

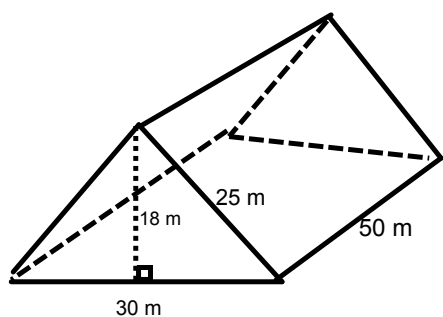


Warm Up Grade 8

May 20, 2016



Find the volume



$$\begin{aligned}
 A_{\Delta} &= \frac{b \times h}{2} \\
 &= \frac{30\text{m} \times 18\text{m}}{2} \\
 &= \frac{540\text{m}^2}{2} \\
 &= 270\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= A_{\Delta} \times H \\
 &= 270\text{m}^2 \times 50\text{m} \\
 &= 13500\text{m}^3
 \end{aligned}$$

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1. If a rectangular prism is cut in half, each of the triangular prism will be the same and each will be half the volume of the rectangular prism

2. In a triangular prism, the only face that can be used as the base is the triangle.

$$3a) \text{ Vol of Rect Prism} = 450 \text{ cm}^3$$

$$\begin{array}{l} \text{Volume of Each} \\ \text{Triangular Prism} \end{array} = \frac{450}{2} = 225 \text{ cm}^3$$

$$b) \text{ Vol of Rect Prism} = 624 \text{ cm}^3$$

$$\begin{array}{l} \text{Vol of each} \\ \text{Triangular Prism} \end{array} = \frac{624}{2} = 312 \text{ cm}^3$$

Homework
Solutions

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

$$\begin{aligned} \text{Vol} &= A_{\text{base}} \times h \\ &= 9.2 \times 2.3 \\ &= 21.16 \text{ cm}^3 \end{aligned}$$

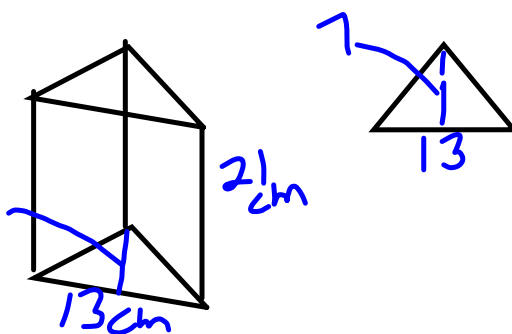
$$\begin{array}{r} 9.2 \\ + 2.3 \\ \hline 276 \\ 1840 \\ \hline 21.16 \end{array}$$

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

$$\begin{aligned} \text{Vol} &= A_{\text{base}} \times h \\ &= 43.5 \times 5 \\ &= 217.5 \text{ cm}^3 \end{aligned}$$

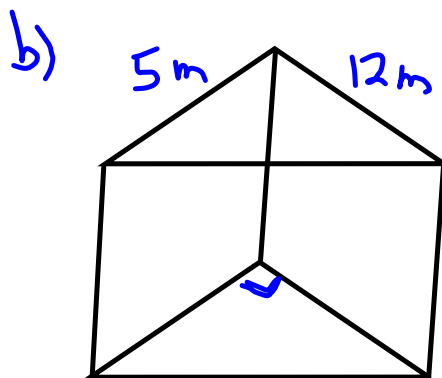
$$c) A_{\text{base}} = 3 \text{ m}^2 \quad h = 15 \text{ m}$$

$$\begin{aligned} \text{Vol} &= A_{\text{base}} \times h \\ &= 3 \times 15 \\ &= 45 \text{ m}^3 \end{aligned}$$

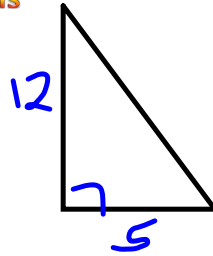
5.
a)

$$\begin{aligned} A_{\text{base}} &= \frac{b \times h}{2} \\ &= \frac{13 \times 7}{2} \\ &= \frac{91}{2} \\ &= 45.5 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Vol} &= A_{\text{base}} \times h \\ &= 45.5 \times 21 \\ &= 955.5 \text{ cm}^3 \end{aligned}$$

