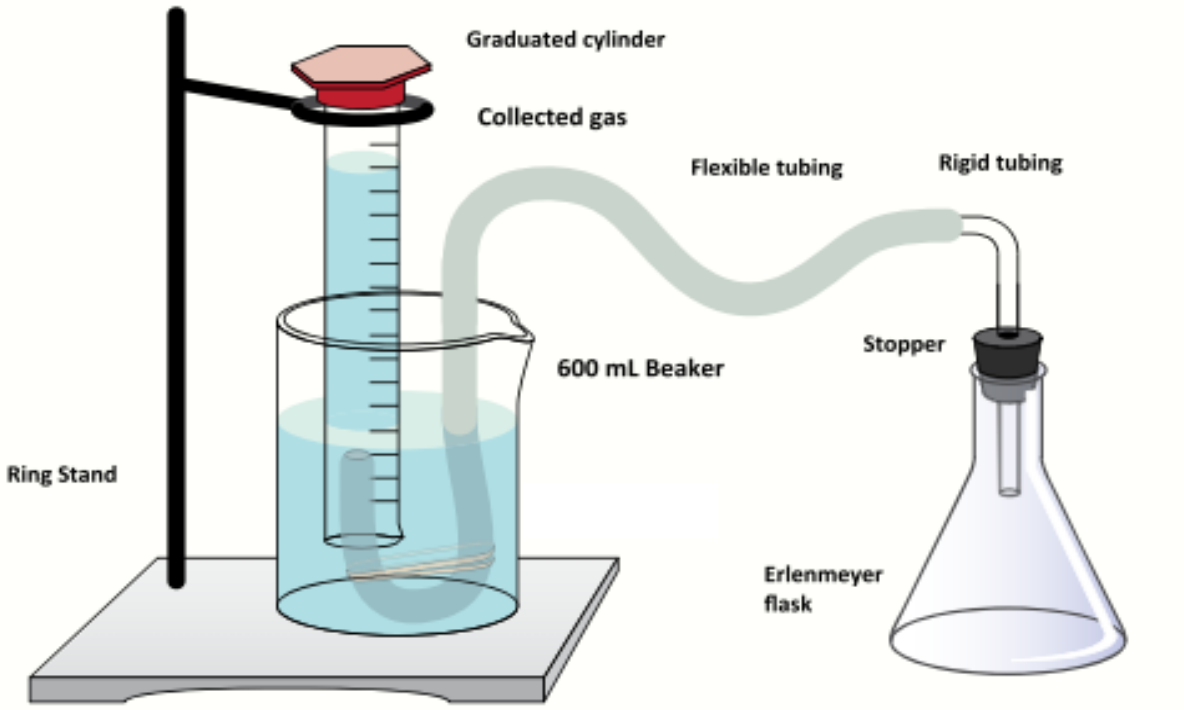
Ideal Gas Law Lab

Intro: In this experiment, you will use the ideal gas law to determine the amount of moles of oxygen produced from the decomposition of hydrogen peroxide.

Materials:

5.00 mL of yeast solution	2 pipettes	Distilled water
5.00 mL hydrogen peroxide	Thermometer	10 mL graduated cylinder
Erlenmeyer flask	Ring Clap	100 mL graduated cylinder
Stopper with glass tubing	Ring Stand	
Rubber tubing	600 mL beaker	

Set up:



Procedure:

1. Collect materials for the apparatus shown above.
2. Fill the 600 mL beaker with 400 mL of water
3. Fill the 100 mL graduated cylinder with water over the 100 mL mark.
4. Take the temperature of the water in the 600 mL beaker and record it in the data section.
5. See your instructor to find the barometric pressure in the room and record it in your data section.
6. Use a 10 mL graduated cylinder and measure out 5.00 mL of hydrogen peroxide. And pour into the Erlenmeyer flask. Put the stopper loosely in the flask.
7. Clean the graduated cylinder out with distilled water.
8. Take the bottom base off your 100 mL graduated cylinder. Cover your 100 mL graduated cylinder with two fingers and invert it quickly into your 600 mL beaker of water. Do not remove your fingers until the opening of the cylinder is completely submerged. If the amount of trapped air exceeds 10 mL, refill the cylinder and try again.

9. Insert the flexible tubing into the beaker and snake it into your graduated cylinder. Make sure that it is far enough in that it won't come out during the experiment.
10. Place the graduated cylinder through the ring clamp and reattach the base. Let it hang from the ring clamp.
11. Record the starting volume in the graduated cylinder (read where the trapped air meets the water).
12. Measure out 5.00 mL of the yeast solution.
13. One person should pour the yeast solution in the Erlenmeyer flask while another person is ready to place the stopper on. Do this step quickly! Pour the solution and then put the stopper on.
14. Carefully swirl the Erlenmeyer flask to start the reaction.
15. You should begin to see bubbles coming up into the 100 mL graduated cylinder. If you don't see bubbles, make sure all connects are secure and there is no place for the gas to escape.
16. Continue to swirl until no more bubbles are present. This should take a few minutes.
17. Record the final volume.
18. Dispose of all chemicals (drain) and put everything away.

Data:

Water Temperature	**Celsius:**	**Kelvin:**
Barometric Pressure	**mm Hg:**	**Atm:**
Initial Volume	**mL:**	**L:**
Final Volume	**mL:**	**L:**
Total Volume	**mL:**	**L:**

Results:

1. Determine the number of moles of oxygen collected by rearranging the ideal gas law to solve for n.

n= _____

2. You should have gotten 0.00321 moles of O_2. Calculate your percent error. List a couple sources of error.