

Warm Up Grade 8

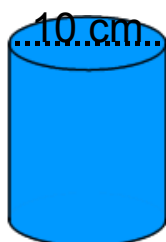


June 1, 2017



~~18~~ more class days
15½

Find the Surface Area



$$\begin{aligned}
 SA_{\text{cyl}} &= 2 \text{circ} + \text{Rect} \\
 &= 2 \pi r^2 + 2 \pi r H \\
 &= 2 (3.14) (5 \text{ cm})^2 + 2 (3.14) (5 \text{ cm}) (20 \text{ cm}) \\
 &= 2 (3.14) 25 \text{ cm}^2 + 2 (3.14) (5 \text{ cm}) (20 \text{ cm}) \\
 &= \underline{157 \text{ cm}^2} + \underline{628 \text{ cm}^2} \\
 &= 785 \text{ cm}^2
 \end{aligned}$$

Homework pg. 213# 8-12, 16

8a)



$$r = 2$$

$$d = 4$$



$$\pi d$$

$$3.14 \times 4$$

$$12.56$$

$$A = \pi r^2$$

$$= 3.14 \times 2^2$$

$$= 3.14 \times 4$$

$$= 12.56 \text{ cm}^2$$

15 cm

$$A = l \times w$$

$$= 15 \times 12.56$$

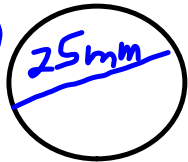
$$= 188.4$$

$$SA = 2 \times 12.56 + 188.4$$

$$= 25.12 + 188.4$$

$$= 213.52 \text{ cm}^2$$

b)



$$d = 25$$

$$r = 12.5$$



$$\pi d$$

$$3.14 \times 25$$

$$78.5$$

$$A = \pi r^2$$

$$= 3.14 \times 12.5^2$$

$$= 3.14 \times 156.25$$

$$= 490.625 \text{ mm}^2$$

$$A = l \times w$$

$$= 230 \times 78.5$$

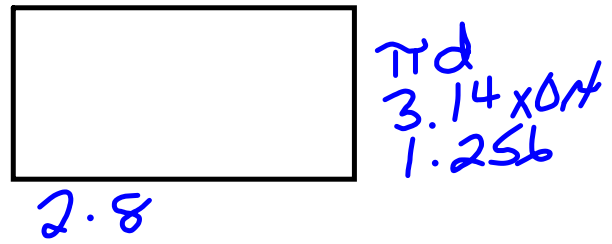
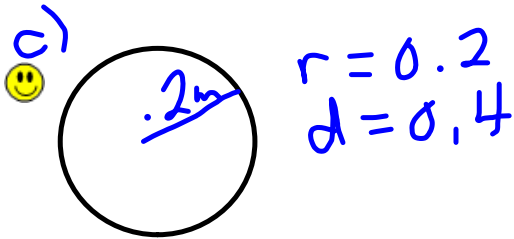
$$= 18055$$

230 mm

$$SA = 2 \times 490.625 + 18055$$

$$= 981.25 + 18055$$

$$= 19036.25 \text{ mm}^2$$



$$A = \pi r^2$$

$$= 3.14 \times 0.2^2$$

$$= 3.14 \times 0.04$$

$$= 0.1256 \text{ m}^2$$

$$A = l \times w$$

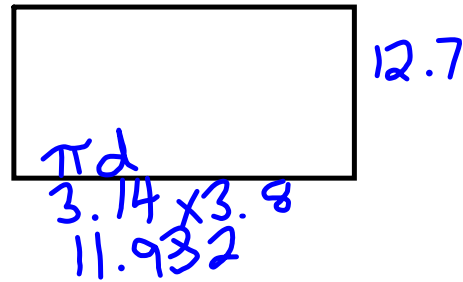
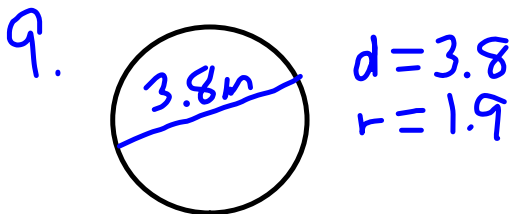
$$= 2.8 \times 1.256$$

