Math 9 – Unit 5: Measurement

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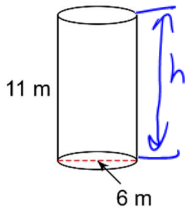
Lesson #3: Cones and Cylinders

Date: February 4, 2018

Learning Goal: We are learning to calculate the surface area and volume of cylinders and cones.

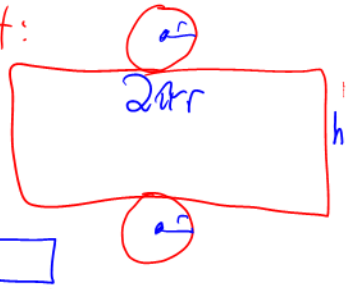
For each figure, draw the net, then calculate the surface area and the volume.

1.



r = 3

Net:



$SA = 2\pi r^2 + 2\pi rh$ (0 | $2\pi rh$: l, w)

$SA = 2(3.14)(3^2) + 2(3.14)(3)(11)$

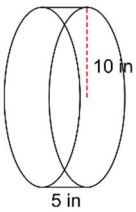
$SA = 263.76\,m^2$

$V = \pi r^2 h$

$V = (3.14)(3^2)(11)$

$V = 310.86\,m^3$

2.



h = 5

r = 10

$SA = 2\pi r^2 + 2\pi rh$

$SA = 2(3.14)(10^2) + 2(3.14)(10)(5)$

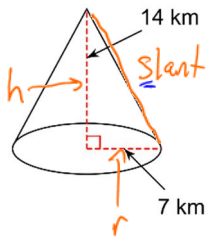
$SA = 942\,in^2$

$V = \pi r^2 h$

$V = (3.14)(10^2)(5)$

$V = 1570\,in^3$

3.



$a^2 + b^2 = c^2$

$r^2 + h^2 = s^2$

$7^2 + 14^2 = s^2$

$49 + 196 = s^2$

$\sqrt{245} = \sqrt{s^2}$

$15.65 = s$

$15.7 = s$

Net:

$SA = \pi r^2 + \pi r s$

$= (3.14)(7)^2 + (3.14)(7)(15.7)$

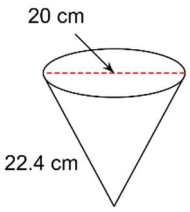
$= 498.95 km^2$

$V = \frac{\text{cylinder}}{3} = \frac{\pi r^2 h}{3}$

$V = \frac{(3.14)(7)^2(14)}{3}$

$V = 718.01 km^3$

4.



$r = 10$

$h =$

$s = 22.4$

$r^2 + h^2 = s^2$

$10^2 + h^2 = 22.4^2$

$h^2 = 501.76 - 100$

$\sqrt{h^2} = \sqrt{401.76}$

$h = 20.04$

$h = 20$ ∴

$SA = \pi r^2 + \pi r s$

$(3.14)(10)^2 + (3.14)(10)(22.4)$

$= 349.54 cm^2$

$V = \frac{\pi r^2 h}{3}$

$V = \frac{(3.14)(10)^2(20)}{3}$

$V = 2093.33 cm^3$

Use the appropriate formula to solve for the missing measurement.

5. A Cylinder has a volume of 2769.48cm^3 with a height of 18cm. What is the length of the radius?

Success Criteria

- I can draw the net of a cylinder or cone
- I can use the appropriate formula to find the surface area or volume of a cone or cylinder
- If given the volume of a cone or cylinder, I can rearrange the equation to find the radius or height.