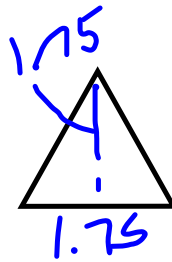
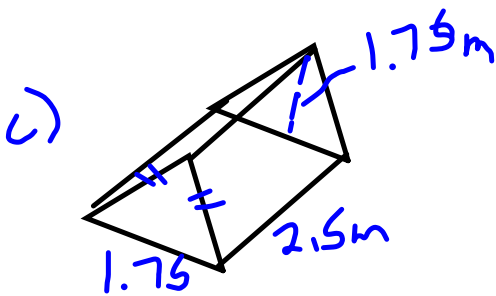


Homework
Solutions



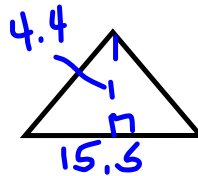
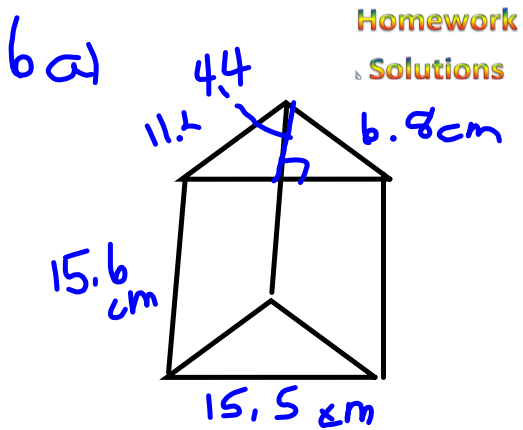
$$\begin{aligned}
 A_{\text{base}} &= \frac{b \times h}{2} \\
 &= \frac{12 \times 5}{2} \\
 &= \frac{60}{2} \\
 &= 30 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 &= 30 \times 8 \\
 &= 240 \text{ m}^3
 \end{aligned}$$



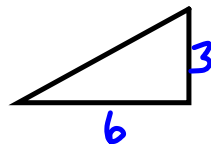
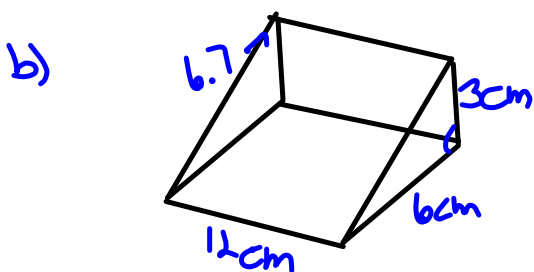
$$\begin{aligned}
 A_b &= \frac{b \times h}{2} \\
 &= \frac{1.75 \times 1.75}{2} \\
 &= \frac{3.0625}{2} \\
 &= 1.53125 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 &= 1.53125 \times 2.5 \\
 &= 3.828125 \text{ m}^3 \\
 &\text{or } 3.8 \text{ m}^3
 \end{aligned}$$



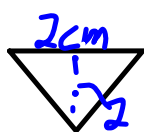
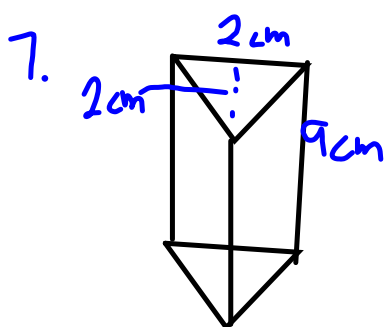
$$\begin{aligned}
 A_{\text{base}} &= \frac{b \times h}{2} \\
 &= \frac{15.5 \times 4.4}{2} \\
 &= \frac{68.2}{2} \\
 &= 34.1 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 &= 34.1 \times 15.6 \\
 &= 531.96 \text{ cm}^3
 \end{aligned}$$



$$\begin{aligned}
 A_{\text{base}} &= \frac{b \times h}{2} \\
 &= \frac{12 \times 3}{2} \\
 &= \frac{36}{2} \\
 &= 18 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 &= 18 \times 6 \\
 &= 108 \text{ cm}^3
 \end{aligned}$$



