

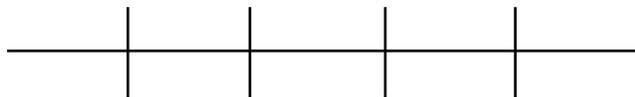
# CHEMISTRY

# DIMENSIONAL ANALYSIS PRACTICE III

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Using your **FACT SHEET AND SOME COMMON KNOWLEDGE**, do these conversions in the DA (dimensional analysis) style. Place your final answer in the blank supplied

\_\_\_\_\_ 1. What is 15.0 mm in km ?



\_\_\_\_\_ 2. How many nanoseconds are in 1.50 days?

\_\_\_\_\_ 3. How many fl oz. of water do you have in exactly half of a ten gallon can?

\_\_\_\_\_ 4. A car is going 60.0 MPH. How fast is that in ft/sec?

\_\_\_\_\_ 5. A car is going 62.0 mi/hr. How fast is that in km/hr?

\_\_\_\_\_ 6. How many mm<sup>2</sup> are there in 1 km<sup>2</sup>

\_\_\_\_\_ 7. How many  $\text{in}^2$  are there in an acre?

\_\_\_\_\_ 8. How many  $\text{mm}^2$  are there in 0.550 acre?

\_\_\_\_\_ 9. A car accelerates at 12  $\text{mi/hr/s}$ . Write that acceleration in  $\text{m/sec}^2$ ?

\_\_\_\_\_ 10. Light travels at  $3.00 \times 10^8 \text{ m/sec}$ . How fast is that in  $\text{mi/hr}$ ?

\_\_\_\_\_ 11. An elephant has a mass of 1.80 tons. What is its weight in ounces?

\_\_\_\_\_ 12. Mercury has a density of 13.6  $\text{g/cc}$ . What is that in  $\text{lb/gal}$ ?

\_\_\_\_\_ 13. A light year is the distance that light goes in a year. Using data from #10, how long is a light year in miles ? (Rate times time = distance)

Using your **FACT SHEET AND SOME COMMON KNOWLEDGE**, do these conversions in the DA (dimensional analysis) style. Place your final answer in the blank supplied

- \_\_\_\_\_ 1. It is 762 miles from here to Chicago. An obese Chemistry teacher jogs at a rate of one mile every twenty minutes. How long would it take him to jog to Chicago if he jogged continuously and REALLY wanted to get here?
- \_\_\_\_\_ 2. The density of lead is 11.4 g/cc. What is the mass of a block of lead two cm by ten cm by four cm?
- \_\_\_\_\_ 3. How many liters of water could you fit into a container measuring 10.0 ft by 13.0 ft by 8.00 ft?
- \_\_\_\_\_ 4. How many ounces is 45.0 tonnes?
- \_\_\_\_\_ 5. How many liters are in 8.55 cubic miles of ocean water?
- \_\_\_\_\_ 6. Water has a density of one gram (1.00g) per cubic centimeter. What is that in pounds per gallon?
- \_\_\_\_\_ 7. A road sign posts a 50.0 MPH limit. What is that in KPH?
- \_\_\_\_\_ 8. How large in square feet is a 525 square meter house?
- \_\_\_\_\_ 9. How many square yards of paint are needed on the ceiling of a room that is 24.0 feet wide, 51.0 feet long and ten feet high?

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\_\_\_\_\_ 10. Gasoline has a density of 5.83 pounds per gallon. What volume tank would you need to store three tons of gasoline?

\_\_\_\_\_ 11. The bathtub in the residential suite of the White House had to be enlarged for Warren G. Harding. He weighed 370 pounds. (Burp.) The bathtub is four feet wide, six feet long and three feet high. How many gallons of water are needed to fill the WGH Memorial Bathtub? (1 gal = 231 cu.in.)

\_\_\_\_\_ 12 The density of water is 8.3 lb/gal. What weight of water is needed to fill the WGH Memorial Bathtub?

\_\_\_\_\_ 13. Mercury is 13.6 kg/liter. What mass of mercury is needed to fill the WGH Memorial Bathtub?

\_\_\_\_\_ 14. The velocity of light is 186,000 mi/sec. It takes radio signals 17.6 minutes to go from Earth to Jupiter at their closest approach. How far apart are the two planets at that time?

\_\_\_\_\_ 15. A car takes on 22.7 L of gasoline. How many Floz is that?

\_\_\_\_\_ 16. Osmium metal is 22.0 g/mL. What's the volume of 2.50 kg of it?

\_\_\_\_\_ 17. Concentrated sulfuric acid is 1.84 kg/L. What is the mass of 500 mL of it?

\_\_\_\_\_ 18. A man is 5 ft. 11 inches tall. How many meters is that?