**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Objectives:** To create a balloon powered car for maximum speed and distance and use the speed formula. S=D/T

**Expectations:**

* Detailed outline of car construction, including two drawings of the car (top and side views) and labeling materials on the car.
* The car must be powered by 1 – 12” balloon.
* You will bring material from home to assemble your car in class.
* It must have at least 3 wheels. Wheels are defined as anything that is round and goes around.
* The wheels cannot be wheels from a toy car. They must be made of something that was not originally meant to be used as wheels.
* The car may not leave the ground.

**Hints:**

* Think lightweight.
* Axle and wheel movement should be smooth with little friction.
* Make sure wheels are straight so car travels in a straight line.
* Traction between wheels and floor is important (need to have some friction).

**Race Day Procedure**:

* Using your Lab Activity Sheet, calculate 5 speed trials of your car. Calculate the distance your car traveled, while one person records the time. Time will be recorded on GO and when the car stops.
* Record all of your results and do an average of the 5 speed trials to find the average speed of your balloon-powered car.
* Answer your lab questions in complete sentences.

**Data:**

|  |  |  |  |
| --- | --- | --- | --- |
| **TRIAL #** | **DISTANCE**  **(meters, cm, mm)** | **TIME**  **(seconds)** | **SPEED**  **S = D/T** |
| **1** |  |  |  |
| **2** |  |  |  |
| **3** |  |  |  |
| **4** |  |  |  |
| **5** |  |  |  |
| **AVERAGE** |  |  |  |

**\*Be sure to include ALL units!**

**Lab Questions: (Remember to answer in complete sentences.)**

1. Did your car work the first time? If not, what did you do to modify it? Explain how that worked.
2. If you could make more improvements on your car, what would you do?
3. Describe how the balloon supplied energy to your car.
4. What factors/things influenced the speed of your car?
5. Give TWO tips or pieces of advice to someone who had to construct a balloon-powered car.
6. Reflect on the building of your car. What did you learn from building and testing your balloon car?

**Lab Evaluation Questions: (Remember to respond in complete sentences.)**

1. What did you like best about the lab? Be specific and tell why.
2. Which part did you find to be the most difficult? Be specific and tell why.

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**GRADING RUBRIC**

|  |  |  |  |
| --- | --- | --- | --- |
| **Lab Write-up** | **POINT VALUE** | **DESCRIPTION** | **POINTS EARNED** |
| **Drawings and Materials** | **15** | **Detailed, labeled drawings of car (including 2 drawings of the car (top and side views), AND list of materials** |  |
| **Observations and Data** | **15** | **Completed data table. Correct calculations, including units.** |  |
| **Lab Questions** | **20** | **Answered all questions correctly with supporting evidence and thoughtful responses. Answered in complete sentences.** |  |
| **Lab Evaluation** | **10** | **What went wrong? How your design changed? What you changed?** |  |
| **Total Points** |  |  |  |