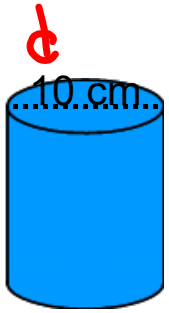
Warm Up Grade 8

Find the Surface Area



$r = 5cm$

$H = 20cm$

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

$2(3.14)(5cm)^2 + 2(3.14)(5cm)(20cm)$

$2(3.14)(25cm^2) + 2(3.14)(5cm)(20cm)$

$157cm^2 + 628cm^2$

$785cm^2$

Homework pg. 213 # 8-12, 16

8a)

$r = 2$

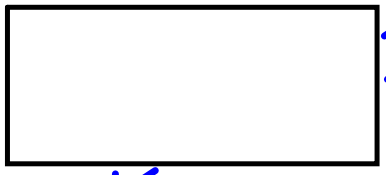
$d = 4$

$A = \pi r^2$

$= 3.14 \times 2^2$

$= 3.14 \times 4$

$= 12.56 cm^2$



15cm

πd

3.14×4

12.56

$A = l \times w$

$= 15 \times 12.56$

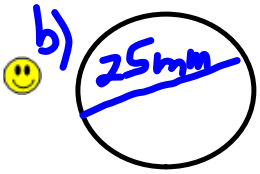
$= 188.4$

$SA = 2 \times 12.56 + 188.4$

$= 25.12 + 188.4$

$= 213.52 cm^2$

b)



$d = 25$

$r = 12.5$

230mm

πd

3.14×25

78.5

$A = \pi r^2$

$= 3.14 \times 12.5^2$

$= 3.14 \times 156.25$

$= 490.625 mm^2$

$A = l \times w$

$= 230 \times 78.5$

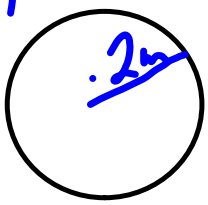
$= 18055$

$SA = 2 \times 490.625 + 18055$

$= 981.25 + 18055$

$= 19036.25 mm^2$

c)



$r = 0.2$
$d = 0.4$

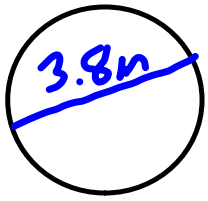
πd
3.14×0.4
1.256

$A = \pi r^2$
$= 3.14 \times 0.2^2$
$= 3.14 \times 0.04$
$= 0.1256\ m^2$

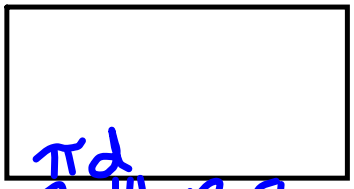
$A = l \times w$
$= 2.8 \times 1.256$
$= 3.5168\ m^2$

$SA = 2 \times 0.1256 + 3.5168$
$= 0.2512 + 3.5168$
$= 3.768\ m^2$

9.



$d = 3.8$
$r = 1.9$



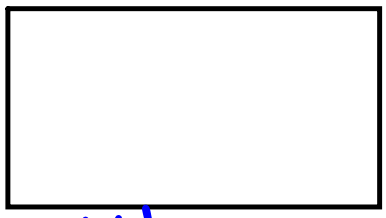
πd
3.14×3.8
11.932

$A = \pi r^2$
$= 3.14 \times 1.9^2$
$= 3.14 \times 3.61$
$= 11.3354\ m^2$

$A = l \times w$
$= 11.932 \times 12.7$
$= 151.5364$

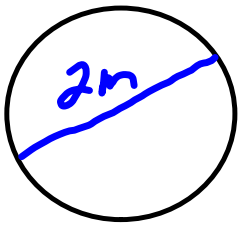
$SA = 2 \times 11.3354 + 151.5364$
$= 22.6708 + 151.5364$
$= 174.2072\ m^2$

10. Curved Face



$A = l \times w$
$= 4.71 \times 2.5$
$= 11.775\ m^2$

11 a)



$A = \pi r^2$
$= 3.14 \times 1^2$
$= 3.14 \times 1$
$= 3.14\ cm^2$

$A = l \times w$
$= 14 \times 6.28$
$= 87.92\ cm^2$

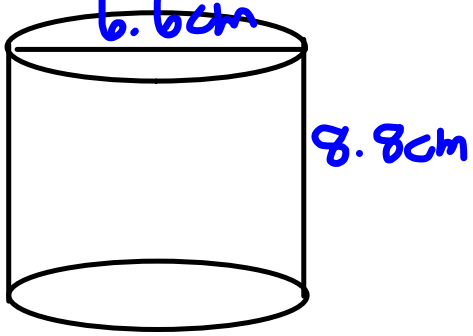
$SA = 2 \times 3.14 + 87.92$
$= 6.28 + 87.92$
$= 94.2\ cm^2$

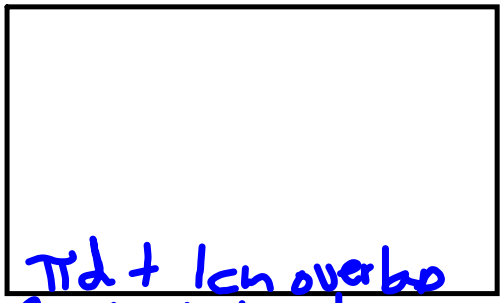
b) $1\ m^2 = 10\,000\ cm^2$
$40\ m^2 = 400\,000\ cm^2$

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

4246 cylinders can be painted

12.





