

Warm Up Grade 8

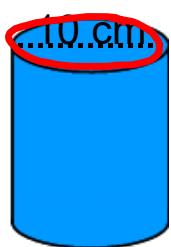
May 25, 2018



Find the Surface Area

$$\text{diameter} = 10 \text{ cm}$$

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



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

$$= 2 \times 3.14 \times (5 \text{ cm})^2 + 2 \times 3.14 \times (5 \text{ cm}) (20 \text{ cm})$$

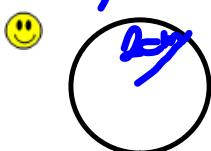
$$\text{height} = \underbrace{2 \times 3.14 \times 25 \text{ cm}^2}_{157 \text{ cm}^2} + \underbrace{2 \times 3.14 \times 5 \text{ cm} \times 20 \text{ cm}}_{628 \text{ cm}^2}$$

$$157 \text{ cm}^2 + 628 \text{ cm}^2$$

$$785 \text{ cm}^2$$

Homework pg. 213 # 8-12, 16

8a)



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

$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 2^2 \\ &= 3.14 \times 4 \\ &= 12.56 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} \text{A} &= \pi d \\ &= 3.14 \times 4 \\ &= 12.56 \end{aligned}$$

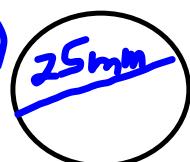
15cm

$$\begin{aligned} A &= l \times w \\ &= 15 \times 12.56 \\ &= 188.4 \end{aligned}$$

$$\begin{aligned} SA &= 2 \times 12.56 + 188.4 \\ &= 25.12 + 188.4 \\ &= 213.52 \text{ cm}^2 \end{aligned}$$

.

b)



$$\begin{aligned} d &= 25 \\ r &= 12.5 \end{aligned}$$



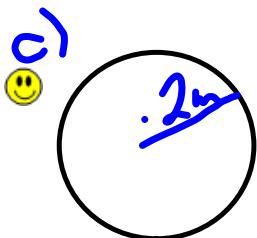
$$\begin{aligned} \text{A} &= \pi d \\ &= 3.14 \times 25 \\ &= 78.5 \end{aligned}$$

230mm

$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 12.5^2 \\ &= 3.14 \times 156.25 \\ &= 490.625 \text{ mm}^2 \end{aligned}$$

$$\begin{aligned} A &= l \times w \\ &= 230 \times 78.5 \\ &= 18055 \end{aligned}$$

$$\begin{aligned} SA &= 2 \times 490.625 + 18055 \\ &= 981.25 + 18055 \\ &= 19036.25 \text{ mm}^2 \end{aligned}$$



$$\begin{aligned}r &= 0.2 \\d &= 0.4\end{aligned}$$



$$\begin{aligned}\pi d \\3.14 \times 0.4 \\1.256\end{aligned}$$

2.8

$$\begin{aligned}A &= \pi r^2 \\&= 3.14 \times 0.2^2 \\&= 3.14 \times 0.04 \\&= 0.1256 \text{ m}^2\end{aligned}$$

$$\begin{aligned}A &= l \times w \\&= 2.8 \times 1.256 \\&= 3.5168 \text{ m}^2\end{aligned}$$

$$\begin{aligned}SA &= 2 \times 0.1256 + 3.5168 \\&= 0.2512 + 3.5168 \\&= 3.768 \text{ m}^2\end{aligned}$$



$$\begin{aligned}A &= \pi r^2 \\&= 3.14 \times 1.9^2 \\&= 3.14 \times 3.61 \\&= 11.3354 \text{ m}^2\end{aligned}$$



12.7

$$\begin{aligned}\pi d \\3.14 \times 3.8 \\11.932\end{aligned}$$

$$\begin{aligned}A &= l \times w \\&= 11.932 \times 12\pi \\&= 151.5364\end{aligned}$$

$$\begin{aligned}SA &= 2 \times 11.3354 + 151.5364 \\&= 22.6708 + 151.5364 \\&= 174.2072 \text{ m}^2\end{aligned}$$

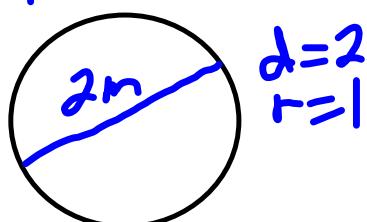
10. Curved Face



$$\begin{aligned} & \text{πd} \\ & 3.14 \times 1.5 \\ & 4.71 \text{ m} \end{aligned}$$

