# Quiz 8.2 – Gas Laws

Name: _____

**Question 1**

A weather balloon starts in Cedar City with with $P = 0.82\ atm$, $T = 21.5\ °C$, and $V = 18.75\ L$

- Find the number of moles of gas inside the balloon
- If the balloon is filled with He gas, find the mass of the gas inside the balloon
- Find the density of the He-filled balloon (assume the instruments and balloon itself have no mass)
- Find the density of the surrounding air (assume it is $100\%$ $N_2$ gas)

**Question 2**

The weather balloon is released into the upper atmosphere and the instruments on-board indicate a pressure of $0.45\ atm$ and a temperature of $-32.4\ °C$

What will the new volume of the balloon be?

**Question 3**

A car engine burns about $0.1\ g$ of gasoline ($C_8H_{18}$)for each engine cycle. A car engine may have a cylinder volume of $1.25\ L$, and operate at a temperature of $80.0\ °C$. If the gasoline combusts completely inside the $1.25\ L$ piston, what is the pressure of the combustion products?

## *Because I Could Not Stop for Death* (*479*)

**By Emily Dickinson**

Because I could not stop for Death –
He kindly stopped for me –
The Carriage held but just Ourselves –
And Immortality.

We slowly drove – He knew no haste
And I had put away
My labor and my leisure too,
For His Civility –

We passed the School, where Children strove
At Recess – in the Ring –
We passed the Fields of Gazing Grain –
We passed the Setting Sun –

Or rather – He passed Us –
The Dews drew quivering and Chill –
For only Gossamer, my Gown –
My Tippet – only Tulle –

We paused before a House that seemed
A Swelling of the Ground –
The Roof was scarcely visible –
The Cornice – in the Ground –

Since then – 'tis Centuries – and yet
Feels shorter than the Day
I first surmised the Horses' Heads
Were toward Eternity –