

Section 1C - Review

Show your work and include units!!

1) The resources for all human activities must be obtained from Earth's atmosphere, hydrosphere, and outer layer of its lithosphere. These resources are not uniformly distributed. Briefly define these three layers of the planet and list two resources they provide.

2) The feasibility of mining and extracting a mineral resource depends, in part, on how easily a particular metal can be processed and used, which largely depends on its chemical reactivity. What factors determine the possibility of mining a particular metallic ore at a certain site?

3) Based on your metal activity series, which metals would be the easiest to process? In other words, which metals would be easiest to remove from all compounds?

4) Find the molar mass of each substance: Show your work and include units.

a) oxygen gas, O_2

d) limestone, calcium carbonate

b) a typical antacid, magnesium hydroxide

e) aspirin, $C_9H_8O_4$

c) bornite, Cu_5FeS_4

f) potash, potassium sulfate

5) A major advantage of the mole concept is that it enables a chemist to "count by weighing." If one mole of potassium metal has a mass of 39.1 g, calculate the mass of the following:

a) 2 moles of potassium?

b) $\frac{1}{2}$ moles of potassium?

6) How many atoms are in 4 moles of aluminum? How many grams of aluminum would that be?

7) Find the percent metal (by mass) in each compound:

a) Ag_2S

b) Al_2O_3

c) CaCO_3

8) A 50.0 g sample of ore contains 5.00 g lead (II) sulfate, PbSO_4 . What is the percent by mass:

a) lead (Pb) in PbSO_4 ?

b) PbSO_4 in the ore sample?

c) Pb in the total ore sample?

9) In water, two-thirds of the atoms are hydrogen atoms; however, the percent hydrogen by mass is not 67%. Explain.

10) How many moles are in 320 grams of magnesium chloride?

13) How many atoms are in 1.4 moles of Aluminum?

11) Calculate the mass of 4.6 moles of calcium sulfate .

14) How many grams of CrS are in 5.7×10^{22} molecules?

12) Calculate the moles of 2.2×10^{24} molecules of Br_2 .

15) How many molecules of water are in 500 grams?