Practice problems for empirical and molecular formula

1) Zircon is a common substitute for diamond in inexpensive jewelry. The percent composition of zircon is 49.57% Zr, 15.32 % Si, and the remainder oxygen. Determine the empirical formula of zircon.

2) A sample of of iron-containing compound is 22.0 % iron, 50.2 % oxygen, and 27.8% chlorine by mass. What is the empirical formula of this formula of this compound?

3) Ferrophosphorus(Fe2P) reacts with pyrite (FeS2), producing iron (II) sulfide and a compound that is 27.87% P and 72.13 % S by mass and has a molar mass of 444.56g/mol.

(a) Determine the empirical amd molecular formulas for this compound.

(b) Write a balanced chemical equation for this reaction.