2.5

$$\begin{aligned} A &= l \times w \\ &= 4.71 \times 2.5 \\ &= 11.775 \text{ m}^2 \end{aligned}$$



$$\begin{aligned} d &= 2 \\ r &= 1 \end{aligned}$$



$$\begin{aligned} & \text{πd} \\ & 3.14 \times 2 \\ & 6.28 \end{aligned}$$

$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 1^2 \\ &= 3.14 \text{ cm}^2 \\ &= 3.14 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} & 14 \\ A &= l \times w \\ &= 14 \times 6.28 \\ &= 87.92 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} SA &= 2 \times 3.14 + 87.92 \\ &= 6.28 + 87.92 \\ &= 94.2 \text{ cm}^2 \end{aligned}$$

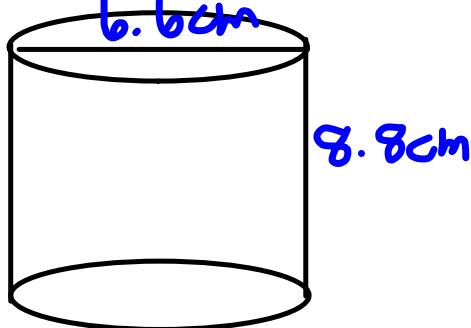
)b) $1 \text{ m}^2 = 10000 \text{ cm}^2$

$$40 \text{ m}^2 = 400000 \text{ cm}^2$$

$$\frac{400000}{94.2} = 4246.3$$

4246 cylinders can be painted

12.



$$\begin{aligned} A &= \pi d \times h \\ &= 21.7 \times 8.8 \\ &= 191.17 \text{ cm}^2 \end{aligned}$$

$\pi d + 1 \text{ cm overbo}$

$$\begin{array}{r} 3.14 \times 6.6 + 1 \\ 20.724 + 1 \\ \hline 21.724 \end{array}$$

13.



$$\begin{aligned} d &= 6.5 \text{ cm} \\ &= 0.65 \text{ m} \\ r &= 0.325 \text{ m} \end{aligned}$$

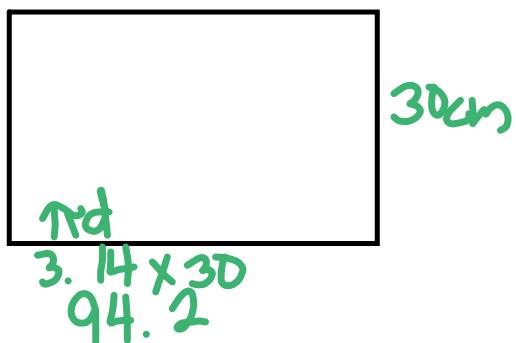
$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 0.325^2 \\ &= 3.14 \times 0.105625 \\ &= 0.3316 \end{aligned}$$

$$\begin{aligned} SA &= 2 \times 0.3316 + 3.0615 \\ &= 0.6632 + 3.0615 \\ &= 3.7247 \text{ m}^2 \\ &= 37247 \text{ cm}^2 \end{aligned}$$

$$\begin{array}{r} 1.5m \\ \hline \pi d \\ 3.14 \times 0.65 \\ 2.041 \end{array}$$

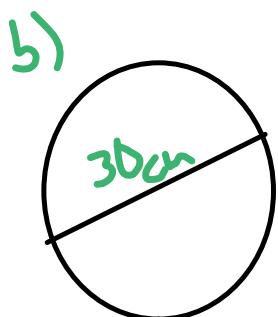
$$\begin{aligned} A &= \pi r^2 \\ &= 2.041 \times 1.5 \\ &= 3.0615 \end{aligned}$$

14. @ Shell is the curved face



$$\begin{aligned} A &= l \times \varrho \\ &= 94.2 \times 30 \\ &= 2826 \text{ cm}^2 \end{aligned}$$

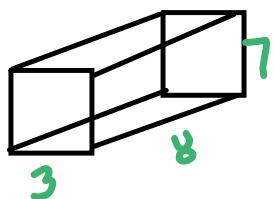
5 layers
 5×2826
 14130 cm^2
 of sheathing needed



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 15^2 \\ &= 3.14 \times 225 \\ &= 706.5 \end{aligned}$$

2 heads 706.5×2
 1413 cm^2

15. Rectangular Box



$$A = l \times w \\ = 8 \times 7 \\ = 56 \text{ cm}^2$$

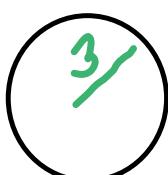
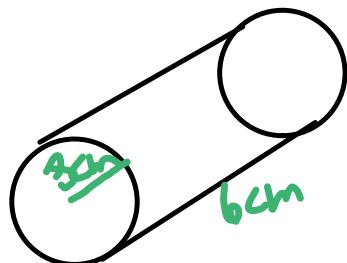