$3.14 \times 6.6 + 1$

$20.724 + 1$

21.724

$A = l \times w$

$= 21.724 \times 8.8$

$= 191.17 cm^2$

13.

$d = 65cm$

$= 0.65m$

$r = 0.325m$

3.14×0.65

2041

$A = \pi r^2$

$= 3.14 \times 0.325^2$

$= 3.14 \times 0.105625$

$= 0.3316$

$A = l \times w$

$= 2.041 \times 1.5$

$= 3.0615$

$SA = 2 \times 0.3316 + 3.0615$

$= 0.6632 + 3.0615$

$= 3.7247 m^2$

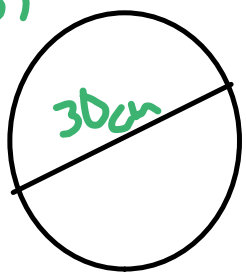
$37247 cm^2$

14. a) Shell is the curved face

$A = l \times p$
$= 94.2 \times 30$
$= 2826 cm^2$

5 layers
5×2826
$14\,130 cm^2$
of sheathing needed

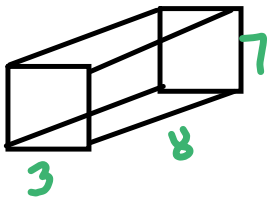
b)

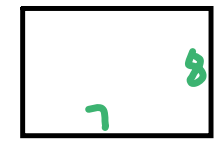


$A = \pi r^2$
$= 3.14 \times 15^2$
$= 3.14 \times 225$
$= 706.5$

2 heads 706.5×2
$1413 cm^2$

15. Rectangular Box



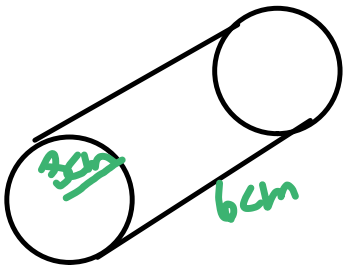


$A = l \times w$
$= 8 \times 7$
$= 56 cm^2$

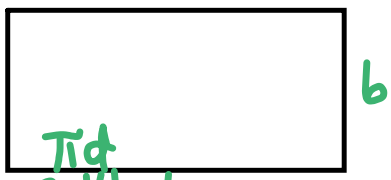
$A = l \times w$
$= 7 \times 3$
$= 21 cm^2$

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

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



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



πd
3.14×6
18.84

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

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

The cylindrical tube uses less material

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

a) $A = l \times w$
$= Cir \times h$
$660 = Cir \times 10$
$66 = Cir$

b) $Cir = \pi d$
$66 = 3.14 \times d$
$\frac{66}{3.14} = d$
$21.02 = d$

radius $= \frac{21.02}{2}$
$= 10.51 cm$

c) $A_0 = \pi r^2$
$= 3.14 \times 10.51^2$
$= 3.14 \times 110.4601$
$= 346.84$

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

Volume of a Cylinder

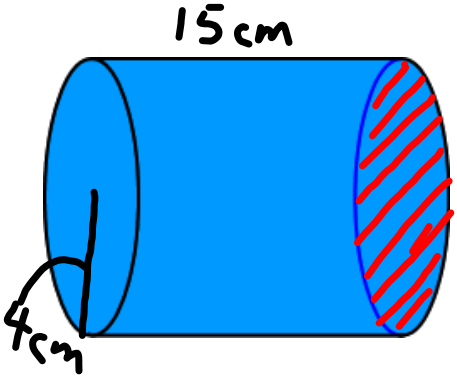
We use the same formula to find the volume of a cylinder.

