Demo WS -- Chem Honors **Name** Answer Key
Masses of Gases (Syringe) **Period**_____ **Date**_____

Data Table: Various gases are filled into a syringe and massed. Each gas sample has the same volume.

Mass of syringe (plunger all the way in) = 77.561 g mass of syringe + vacuum = 77.414 g

	AIR	CH_4	O_2	CO_2
mass of syringe + gas	**77.571 g**	**77.490 g**	**77.582 g**	**77.640 g**
mass of sample of gas (g) (all have same volume)	**77.571 g – 77.414 g = 0.157 g**			**0.226 g**
relative mass of gas compared to CO_2	**0.155 g / 0 226 g = 0.695**			**1.00 = 1.00**
experimental molecular mass of gas (CO_2 is set to a mass of 44.0 because this makes mass of H = 1.0 amu)	**0.695 × 44.0 amu = 30.6 amu**			**44.0 amu**
accepted molecular mass of gases	*	**16.0 amu**	**32.0 amu**	**44.0 amu**
% error				—

Post Demo Questions:

1) ***To find accepted molecular mass of air:**
"Air" is of course, NOT on the periodic table. It is actually a mixture of N_2 gas, O_2 gas and some Ar gas. Using the percent composition of air given below, find the accepted molecular mass of air.
Air is 78.1 % N_2, 20.9 % O_2 and 0.934 % Ar.
(N_2 = 28.0 amu, O_2 = 32.0 amu, Ar = 40.0 amu)

2) In the lab, we assumed that the gas from the gas jets was pure methane gas (CH_4). However, in reality there is some ethane gas (CH_3CH_3) mixed in. Does this fact help to explain your experimental error in your mass of CH_4? Explain.