Homework
Solutions

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

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

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

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

$$\text{Vol} = A_b \times h$$

$$= 2 \times 9$$

$$= 18 \text{ cm}^3$$

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

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

$$= 7.5 \text{ cm}$$

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

Solutions

a) $S = _ \times _$

$A_b = 1 \text{ cm}^2$ $h = 5 \text{ cm}$
 $A_b = 2 \text{ cm}^2$ $h = 2.5 \text{ cm}$

b) $9 \text{ m}^3 = _ \times _$

$A_b = 1 \text{ m}^2$, $h = 9 \text{ m}$
 $A_b = 3 \text{ m}^2$, $h = 3 \text{ m}$
 $A_b = 9 \text{ m}^2$, $h = 1 \text{ m}$

c) $8 \text{ m}^3 = _ \times _$

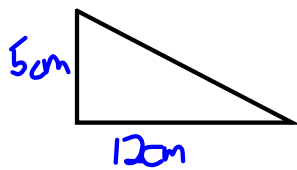
$A_b = 1 \text{ m}^2$ $h = 8 \text{ m}$
 $A_b = 2 \text{ m}^2$ $h = 4 \text{ m}$
 $A_b = 4 \text{ m}^2$ $h = 2 \text{ m}$
 $A_b = 8 \text{ m}^2$ $h = 1 \text{ m}$

d) $18 \text{ cm}^3 = _ \times _$

$A_b = 2 \text{ m}^2$ $A = 9 \text{ m}$
 $A_b = 3 \text{ m}^2$ $A = 6 \text{ m}$

b) To find all possibilities, list the factors.

10. Sketch

Homework
Solutions

$$\begin{aligned}
 A_b &= \frac{b \times h}{2} \\
 &= \frac{12 \times 5}{2} \\
 &= \frac{60}{2} \\
 &= 30 \text{ cm}^2
 \end{aligned}$$

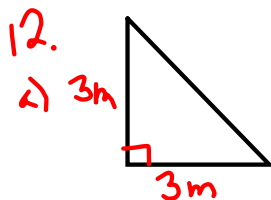
$$\begin{aligned}
 \text{Vol} &= A_b \times h \\
 &= 30 \times 4 \\
 &= 120 \text{ cm}^3
 \end{aligned}$$

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

$$\begin{aligned}
 11. \quad \text{Vol} &= A_{\text{base}} \times h \\
 50 &= A_{\text{base}} \times 5 \\
 &= 10 \times 5
 \end{aligned}$$

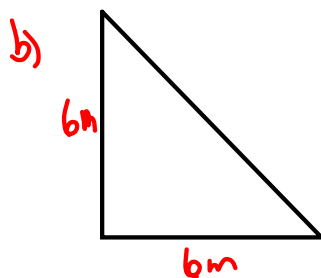
Homework
Solutions

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



$$\begin{aligned}
 A_b &= \frac{b \times h}{2} \\
 &= \frac{3 \times 3}{2} \\
 &= \frac{9}{2} \\
 &= 4.5 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 &= 4.5 \times 0.25 \\
 &= 1.125 \text{ m}^3
 \end{aligned}$$

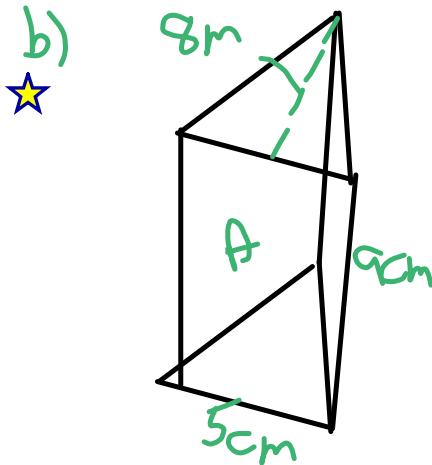


$$\begin{aligned}
 A &= \frac{b \times h}{2} \\
 &= \frac{6 \times 6}{2} \\
 &= \frac{36}{2} \\
 &= 18 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_b \times h \\
 &= 18 \times 0.25 \\
 &= 4.5 \text{ m}^3
 \end{aligned}$$