$$A = l \times w \\ = 7 \times 3 \\ = 21 \text{ cm}^2$$

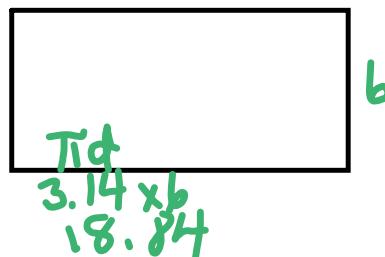


$$A = l \times w \\ = 8 \times 3 \\ = 24 \text{ cm}^2$$

$$SA = 2 \times 56 + 2 \times 21 + 2 \times 24 \\ = 112 + 42 + 48 \\ = 202 \text{ cm}^2$$



$$A = \pi r^2 \\ = 3.14 \times 3^2 \\ = 3.14 \times 9 \\ = 28.26$$



$$A = l \times w \\ = 18.84 \times 6 \\ = 113.04$$

$$SA = 2 \times 28.26 + 113.04 \\ = 56.52 + 113.04 \\ = 169.56 \text{ cm}^2$$

The cylindrical tube uses less material

16. Curved SA = 660 cm²
 Height 10cm

$$\boxed{\begin{matrix} x \\ 660 \text{ cm}^2 \end{matrix}} \text{ 10}$$

$$\text{a) } A = l \times w \\ = \text{Cir} \times h$$

$$660 = \text{Cir} \times 10$$

$$66 = \text{Cir}$$

$$\text{b) } \text{Cir} = \pi d$$

$$66 = 3.14 \times d$$

$$\frac{66}{3.14} = d$$

$$21.02 = d$$

$$\text{radius} = \frac{21.02}{2} \\ = 10.5 \text{ cm}$$

$$x = \frac{660}{10}$$

$$x = 66$$

↑
circum

$$2\pi r = 66$$

$$\frac{6.28 r}{6.28} = \frac{66}{6.28}$$

$$\boxed{r = 10.5}$$

$$\text{c) } A_O = \pi r^2 \\ = 3.14 \times 10.5^2 \\ = 3.14 \times 110.25 \\ = 346.84$$

$$\text{d) } SA = 2 \text{ Circular Bases} + \text{Curved Face} \\ = 2 \times 346.84 + 660 \\ = 693.68 + 660 \\ = 1353.68 \text{ cm}^2$$

Volume of a Cylinder

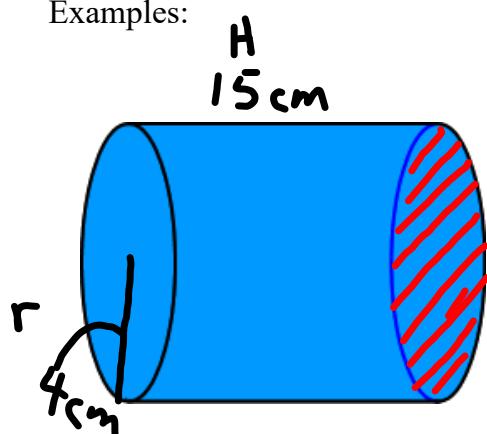
We use the same formula to find the volume of a cylinder.

$$\star \boxed{\text{Volume} = \text{Area of the base} \times \text{height}} \star$$

What is the base of a cylinder? _____

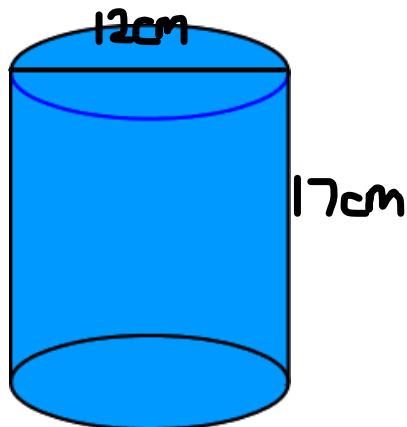
$$\star \boxed{\text{Area of Circle} = \pi r^2} \star$$

Examples:



$$\begin{aligned}
 V &= A_{\text{base}} \times H \\
 &= \pi r^2 \times H \\
 &= 3.14 \times (4\text{cm})^2 \times 15\text{cm} \\
 &= 3.14 \times 16\text{cm}^2 \times 15\text{cm} \\
 &= 753.6 \text{ cm}^3
 \end{aligned}$$

Ex 2)

Your Turn

$$\begin{aligned}
 V &= A_{\text{base}} \times H \\
 &= 113.03 \text{ cm}^2 \times 17 \text{ cm} \\
 &= 1921.68 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 A_{\text{base}} &= \pi r^2 \\
 &= 3.14 \times (6 \text{ cm})^2 \\
 &= 3.14 \times 36 \text{ cm}^2 \\
 &= 113.04 \text{ cm}^2
 \end{aligned}$$

Class/Homework

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