

Name: _____ Date: _____ Per. _____ Assign # _____

Lab: Burning up the Atmosphere

Purpose: To determine the percentage of oxygen of air

Introduction: Here's the deal. . . Let's say that, until recently, scientists still hadn't figured out how much oxygen is present in the air we breathe. However, earlier this week, in an article published in a major scientific journal, a scientist named I. M. Knotreel claims to have discovered that (dry) air is 21 % oxygen.

The discovery has caused quite a stir in the scientific community, so this week scientists all over the world are attempting to repeat the experiment used in the study. As they do so, they are carefully evaluating the experimental technique in order to decide whether or not the scientist's claim is legitimate. Today you will join this endeavor by repeating Knotreel's simple experiment.

Using fire to determine the percentage of oxygen in air is helpful because fire uses up oxygen as it burns. In today's experiment you will be using the fire from a birthday candle to determine the percentage of oxygen in the atmosphere.

Pre-Lab Questions:

1. IN YOUR OWN WORDS: What is the purpose of this lab?
2. Which gas in air is "used up" as a candle burns? Why is using fire necessary in this lab?
3. Change ".18" to a percentage.

Materials: Birthday candle, hex-nut (candle holder), shallow pan/culture dish, metric ruler, test tube, matches, calculator and colored water

Procedure:

1. Obtain the materials listed above. Use the Metric ruler to measure the height of your test tube to the nearest .1 cm (record the results in your lab).

Height of test tube: _____cm

2. Position a candle in the holder. (Be sure that the candle is at least 5 cm tall)
3. Pour 1 cm of water into the pan and set the candle into the center of the pan.
4. Light the candle and then carefully in one motion, invert the test tube over the candle so that the bottom of the tube is completely under water. However, do not allow the bottom of the test tube to completely touch the pan.
5. Record how high the water went up in the test tube (to the nearest .1cm)
6. Repeat 5 times.
7. Now calculate the percentage of oxygen used in the test tube for each trial. Record in data table.

Do this by simply:

Height of the water in the test tube = Percentage of oxygen in test tube

Height of the test tube

Data Table:

	Height That Water Rose in Test Tube	Percentage of Oxygen in Test Tube
Trial #1		
Trial #2		
Trial #3		
Trial #4		
Trial #5		

8. Then calculate the average of your results for your five trials. Record underneath your data table.

Average of all 5 trials= _____%

Analysis and Conclusion:

1. On a piece of graph paper, create a bar graph showing the percentage of oxygen for each of the 5 trials you completed. On the same graph, draw a line showing the average temperature you calculated.

[(x-axis the number of the trial) and (y-axis is the percentage of oxygen)]

2. Was the average percentage you found close to the 21% oxygen level stated in class? By how much was your percentage different?

3. Some students will have different results than your lab group. What could be some reasons for discrepancies between lab groups?