

Dear Parents of Fifth Graders,

2/2015

As part of our science curriculum, students learn about the Design and Engineering Process. This process encourages students to brainstorm ideas for solutions to a problem, create, test, improve, test, improve, etc.

**Project Objective:** *Build a vehicle to transport a penny from the top of an inclined track to the end of the flat track in as short a time as possible.*

**Students will be designing a vehicle at home using the following specifications:**

- Overall length of the vehicle shall not exceed 7 inches
- Overall width of the vehicle shall not exceed  $2\frac{3}{4}$  inches
- The distance between opposing wheels must be at least  $1\frac{3}{4}$  inches, so that it can properly straddle the racetrack.
- No commercially made cars or car kits can be used. For example, you can't doctor up a matchbox car, or use a Pinewood Derby car. You can certainly use the same concepts behind those vehicles, but use other non-commercially made materials.
- Vehicles will be gravity powered and run unaided down a racetrack to the finish line.
- Vehicles can be painted and decorated to fit the personality of the builder☺

**There also needs to be a little clearance between the track and the bottom of the car.**

**CREATIVITY IS ENCOURAGED!!!!** Think about using different materials. Most students use wood as the standard body for the vehicle, but last year students used aluminum cans, plastic bottles, potatoes, rocks, and all sorts of interesting items and the results were quite amazing.

Mr. Stasiewicz, a retired engineer, is going to meet with the students on Tuesday, February 24, to discuss ideas to consider before beginning the building of their car. He will talk about how different things affect the vehicle, such as: mass, traction, friction, the tread on the tires, axles, the distribution of weight, etc.

**The first timed trial of the vehicle will take place the middle of March**, with testing being done each month until June. The objective is for the time to improve each month as students analyze the performance and **then make adjustments**. This is a school project that will require some adult supervision....but **PLEASE be the guide on the side** and not the one making all of the decisions. When students test their vehicle it is obvious which students truly feel ownership. Last year many students were mentored by grandparents, uncles, friends, and neighbors who love this type of thing. We are not trying to break records, just introducing students to the engineering process, building confidence in their decision making, and encouraging a **LOVE OF LEARNING!!**

The track that is used is an official Pinewood Derby track, and I believe it is about 30 feet long. There will be a small section of the track on the counter in my room for students to bring their car in at any time to make sure it fits on the track. You are welcome any time to look at the track.

There will not be a traditional science fair this year, so I hope that you enjoy doing this activity with your child. I know they are looking forward to it. This is a part of their science grade for quarter 4.

**Evaluation for this assignment will be as follows:**

Project book complete and turned in, Creativity and Uniqueness of vehicle - 50%; Improvements made - 30%; Time - 20%

Together in education, Mrs. Hagreaves