$$= 3.5168 \text{ m}^2$$

$$SA = 2 \times 0.1256 + 3.5168$$

$$= 0.2512 + 3.5168$$

$$= 3.768 \text{ m}^2$$



$$A = \pi r^2$$

$$= 3.14 \times 1.9^2$$

$$= 3.14 \times 3.61$$

$$= 11.3354 \text{ m}^2$$

$$A = l \times w$$

$$= 11.932 \times 12.7$$

$$= 151.5364$$

$$SA = 2 \times 11.3354 + 151.5364$$

$$= 22.6708 + 151.5364$$

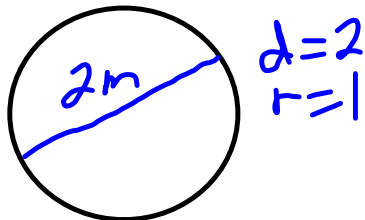
$$= 174.2072 \text{ m}^2$$

10. Curved Face



$$\begin{aligned} \pi r d \\ 3.14 \times 1.5 \\ 4.71 \text{ m} \end{aligned}$$

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



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



$$\begin{aligned} \pi d \\ 3.14 \times 2 \\ 6.28 \end{aligned}$$

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

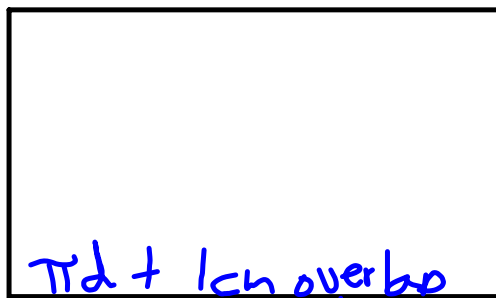
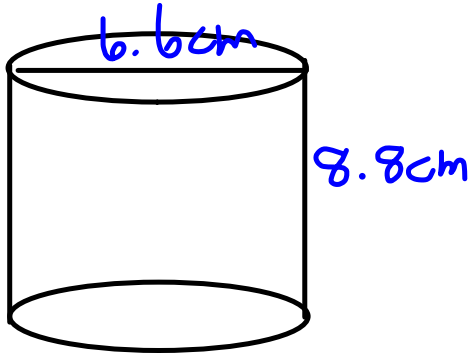
$$\begin{aligned} SA &= 2 \times 3.14 + 87.92 \\ &= 6.28 + 87.92 \\ &= 94.2 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{b) } 1 \text{ m}^2 &= 10\,000 \text{ cm}^2 \\ 40 \text{ m}^2 &= 400\,000 \text{ cm}^2 \end{aligned}$$

$$\frac{400\,000}{94.2} = 4246.3$$

4246 cylinders can be painted

12. 😊



$$\begin{aligned} &3.14 \times 6.6 + 1 \\ &20.724 + 1 \\ &21.724 \end{aligned}$$

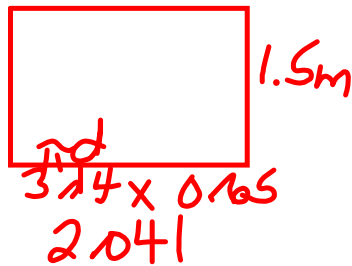
8.8 cm

$$\begin{aligned} A &= l \times w \\ &= 21.724 \times 8.8 \\ &= 191.17 \text{ cm}^2 \end{aligned}$$

13.



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



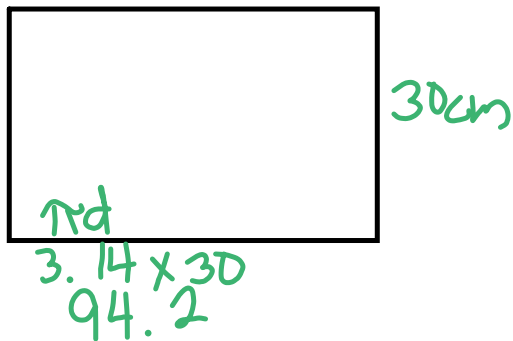
$$\begin{aligned} &3.14 \times 0.65 \\ &2.041 \end{aligned}$$

