

## Conversion Factors and Road Maps

Name \_\_\_\_\_

Answer the questions for the following problem.

In the past, the grain (gr) was used to measure the mass of grains and precious stones. One carat (ct) is equivalent to 3.09 gr. The largest rough diamond ever found had a mass of 9598 gr. How many carats is the diamond? How much does the diamond weigh in mg if one carat is equivalent to 0.200 g?

- a) determine the given and the desired units
  
  
  
  
  
  
  
  
  
  
- b) Set up a road map for the following problem:
  
  
  
  
  
  
  
  
  
  
- c) Write the equivalences needed for the problem (these can be different depending on what you remember).
  
  
  
  
  
  
  
  
  
  
- d) Write the conversion factors from the equivalences
  
  
  
  
  
  
  
  
  
  
- e) Set up the problem and solve

Answer the questions for the following problem.

The diameter of a gold atom is 166 pm. What is the volume in L of  $2.83 \times 10^{25}$  gold atoms.  $V_{\text{sphere}} = \frac{4}{3} \pi r^3$  (Hint: Treat the atom as a sphere)

a) determine the given and the desired units

b) Set up a road map for the problem:

c) Write the equivalences needed for the problem (these can be different depending on what you remember).

d) Set up the problem and solve