Using Moles to Check an Equation

Name_____

Introduction

In this lab you will use an equation to determine if the expected number of moles of chromium(III)oxide are produced in the decomposition of ammonium dichromate. We will be checking the basic recipe for this reaction against our own scaled down version.

Pre-lab Questions:

- 1) Writing the equation: The reaction that you will be running is a decomposition reaction. Ammonium dichromate when heated will break up into nitrogen (diatomic), water, and chromium(III) oxide. Write the balanced equation for this reaction:
- 2) According to the above reaction how many moles of chromium(III)oxide are produced if you start with one mole of ammonium dichromate?
- 3) How many moles of chromium(III)oxide are produced if you start with four moles of ammonium dichromate?
- 4) What relation do you see between the moles of ammonium dichromate used and the moles of chromium(III)oxide produced?

Running the Reaction:

- 1) Obtain a piece of glass wool from the lab bench.
- 2) Measure the mass of the glass wool and a test tube together.
- 3) Now place a small scoop of ammonium dichromate into the test tube and put the piece of glass wool snugly (bunched up into a ball) into the top of the test tube so that it will not easily be pushed out. <u>Check with the teacher before continuing.</u>
- 4) Re-weigh the test tube, glass wool, and ammonium dichromate together.
- 5) Hold the test tube in a test tube holder (from your lab drawer).
- 6) Ignite a Bunsen burner and place the end of the test tube into the flame just until the reaction starts. Then remove the test tube from the flame immediately.

- 7) Gently, heat the entire length of the test tube by sweeping the test tube back and forth along its entire length through the flame. If you use too hot a flame your test tube will be very difficult to clean. Heating is done to make sure all the water is evaporated from inside, therefore, you must also heat the part of the test tube with the glass wool. Gently heat for 3 minutes.
- 8)Let the test tube cool and re-weigh the test tube to determine the mass of chromium(III) oxide present.
- 9) See teacher for disposal of materials.

Questions

1) How many moles of ammonium dichromate did you start with? (convert your grams of ammonium dichromate to moles)

2) How many moles of chromium(III)oxide did you end up with? (convert your grams of chromium(III)oxide to moles)

- 3) How many moles of chromium(III) oxide were you supposed to end up with? (refer back to your answer to question number 4 on the front of this sheet)
- 4) What was your percent error? Remember percentage is the (part/whole)*100. Your "part" is the error: difference between #2 and #3. Your whole is the theoretical yield (#3).