

Note: Problems listed here are at a higher level. Please attempt these only after completing your assigned textbook homework. Solving these problems help you with the written portion of the upcoming quizzes and exam(s). Rewrite these problem statements and do all problems in your homework notebook. Don't memorize any of these problems. Learn the concept behind each and identify your weaknesses. If you are not solving these correctly, identify the missing links from your learning. Next, go back to your notes and study the concepts and examples we did in class and review your textbook homework. The hardest situation to deal with from both student and instructor's point of view is: "*I don't know what I don't know*"! Turn this into 'I know what I don't know' and work on that and get help from your instructor and study partners.

- 1) A hybrid car has a rated gas mileage of 70. miles per gallon on the highway. Convert this rating to kilometers per liter.
- 2) A metal sample has a volume of 13 in^3 . If this sample weighs 5.14 lbs, calculate its density in grams per cubic centimeter.
- 3) A swimming pool contains 5.5×10^6 lb of water. Calculate gallons of water in the pool.
- 4) A spherical piece of metal has a mass of 249 kg. If the metal's radius is 0.25 m. Calculate its density in grams per cubic centimeter. (use the formula for sphere's volume: $V = \frac{4}{3} \pi r^3$)
- 5) A liquid has a density of 1.11 g/cm^3 .
 - a. What is the mass of 417 mL of this liquid.
 - b. What is the volume (L) of 4.1 kg of this liquid.

Answer key:

- 1) 30. km/L
- 2) 10.6 g/cm^3
- 3) 6.6×10^5 gal
- 4) 3.8 g/cm^3
- 5) a) 463 g b) 3.7 L