Jackie needs 4 times as much concrete

13. a) Prediction
Prism A



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

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

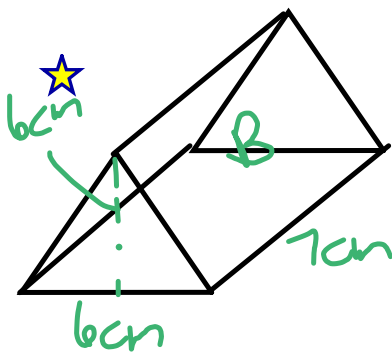
$$= \frac{40}{2}$$

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

$$Vol = A_b \times h$$

$$= 20 \times 9$$

$$= 180 \text{ cm}^3$$



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

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

$$= \frac{36}{2}$$

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

$$V = A_b \times h$$

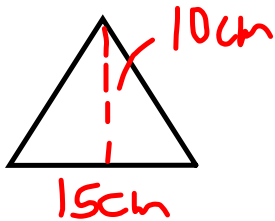
$$= 18 \times 7$$

$$= 126 \text{ cm}^3$$

Prediction was correct

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

1.4 sketch



$$\begin{aligned}
 A_p &= \frac{b \times h}{2} \\
 &= \frac{15 \times 10}{2} \\
 &= \frac{150}{2} \\
 &= 75 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Vol} &= A_p \times h \\
 &= 75 \times 30 \\
 &= 2250 \text{ cm}^3
 \end{aligned}$$

b) Contains 1350 ml of water
depth = ?

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

$$\begin{aligned}
 \text{Vol} &= A_{\text{base}} \times h \\
 1350 &= 75 \times h
 \end{aligned}$$

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

The depth would be
18cm

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

15. Volume = 198 cm^3
 Area = 18

Vol = Area \times h
 $198 = 18 \times h$

$\frac{198}{18} = h$
 $11 = h$

$11 = h$



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

$36 = b \times h$

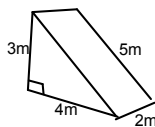
Base of Δ , Height of Δ , Height of Prism

- 1
- 2
- 3
- 4
- 6
- 9

- 36
- 18
- 12
- 9
- 6
- 4

- 11
- 11
- 11
- 11
- 11
- 11

★ 17a)



Atri = $(bxh)/2$
 $= (3m \times 4m) / 2$
 $= 12m^2 / 2$
 $= 6m^2$

Arec = $b \times h$
 $= 4m \times 2m$
 $= 8m^2$

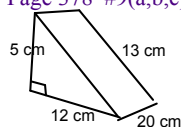
Arec = $b \times h$
 $= 5m \times 2m$
 $= 10m^2$

Arec = $b \times h$
 $= 3m \times 2m$
 $= 6m^2$

Total S.A = 2(Triangles) + rec + rec + rec
 $= 2(6m^2) + 8m^2 + 10m^2 + 6m^2$
 $= 12m^2 + 8m^2 + 10m^2 + 6m^2$
 $= 36m^2$

Volume = Area of Tri \times Depth
 $= 6m^2 \times 2m$
 $= 12m^3$

Page 378 #9(a,b,c)

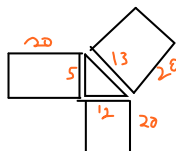


a)

Atri = $(bxh)/2$
 $= (5 \text{ cm} \times 12 \text{ cm}) / 2$
 $= 60 \text{ cm}^2 / 2$
 $= 30 \text{ cm}^2$

Volume = Area of Tri \times Depth
 $= 30 \text{ cm}^2 \times 20 \text{ cm}$
 $= 600 \text{ cm}^3$

b)



c)

Atri = $(bxh)/2$
 $= (5 \text{ cm} \times 12 \text{ cm}) / 2$
 $= 60 \text{ cm}^2 / 2$
 $= 30 \text{ cm}^2$

Arec = $b \times h$
 $= 13 \text{ cm} \times 20 \text{ cm}$
 $= 260 \text{ cm}^2$

