

Name: _____

Toxins Lab Exam (*show your work for each step*)

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1. You have a plastic bottle with you for this lab exam.

a. Write the volume (in Liters) of the plastic bottle that you have.

b. O₂ gas makes up 21% of our atmosphere. Calculate the volume of O₂ gas in your bottle.

2. The Ideal Gas Law allows us to solve for the number of moles of any gas if we know the pressure, volume and temperature of that gas. *Assume 1 atm of pressure and 21°C. The universal gas constant is $0.082 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}}$. Use volume from 1b.*

a) Calculate the number of moles of O₂ gas inside your bottle.

3. You are going to be carrying out a combustion reaction between two reactants, O₂ and C₂H₅OH, or ethyl alcohol.

a) Write the balanced chemical equation for this reaction. (5a, 6b)

4. Our goal for this reaction is to completely react all of the O_2 inside the bottle.

a. Using Stoichiometry, calculate the number of moles of C_2H_5OH you will need to do this. (24a, 24b)

b. How many grams of C_2H_5OH will this reaction require? (10a, 11a, 25a)

c) The density of ethyl alcohol is 0.789 g/mL, how much volume of ethyl alcohol is this equal to?

d) How many total grams of CO_2 and H_2O will be produced? (4a, 11b)