Volume = Area of the base x height

What is the base of a cylinder? Circle

Area of Circle = πr^2

Examples:



$r = 4cm$

$H = 15cm$

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

$= (3.14)(4cm)^2$

$= (3.14)(16cm^2)$

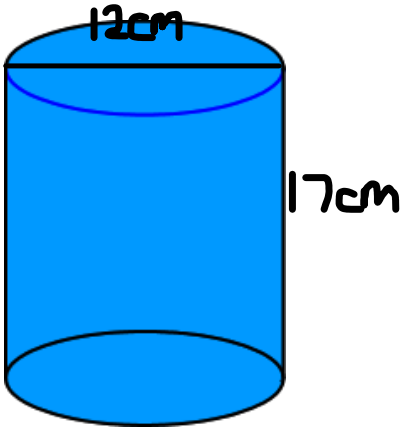
$= 50.24cm^2$

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

$= 50.24cm^2 \times 15cm$

$= 753.6cm^3$

Ex 2)



$d = 12\text{cm} \Rightarrow r = 6\text{cm}$

$h = 17\text{cm}$

Your Turn

$A_0 = \pi r^2$

$= 3.14\,(6\text{cm})^2$

$= 3.14\,(36\text{cm}^2)$

$A_0 = 113.04\text{cm}^2$

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

$= 113.04\text{cm}^2 \times 17\text{cm}$

$= 1921.68\text{cm}^3$

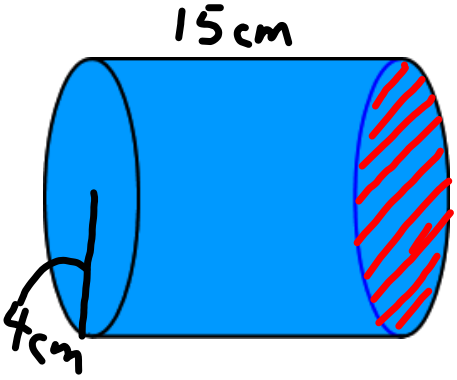
Volume of a Cylinder

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

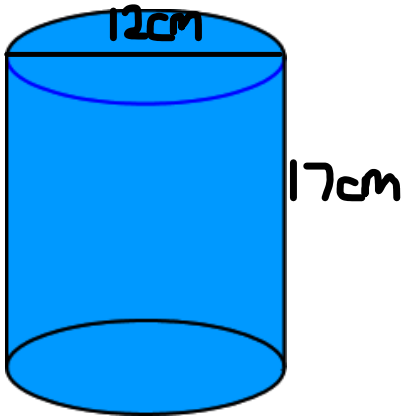
Circle and Area of Circle = πr^2

Examples:



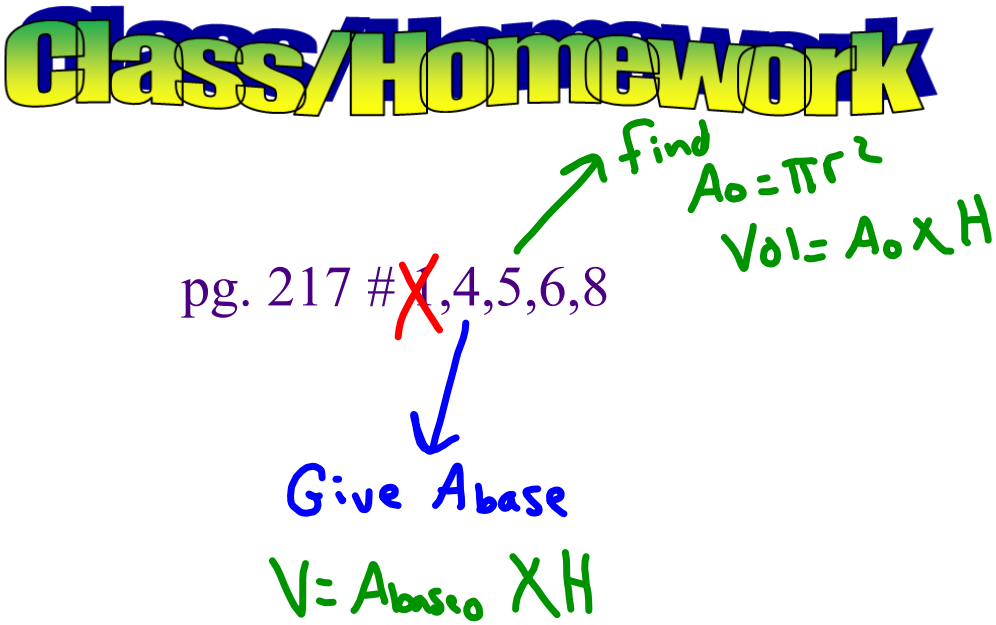
$Vol = A_{base} \times h$
$= 50.24 \times 15$
$= 753.6 cm^3$

$A_{base} = \pi r^2$
$= 3.14 \times 4^2$
$= 3.14 \times 16$
$= 50.24 cm^2$



A of base $= \pi r^2$
$= 3.14 \times 6^2$
$= 3.14 \times 36$
$= 113.04 cm^2$

$Vol = A of b \times h$
$= 113.04 \times 17$
$= 1921.68 cm^3$


Class/Homework
pg. 217 #1,4,5,6,8
find
$A_o = \pi r^2$
$Vol = A_o \times H$
Give A_{base}
$V = A_{base} \times H$