Name _____ Date _____ Class _____

CHAPTER 10 STUDY GUIDE

The Mole

Section 10.1 Measuring Matter

In your textbook, read about counting particles.

In Column B, rank the quantities from Column A from smallest to largest.

Column A	Column B
0.5 mol	1. _____
200	2. _____
5	3. _____
6,000,000,000	4. _____
6.02×10^{23}	5. _____
dozen	6. _____
four moles	7. _____
gross	8. _____
pair	9. _____
ream	10. _____

In your textbook, read about converting moles to particles and particles to moles.

In the boxes provided, write the conversion factor that correctly completes each problem.

11. 1.20 mol Cu × [ ] = 7.22×10^{23} Cu atoms

12. 9.25×10^{22} molecules CH_4 × [ ] = 1.54×10^{-1} mol CH_4

13. 1.54×10^{26} atoms Xe × [ ] = 2.56×10^{2} mol Xe

14. 3.01 mol F_2 × [ ] = 1.81×10^{24} molecules F_2

Copyright © Glencoe McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

Section 10.2 Mass and the Mole

In your textbook, read about the mass of a mole.

For each statement below, write *true* or *false*.

_____ **1.** The isotope hydrogen-1 is the standard used for the relative scale of atomic masses.

_____ **2.** The mass of an atom of helium-4 is 4 amu.

_____ **3.** The mass of a mole of hydrogen atoms is 1.00×10^{23} amu.

_____ **4.** The mass in grams of one mole of any pure substance is called its molar mass.

_____ **5.** The atomic masses recorded on the periodic table are weighted averages of the masses of all the naturally occurring isotopes of each element.

_____ **6.** The molar mass of any element is numerically equal to its atomic mass in grams.

_____ **7.** The molar mass unit is mol/g.

_____ **8.** If the measured mass of an element is numerically equal to its molar mass, then you have indirectly counted 6.02×10^{23} atoms of the element in the measurement.

In your textbook, read about using molar mass.

For each problem listed in Column A, select from Column B the letter of the conversion factor that is needed to solve the problem. You may need to use more than one conversion factor to solve the problem.

Column A	Column B
_____ **9.** Find the number of moles in 23.0 g of zinc.	**a.** $\frac{65.4\text{ g Zn}}{1\text{ mol Zn}}$
_____ **10.** Find the mass of 5.0×10^{20} zinc atoms.	**b.** $\frac{1\text{ mol Zn}}{65.4\text{ g Zn}}$
_____ **11.** Find the mass of 2.00 moles of zinc.	**c.** $\frac{6.02\times10^{23}\text{ atoms Zn}}{1\text{ mol Zn}}$
_____ **12.** Find the number of atoms in 7.40 g of zinc.	**d.** $\frac{1\text{ mol Zn}}{6.02\times10^{23}\text{ atoms Zn}}$
_____ **13.** Find the number of moles that contain 4.25×10^{27} zinc atoms.	
_____ **14.** Find the number of atoms in 3.25 moles of zinc.	

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.