STEPS FOR SOLVING SCIENTIFIC WORD PROBLEMS WITH FORMULAS

1. Read the question/problem thoroughly and determine what it is asking for (your unknown).

   What is the mass of a 350 cm$^3$ sample of pure silicon with a density of 2.336 g/cm$^3$?
   
   Unknown = mass of silicon

2. Write down all information that is provided in the question/problem.

   Mass of silicon = ?
   Density of silicon = 2.336 g/cm$^3$
   Volume of silicon = 350 cm$^3$

3. Identify/select the formula that will help you solve for your unknown and write it down.

   Density = \frac{Mass}{Volume}

4. Determine if you will use the formula “as is” or if you need to rearrange it to solve for a different variable. If you can use it “as is,” move on to Step 5, if not, rearrange it for the unknown variable as you would a mathematical equation.

   Since the density formula cannot be used “as is” it needs to be rearranged so that mass is the unknown variable → Mass = (Density)(Volume)

5. Using the information from Step 2, “plug” these values into the formula.

   Mass = (2.336 g/cm$^3$)(350 cm$^3$)

6. Perform the specified mathematical functions to get your final answer. In this case, we multiplied 2.336 g/cm$^3$ by 350 cm$^3$ to get the answer below.

   Mass = 817.6 (g)(cm$^3$) / (cm$^3$)

7. Cancel any necessary units. This should provide you with a sensible unit when considering what your question/problem is asking for.

   Mass = 817.6 (g)(cm$^3$) / (cm$^3$) → Mass of silicon = 817.6 grams

8. Check your answer by inserting it back into the formula. Also, be sure that your answer makes sense!