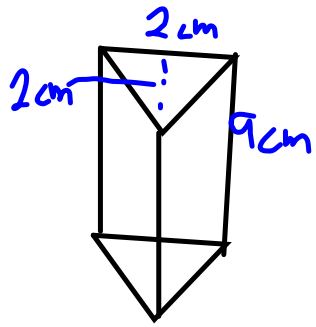
$= 9 cm^2$

$Vol = A_{base} \times h$

$= 9 \times 12$

$= 108 cm^3$

7.



Homework Solutions

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

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

$= \frac{4}{2}$

$= 2cm^2$

$Vol = A_b \times h$

$= 2 \times 9$

$= 18cm^3$

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

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

$= 7.5cm$

9. . $Vol = A_b \times h$ Homework Solutions

a) $5 = \_\_ \times \_\_$

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

b) $9m^3 = \_\_ \times \_\_$

$A_b = 1m^2$, $h = 9m$
$A_b = 3m^2$, $h = 3m$
$A_b = 9m^2$, $h = 1m$

c) $8m^3 = \_\_ \times \_\_$

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

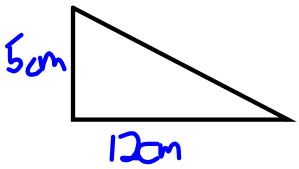
d) $18cm^3 = \_\_ \times \_\_$

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

b) To find all possibilities, list the factors.

10. Sketch

Homework Solutions



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

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

$= \frac{60}{2}$

$= 30cm^2$

$Vol = A_b \times h$

$= 30 \times 4$

$= 120cm^3$

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

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

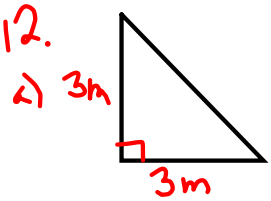
$50 = A_{base} \times 5$

10×5

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

Homework Solutions

12.

a) 

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

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

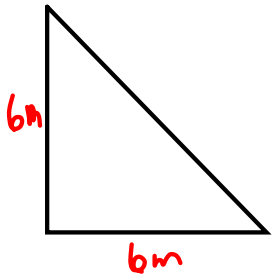
$= \frac{9}{2}$

$= 4.5m^2$

$Vol = A_{base} \times h$

$= 4.5 \times 0.25$

$= 1.125m^3$

b) 

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

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

$= \frac{36}{2}$

$= 18m^2$

$Vol = A_b \times h$

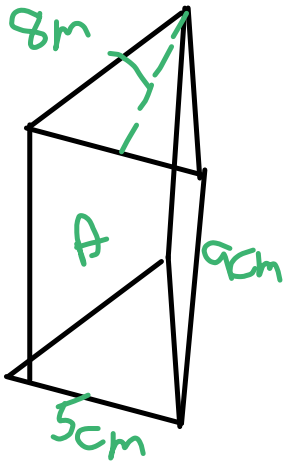
$= 18 \times 0.25$

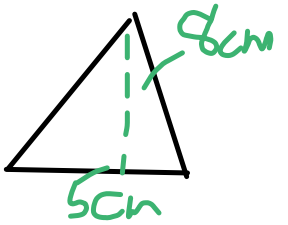
$= 4.5m^3$

Jackie needs 4 times as much concrete

13. a) Prediction
Prism A

b)





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

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

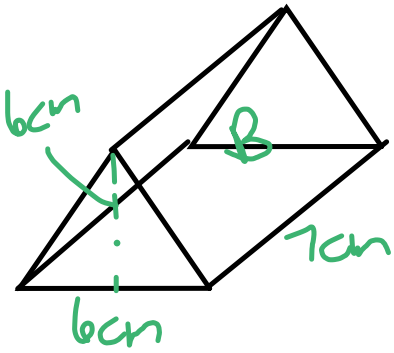
$= \frac{40}{2}$

$= 20cm^2$

$Vol = A_b \times h$

$= 20 \times 9$

$= 180cm^3$



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

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

$= \frac{36}{2}$

$= 18cm^2$

$V = A_b \times h$

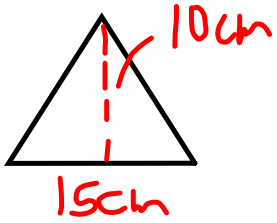
$= 18 \times 7$

$= 126cm^3$

Prediction was correct

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

14 sketch



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

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

$= \frac{150}{2}$

$= 75 cm^2$

Vol $= A_b \times h$

$= 75 \times 30$

$= 2250 cm^3$

b) Contains 1350 ml of water

depth = ?

