**Hot Air Balloon Project**

**Physics**

**Introduction:**

Students will work in pairs and will be given the material to build a Hot Air Balloon along with basic instructions.

This project will be completed in three phases; a) Research, b) construction, c) experimentation and flight.

**Research** **(50 points)**

You must research topic related to hot air balloons and write a one page report on your topic, double spaced and typewritten. The paper must focus on a single aspect of hot air balloon, such as the science behind their flight, the history of their use in warfare or transportation, their construction and design, etc. The paper must include an appropriate APA or MLA citation for the source or sources where you found your information.. The paper will be submitted on the Turnitin website by 3:00 pm on Friday, May 26, 2016. No late papers will be accepted.

**Construction (50 points)**

You will be given the materials and basic instructions to construct your balloon. You make work alone or in pairs. You balloon will be tested on Tuesday, May 26th in class. These points will be assigned based on the using the rubric on the back of this page..

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| **Category** | **5** | **4** | **3** | **2** | **Weighting** |
| **Research** |  |  |  |  |  |
| Technical Aspects | Paper has a beginning, middle, and end, (5 paragraphs) including a thoughtful introduction and conclusion. Ideas are presented in a logical and concise way | Paper has a beginning, middle, and end; however it lacks a thoughtful introduction and/or conclusion. (Not 5 paragraphs). Ideas may or may not be presented in a logical way. | Paper lacks a clear beginning, middle, and end. Introduction or conclusion are lacking in thought. Ideas are not presented in a logical way. | Paper is hard to read due to a total lack of organization. Ideas are not clearly presented and/or lack any type of sequence. | Score x 6 |
| Writing Skills | Spelling and grammar are correct. The paper is well written and “flows” well with clear transitions between ideas.  Citations are present and in the correct style | Spelling and grammar are mostly correct. Paper suffers from poor transitions or a lack thereof.  Citations are present and in correct style | Many spelling and grammar errors. Use of run on or poorly written sentences which lack connection.  Citations are present but not formatted correctly | Paper requires extensive editing in order to meet basic grammatical standards.  Citations not present | Score x 4 |
| **Paper Grade** | |  |  |  |  |
| **Construction** |  |  |  |  |  |
| **Craftsmanship** | The balloon shows that  the creator took great  Pride in his/her work. The design and construction look carefully planned.  The item is neat and free of flaws. | The balloon shows that the creator took pride in his/her work. The design and construction look  Planned. The item has a few flaws, but these do not detract from the overall look. | The design and construction were  Planned. The item has  Several flaws that detract from the overall look. | The balloon looks thrown together at the last minute. It appears that little design or planning  Was done. Craftsmanship  Is poor. | X 4 |
| **Buoyancy** | Balloon floats to ceiling | Balloon Floats ½ way to ceiling | Balloon Floats at least one meter off launcher | Balloon doesn’t float | X 1 |
| **Automatic points for having built a balloon** | | | | | **25** |
| **Sub-total for balloon** | | | | |  |
| **Total Points (100 possible)** | | | | |  |