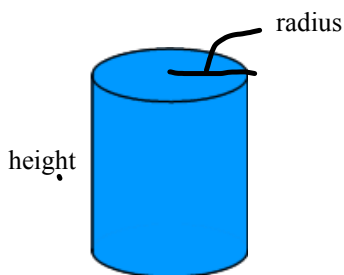
Arec = $b \times h$
 $= 12 \text{ cm} \times 20 \text{ cm}$
 $= 240 \text{ cm}^2$

Arec = $b \times h$
 $= 5 \text{ cm} \times 20 \text{ cm}$
 $= 100 \text{ cm}^2$

Total S.A = 2(Triangles) + rec + rec + rec
 $= 2(30 \text{ cm}^2) + 260 \text{ cm}^2 + 240 \text{ cm}^2 + 100 \text{ cm}^2$
 $= 60 \text{ cm}^2 + 260 \text{ cm}^2 + 240 \text{ cm}^2 + 100 \text{ cm}^2$
 $= 660 \text{ cm}^2$

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 circle

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 $A_0 = \pi r^2$ $2\pi r$

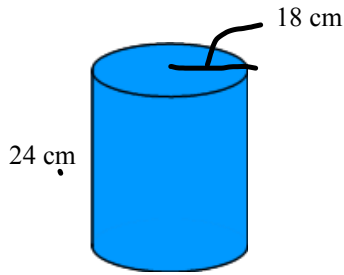
Step 2) Find the circumference of the circle

Step 3) Find the area of the rectangle $A = b \times h$

= circumference \times h

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

$$\begin{aligned}
 S.A._{cyl} &= 2\pi r^2 + 2\pi r H \\
 &= 2(3.14)(r)^2 + 2(3.14)(r)(H)
 \end{aligned}$$



Step 1) Find the area of the circle

Step 2) Find the circumference of the circle

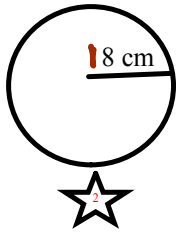
Step 3) Find the area of the rectangle $A = b \times h$

= circumference \times h

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

can do together

Top and Bottom



Step 1)

Area of circle =

Curved Face



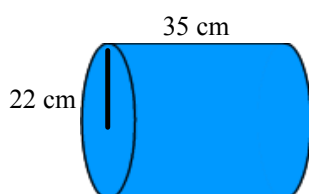
Step 2 & 3)

$$\begin{aligned}
 S.A_{cyl} &= 2\pi r^2 + 2\pi r H \\
 &= 2(3.14)(18\text{ cm})^2 + 2(3.14)(18\text{ cm})(24\text{ cm}) \\
 &= 2(3.14)(324\text{ cm}^2) + 2(3.14)(18\text{ cm})(24\text{ cm}) \\
 &= 2034.72\text{ cm}^2 + 2712.96\text{ cm}^2 \\
 &= 4747.68\text{ cm}^2
 \end{aligned}$$

Step 4)

Total Surface Area =

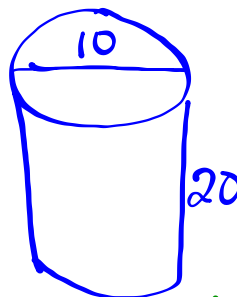
Find the surface area

Your Turn

$$\begin{aligned}
 S.A. \text{ cyl} &= 2\pi r^2 + 2\pi rH \\
 &= 2(3.14)(22\text{cm})^2 + 2(3.14)(22\text{cm})(35\text{cm}) \\
 &= 2(3.14)(484\text{cm}^2) + 2(3.14)(22\text{cm})(35\text{cm}) \\
 &= 3039.52\text{cm}^2 + 4835.6\text{cm}^2 \\
 &= 7875.12\text{cm}^2
 \end{aligned}$$

Class/Homework

Worksheet



$$\begin{array}{l} d = 10 \\ r = 5 \end{array}$$

$$S.A_{cylinder} = 2\pi r^2 + 2\pi rH$$
$$2(3.14)(\quad)^2 + 2(3.14)(\quad)(\quad)$$

Attachments

cylinder worksheet.pdf