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

$$\begin{aligned} A &= l \times w \\ &= 2.041 \times 1.5 \\ &= 3.0615 \end{aligned}$$

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

14. a) Shell is the curved face



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

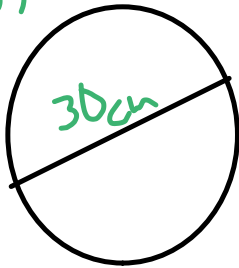
5 layers

$$5 \times 2826_2$$

14130 cm

of sheathing needed

b)

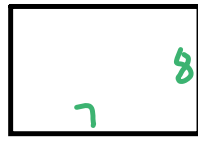
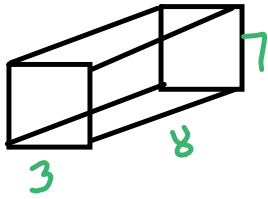


$$\begin{aligned}
 A &= \pi r^2 \\
 &= 3.14 \times 15^2 \\
 &= 3.14 \times 225 \\
 &= 706.5
 \end{aligned}$$

2 heads

$$\begin{aligned}
 &706.5 \times 2 \\
 &1413 \text{ cm}^2
 \end{aligned}$$

15. Rectangular Box



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

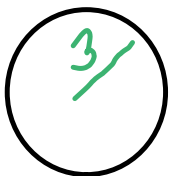
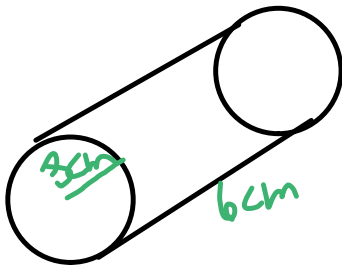


$$\begin{aligned} A &= l \times w \\ &= 7 \times 3 \\ &= 21 \text{ cm}^2 \end{aligned}$$

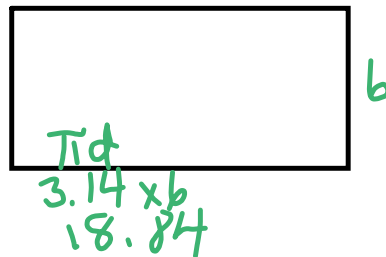


$$\begin{aligned} A &= l \times w \\ &= 8 \times 3 \\ &= 24 \text{ cm}^2 \end{aligned}$$

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



$$\begin{aligned} A &= \pi r^2 \\ &= 3.14 \times 3^2 \\ &= 3.14 \times 9 \\ &= 28.26 \end{aligned}$$



$$\begin{aligned} A &= l \times w \\ &= 18.84 \times 6 \\ &= 113.04 \end{aligned}$$

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

The cylindrical tube uses less material

16. Curved SA = 660 cm^2
 Height 10cm

$$a) A = l \times w$$

$$= \text{Cir} \times h$$

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

$$66 = \text{Cir}$$

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

$$66 = 3.14 \times d$$

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

$$21.02 = d$$

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

$$= 10.51 \text{ cm}$$

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

$$= 3.14 \times 10.51^2$$

$$= 3.14 \times 110.4601$$

$$= 346.84$$

$$d) \text{SA} = 2 \text{ Circular Bases} + \text{Curved Face}$$

$$= 2 \times 346.84 + 660$$

$$= 693.68 + 660$$

$$= 1353.68 \text{ cm}^2$$

Volume of a Cylinder

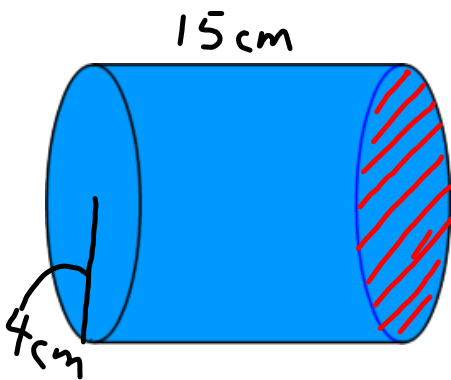
We use the same formula to find the volume of a cylinder.