1350 ml = 1350 cm^3

Vol = $A_{base} \times h$

$1350 = 75 \times h$

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

The depth would be 18cm

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

15. Volume = $198\ cm^3$

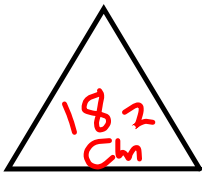
$A_{base} = 18$

$Vol = A_{base} \times h$

$198 = 18 \times h$

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

$11 = h$



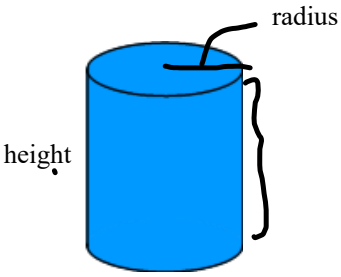
$18 = \frac{b \times h}{2}$

$36 = b \times h$

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

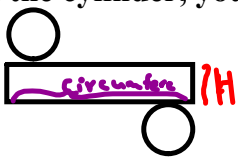
Surface Area of a Cylinder

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?



The top and bottom are both circles.

If you unroll the curved face of the cylinder, you will get a rectangle.



One side of the rectangle is the height of the cylinder, and

the other side of the rectangle is the circumference of the circle

Step 1) Find the area of the circle $A_{\circ} = \pi r^2$

Step 2) Find the circumference of the circle $Cir = 2\pi r$

Step 3) Find the area of the rectangle A = bxh $A_{\square} = (2\pi r)\,H$

= circumference x h

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

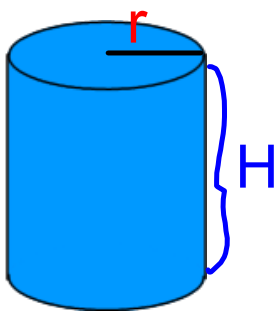
$2A_{\circ} + A_{\square}$

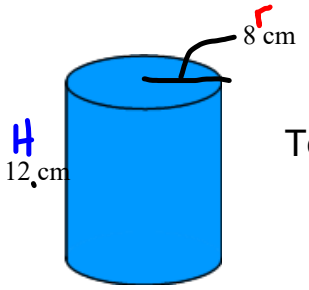
$$SA_{cyl} = 2\pi r^2 + 2\pi r h$$

Total SA_{cyl} = 2Circles + Rectangle

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

$= [2 \times 3.14 \times r \times r] + [2 \times 3.14 \times r \times H]$





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]

Fill in the radius and the Height of the cylinder

= [2 x 3.14 x 8cm x 8cm] + [2 x 3.14 x 8cm x 12cm]

Use a calculator and

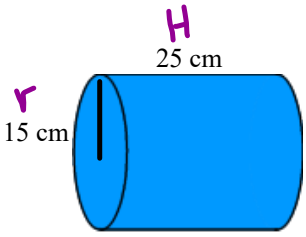
=

= [401.92 cm^2] + [602.88 cm^2]

= 1004.8 cm^2

Your Turn

Find the surface area



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]

Fill in the radius and the Height of the cylinder

= [2 x 3.14 x 15cm x 15cm] + [2 x 3.14 x 15cm x 25cm]

Use a calculator and multiply each bracket separately

= [1413 cm^2] + [2355 cm^2]

= 3768 cm^2

Class/Homework

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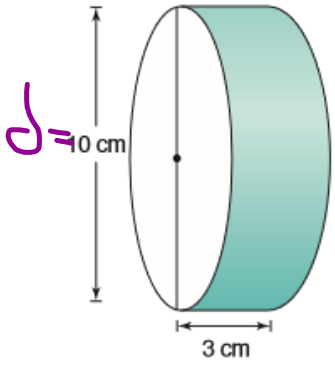
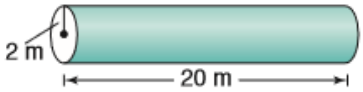
6(b, c) MAKE sure to use radius NOT diameter $r = \frac{d}{2}$

#9

6 b)



c)



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