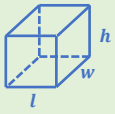
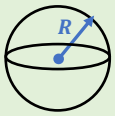
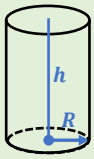
CONCEPT: SOLVING DENSITY PROBLEMS

● Density is defined as _____ divided by _____ ⇒ $\rho = \frac{\quad}{\quad}$ **[Units: ——]**

(amount of stuff) (amount of space taken up)

- Many problems involve relating density, mass, and volume of **geometric shapes,** and converting units**.**

RECTANGULAR PRISM	SPHERE	CYLINDER
		
$V = l \times w \times h$	$V = \frac{4}{3}\pi R^3$	$V = \pi R^2 h$

EXAMPLE**:** The average density of Earth is 5500 kg/m^3**.** If we assume it is approximately a sphere with a radius of 3960mi, what is the mass of Earth? (1 mi ≈ 1609 m)

PRACTICE: A wooden cylinder has a radius of 3.5 cm and a height of 6 cm. If the mass is 161 g, what is the density of the wooden cylinder?

A) 222 kg/m^3
B) 3.767×10^3 kg/m^3
C) 697 kg/m^3
D) 2440 kg/m^3

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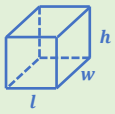
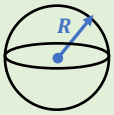
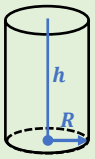
 $V = l \times w \times h$	 $V = \frac{4}{3}\pi R^3$	 $V = \pi R^2 h$

EXAMPLE: An iron cube has a mass of 0.515 kg. The density of iron is 7.87×10^3 kg/m^3. What is the length of the sides of the cube?

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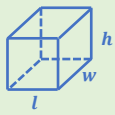
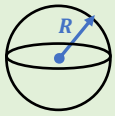
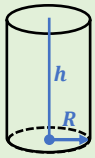
 $V = l \times w \times h$	 $V = \frac{4}{3}\pi R^3$	 $V = \pi R^2 h$

PRACTICE: Copper has a density of 8.96 g/cm^3. If a single copper atom as a mass of 1.055×10^{-25} kg, what is the volume of a copper atom?

A) 1.18×10^{-26} m^3
B) 9.45×10^{-25} m^3
C) 1.18×10^{-29} m^3
D) 1.18×10^{-26} cm^3

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	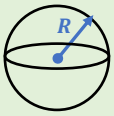	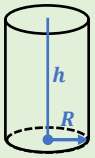
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