Empirical and Molecular Formula Practice

Find the empirical formula for the following molecular compositions:

1. 88.8% copper; 11.2% oxygen
2. 40% carbon; 6.7% hydrogen; 53.3% oxygen
3. 92.3% carbon; 7.7% hydrogen
4. 70.0% iron; 30.0% oxygen
5. 5.88% hydrogen; 94.12% oxygen
6. 38.7% chlorine; 61.3% fluorine
7. 7.19% phosphorus; 92.81% bromine
8. 30.4% nitrogen; 69.6% oxygen

Find the molecular formula for the following:

1. If the compound in question 7 has a molar mass of 431g/mol, what is the molecular formula?
2. If the compound in question 8 has a molar mass of 92g/mol, what is the molecular formula?
3. Naphthalene is a carbon and hydrogen containing compound often used in moth balls. The empirical formula is C₂H₄ and its molar mass is 128.16g/mol. Find the molecular formula.
4. A compound with the following composition has a molar mass of 60.10g/mol: 39.97% carbon; 13.41% hydrogen; 46.62% nitrogen. Find the molecular formula.
Empirical Formula Answers:

1. Cu$_2$O
2. CH$_2$O
3. CH
4. Fe$_2$O$_3$
5. HO
6. ClF$_3$
7. PBr$_5$
8. NO$_2$

Molecular Formula Answers:

1. PBr$_5$
2. N$_2$O$_4$
3. C$_{10}$H$_8$
4. C$_2$H$_8$N$_2$