

Mole Worksheet #2- Avogadro's Number and the Mole

Write the answers to each of the following questions. Be alert to the fact that the answers have specific units, that is number of atoms or molecules, moles, or grams.

**THESE ARE TRICKY - USE DIMENSIONAL ANALYSIS**

- \_\_\_\_\_ 1. The number of grams in 0.035 mole of carbon dioxide
- \_\_\_\_\_ 2. The number of moles of carbon atoms in 0.035 mole of carbon dioxide
- \_\_\_\_\_ 3. The number of moles of oxygen atoms in 0.035 mole of carbon dioxide
- \_\_\_\_\_ 4. The number of carbon atoms in 0.035 mole of carbon dioxide
- \_\_\_\_\_ 5. The number of oxygen atoms in 0.035 mole of carbon dioxide
- \_\_\_\_\_ 6. The number of moles of carbon dioxide in  $4.4 \times 10^{-2}$  grams of carbon dioxide
- \_\_\_\_\_ 7. The number of carbon atoms in one molecule of carbon dioxide
- \_\_\_\_\_ 8. The number of oxygen atoms in ten molecules of carbon dioxide
- \_\_\_\_\_ 9. The mass in grams of one molecule of carbon dioxide
- \_\_\_\_\_ 10. The number of moles of carbon dioxide in 0.440 grams of carbon dioxide
- \_\_\_\_\_ 11. The number of molecules of carbon dioxide in 4.4 grams of carbon dioxide
- \_\_\_\_\_ 12. The number of carbon atoms in 4.4 grams of carbon dioxide
- \_\_\_\_\_ 13. The number of oxygen atoms in 4.4 grams of carbon dioxide
- \_\_\_\_\_ 14. The mass in grams of  $2.01 \times 10^{10}$  molecules of carbon dioxide
- \_\_\_\_\_ 15. The mass in grams of carbon dioxide which contains  $1.204 \times 10^{16}$  atoms of carbon
- \_\_\_\_\_ 16. The mass in grams of carbon dioxide which contains  $6.02 \times 10^{20}$  atoms of oxygen

Answers: 1) 1.5 g CO<sub>2</sub> 2) 3.5 E-2 mol of C atoms 3) 7.0E-2 mol O<sub>2</sub> 4) 2.1 E22 atoms C  
5) 4.3 E22 atoms O 6) 1.0 E-2 mol CO<sub>2</sub> 7) 1 carbon atom 8) 20 atoms O  
9) 7.31 E-23 g CO<sub>2</sub> 10) 1.00 E-2 mol CO<sub>2</sub> 11) 6.0 E22 molecules CO<sub>2</sub> 12) 6.0 E22 atoms C  
13) 1.2 E23 atoms O 14) 1.47 E-12 g CO<sub>2</sub> 15) 8.800 E-7 g CO<sub>2</sub> 16) 2.20 E-2 g CO<sub>2</sub>