

You were busy working in lab with 4 different but identical looking liquids: ethanol, methanol, isopropyl alcohol and acetic acid. You forgot to label the containers! However, you have a tool in your lab that will tell you the percent composition of each compound.

	% C	% O	% H
Ethanol (C ₂ H ₅ OH)	52.1%	34.7%	13.1%
Methanol (CH ₃ OH)	37.5%	49.9%	12.6%
Isopropyl alcohol (C ₃ H ₇ OH)	60.0%	26.6%	13.4%
Acetic Acid (CH ₃ COOH)	40.0%	53.3%	6.7%

1. Describe **why** you can use the mass percent composition of the compounds to identify each.
2. Explain **why** the same three elements can form four different compounds.
3. Identify each compound by calculating their composition by mass percent:
 - a. Compound A has a mass of 250.0 g. It has 150.0 g of carbon, 66.5 g of oxygen and 33.5 g of hydrogen.
 - b. Compound B has a mass of 135 g. It has 50.6 g of carbon, 67.4 g of oxygen, and 17.0 g of hydrogen.
 - c. Compound C has a mass of 54 g. It has 7.1 g of hydrogen, 28.1 g of carbon, and 18.8 g of oxygen.
 - d. Compound D has a mass of 390.0 g. It has 208.9 g of oxygen, 156 g of carbon, and 26.1 g of hydrogen.