

1. Determine the empirical formula of each compound:

Molecular Formula:  $C_{27}H_{24}O_9$

$C_6H_6$

$C_3H_4$

$C_{12}H_{24}O_4$

$C_6H_{14}$

Empirical Formula: \_\_\_\_\_

2. A compound has the empirical formula  $C_2H_4O$ .

a. List some possible molecular formulas that would have this empirical formula:

b. If a compound has an empirical formula of  $C_2H_4O$ , and a molar mass of around 130 amu, what is the molecular formula of the compound?

c. If a compound has an empirical formula of  $C_2H_4O$ , and a molar mass of around 88 amu, what is the molecular formula of the compound?

d. If a compound has an empirical formula of  $C_2H_4O$ , and a molar mass that is between 170 amu and 200 amu, what is the molecular formula of the compound?

3. A compound has the empirical formula  $C_2H_3$ , and has a molar mass that is between 100 and 110 amu. What is the molecular formula of the compound?

4. Determine the empirical formula of a compound that contains 7.58 grams carbon per 1.70 grams hydrogen per 6.74 grams oxygen.

5. Determine the empirical formula of a compound that is 46.14% carbon, 7.75% hydrogen, and 46.11% oxygen by mass.