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

What is the base of a cylinder? **Circle**

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

Examples:



$$\begin{aligned} A_{\text{base}} &= \pi r^2 \\ &= 3.14 (4\text{cm})^2 \\ &= 3.14 \times 16\text{cm}^2 \\ &= 50.74\text{cm}^2 \end{aligned} \quad \begin{aligned} V &= \text{Area base} \times H \\ &= 50.74\text{cm}^2 \times 15\text{cm} \\ &= 761.1\text{cm}^3 \end{aligned}$$

$$A_{\square} = b \times h$$

$$A_{\circ} = \pi r^2$$

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

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

$$V = A_{\text{base}} \times H$$

Cube has ^{Total} SA of 54 cm^2

all edges
are
equal

a) Area of 1 face
 $54 \text{ cm}^2 \div 6 = 9 \text{ cm}^2$

6 Equal faces

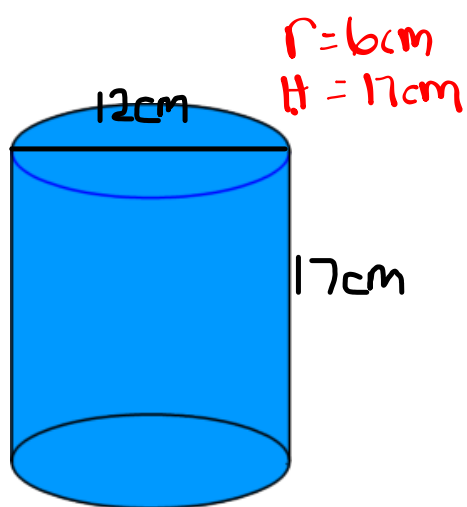
$$A=9$$

b) what is side length?

$$\begin{aligned} \text{Side}_{s_6} &= \sqrt{\text{Area of Square}} \\ &= \sqrt{9} \\ &= 3 \text{ cm} \end{aligned}$$

Ex 2)

Your Turn



Volume Cylinder

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

$$\begin{aligned} V &= A_{\text{base}} \times H \\ &= 113.04\text{ cm}^2 \times 17\text{ cm} \\ &= 1921.68\text{ cm}^3 \end{aligned}$$

Test Outline

3 Multiple Choice

Long Response

1) Cube question

2) Find dimensions when given a volume
 $V = (l \times w) \times h$ of
rec. prism

3) Volume / SA
Triangular Prism

4) Volume / SA
Cylinder

5) Volume / SA
Rectangular Prism

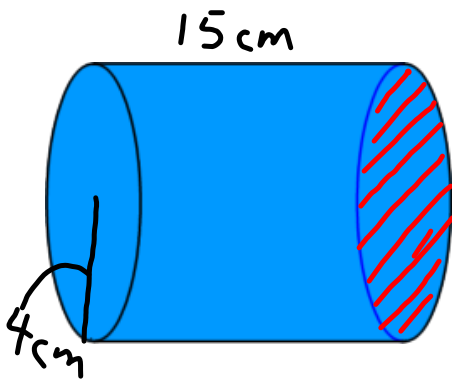
Volume of a Cylinder

We use the same formula, Volume = Area of the base x height to find the volume of a cylinder.

What is the base of a cylinder

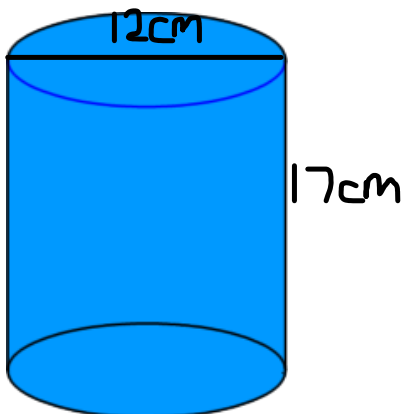
Circle and Area of Circle = πr^2

Examples:



$$\begin{aligned} \text{Vol} &= A_{\text{base}} \times h \\ &= 50.24 \times 15 \\ &= 753.6 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} A_{\text{base}} &= \pi r^2 \\ &= 3.14 \times 4^2 \\ &= 3.14 \times 16 \\ &= 50.24 \text{ cm}^2 \end{aligned}$$



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

$$\begin{aligned} \text{Vol} &= A_{\text{of base}} \times h \\ &= 113.04 \times 17 \\ &= 1921.68 \text{ cm}^3 \end{aligned}$$

Class/Homework

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