Warmup: solve for x

a) $36 = 10 - 2x$

$-10 \quad -10$

$26 = -2x$

$\frac{26}{-2} = \frac{-2x}{-2}$

$-13 = x$

b) $42\pi = 5\pi \cdot x^2$

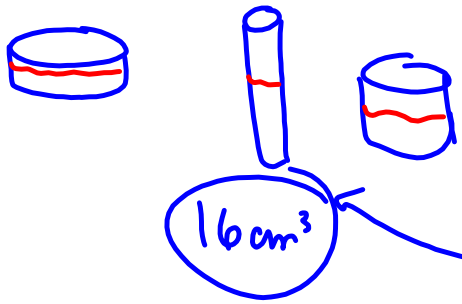
$\frac{131.88}{15.7} = \frac{15.7x^2}{15.7}$

$\sqrt{8.4} = \sqrt{x^2}$

$2.9 = x$

An ice cube measures 2cm by 2cm by 2cm. It melts in a small cylindrical container, and when it is completely liquid, the cylinder is half-full.

What is the volume of the cylindrical container?



$V = 2 \times 2 \times 2$

$= 8 cm^3$

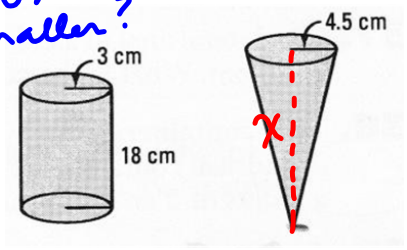
MISSING MEASURES OF A SOLID

Steps:

1. Which volume is given? Is there a volume you can calculate?
2. Write out the formula for the **known** volume.
3. Fill in the formula, including the volume. Call your unknown "x".
4. Work backwards to find the missing measure "x".

bigger? smaller?

Ex. The cylinder and cone have the same volume. What is the height of the cone?



1. Volume of cylinder:

$V = \pi r^2 \cdot h$

$= 3.14 \cdot 3^2 \cdot 18$

$= 508.68\,cm^3$

2. Formula for volume of cone:

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

3. $508.68 = \frac{3.14 \cdot 4.5^2 \cdot x}{3}$ $\quad \frac{3.14 \cdot 4.5^2}{3} = 21.195$

4. $\frac{508.68}{21.195} = \frac{21.195 \cdot x}{21.195}$

$24 = x$ The height of the cone is 24cm

If the volume of a sphere is 36π cm^3, what is its radius?

1. Vol of sphere
2. $V = \frac{4\pi r^3}{3}$
3. $36\pi = \frac{4\pi r^3}{3}$ $\quad \frac{4\pi}{3} = 4.19$
4. $\frac{113.04}{4.19} = \frac{4.19 \cdot x^3}{4.19}$

$\sqrt[3]{26.98} = \sqrt[3]{x^3}$ $\qquad \sqrt{x^2}$

$3 = x$

$\sqrt[3]{27} = 3$

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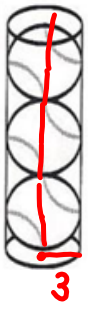
21. Three tennis balls are placed in a cylindrical can. If each ball has a volume of 36π cm^3, what is the volume of the cylindrical can?

(The tennis balls fit exactly in the cylindrical can) _____



$V = \pi r^2 \cdot h$

$= 3.14 \cdot 3^2 \cdot 18 = 508.68\ cm^3$

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26. A prism has a volume of 70 cm^3. If the length of the prism is 7 cm and its height is 5 cm, wh is the prism's total area? _____

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