CHEM 0010 Tutorial Answers

A. Mole Questions 1

1. 10.0 mole Li = _69.0_ g Li
2. 3.00 mole of Mg = 1.81×10^{24} atoms Mg
3. 5.00×10^{23} atoms C = 0.830 mole C
4. 7.25 g Cu = 6.88×10^{22} atoms Cu
5. 2.22×10^{26} atoms Pb = 3.69×10^{2} mole Pb
6. 15.0 mole K = 9.03×10^{24} atoms K
7. 4.65×10^{22} atoms S = 0.0772 mole S
8. 333 g Mg = 13.7 mole Mg
9. 48.0×10^{23} atoms O = 128 grams O
10. 0.250 mole Br = 1.5×10^{23} atoms Br
11. Define mole.

Mole is a counting unit, a quantity of things (1 mole of any substance contains 6.022×10^{23} particles)

12. Define molar mass.

Molar mass is a mass (in grams) of one mole of that substance. (Example: Molar mass of oxygen atom is 16 g/mol)

13. State Avogadro's number.

6.022×10^{23}

Mole Questions 2

1. 1.77×10^{28} atoms Cu = 2.94×10^{4} mole Cu = 1.87×10^{6} grams Cu
2. 44.0 g Ca = 1.10 mole Ca = 6.62×10^{23} atoms Ca
3. 0.775 mole K = 4.67×10^{23} atoms K = 30.3 g K
4. 1.99×10^{25} molecules of H_2O = 33.0 moles H_2O
5. 0.667 moles Li = 4.60 g Li
6. 5.88 moles Na = 3.54×10^{24} atoms Na
7. 15.0×10^{23} atoms Zn = 163 g Zn
8. 878 g O = 3.30×10^{25} atoms O
9. 125 g Cr = 1.45×10^{24} atoms Cr
10. 4.75×10^{6} atoms Al = 2.13×10^{-16} g Al

Mole Questions 3

1. 5.00 mole Zn = _3.01×10^{24} atoms Zn
2. 2.00×10^{47} molecules H_2O = _3.32×10^{23} mole H_2O
3. 1.50 mole Ca = _60.2 grams Ca
4. 6.75 mole Cu = _4.06×10^{24} atoms Cu
5. 1.75×10^{15} atoms K = _2.91×10^{-9} mole K
6. 5.00g C = _2.51×10^{23} atoms C
7. 45.9 g Pb = _0.222 mole Pb
8. 3.01×10^{23} molecules CO_2 = _0.5 mole CO_2
9. 4.25×10^{22} atoms Ni = _4.14 g Ni
10. 9.50 g Li = _8.29×10^{23}atoms Li
11. 0.250 mole Si = _1.51×10^{23} atoms Si
12. 2.30 mole Mg = _55.9 g Mg
13. 2.50×10^{25} atoms Au = _41.5 mole Au
14. 105 g Be = _11.7 mole Be
15. 75.0 g S = 1.41×10^{24} atoms S
16. Which contains a greater number of atoms, 2.0 moles of Zn or 2.0 moles Cu?

They both contain 2x $6.022 \times 10^{23} = 1.204 \times 10^{24}$

17. Which has a greater mass, 2.0 moles of Zn or 2.0 moles Cu? Zn
18. A mole of moles digs a mole of holes. How many holes does each mole dig?

    One.