**ROLLER COASTER MANIA**

You will work in a group of 3-5 classmates to design and build a roller coaster. The base restrictions are 2’ x 3’ or 1’ x 4’. It is best to use a sturdy base, as this supports your entire ride. The base and a box to keep your group supplies in are due by the start of class on Feb. 21. I can most likely supply your group with a base if you cannot get one.

The roller coaster must contain at least 2 loops, 2 hills (where the marble goes up and comes back down), and a jump (at least 2 inch jump where the marble leaves and reenters the track). The ride must have a safe and gentle landing. The ride must be decorated according to a theme. The theme is due by Feb. 22 The name of the ride must coordinate with the theme.

You will receive participation points for each workday. Each day is worth 10 points. Points will be deducted for an absence, being out of your group, fooling around, not participating, failure to bring materials, or not cleaning up. **If you are absent, you may earn your missed points back** by completing a small assignment, but it is YOUR responsibility to ask the teacher for work for a specific day.

You will have approximately 5 class periods to construct the coaster. We will then collect data from the roller coaster and create a blueprint or a sketch. **EVERYONE in the group creates their own individual blueprint**. We spend approximately 2 class periods on data collection and creating the individual sketches. The sketches will contain all of the scientific concepts displayed on the ride, such as Newton’s Laws and friction (just to name a few). The coasters **will be** presented to your class. If you are absent for the presentation, you will be required to present on your own or forfeit those points. After everyone in your group presents the coasters can be taken apart or taken home. Any coasters left after several days will be discarded or taken apart.

We will also be writing a formal lab report at the conclusion of the roller coaster project. Overall, the roller coaster project with all of its components is the biggest grade of the year in Science. Please work hard, stay organized and focused, contribute to your group, and be courteous to others!

Groups may NOT use any K’nex or pre-made coaster. You may not use any type of motor. Everyone will use a marble as a “car.” You may bring in your own marbles to use. Construction must take place during class time only. (Not during HR/Exploratory/Specials) One suggestion to be done at home is to drill some holes in the base before you bring it in to begin. This way you will have places to insert supports. Also, if you want the base spray painted this must be done at home before we begin. No spray painting at school. **The art teachers are not able to provide you with any supplies.**

The goal is for the marble to safely travel the track 5 times during the presentation. If you want a challenge, you may try to design a system to bring the marble back to the top without touching it. This will be worth a 10 point bonus and is completely optional. The track must be pipe insulation and must be open. You may have up to 12 inches of closed track which may be made from any material.

Safety must be a priority. The room will be crowded. Please do not take supplies from another group’s supply box or touch other group’s projects. **Your group will lose points for your actions.**

Suggested Materials for Roller Coasters

Materials need to be labeled with your name and class period.

You may not bring any power tools. Any spray painting must be done before bringing the base to school. You will be allowed to paint with regular paint and brush as long as you supply your paint and clean up your area. The art teachers cannot give you paint.

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| --- | --- |
| Hot glue gun and glue sticks | Glue |
| Masking tape | Duct tape |
| Clamps  | Marbles |
| Popsicle sticks | Dowel rods |
| Spools and thread | Fishing line, string, twine |
| Yarn  | Small pieces of wood |
| Toothpicks | Decorations for your theme |
|  |  |

\*Students are NOT permitted to ask the art teachers or tech ed teacher for supplies or assistance.

\*I have hot glue guns, hammers, and nails here.

February 2017

Dear Parents,

 In the next week, we will be starting the roller coaster project in Science. It is a very exciting project where we can apply all of the concepts learned in the Force and Motion unit. Students will work in groups for this project but only part of the grade is “group.” The majority of the points will come from individual participation on the “construction days,” collecting data, creating a detailed sketch, presenting the coaster to the class, and writing a lab report. The roller coaster is the most detailed project of the year. If your child is absent during any part of the project, it is their responsibility to see me for an assignment to earn back participation points for the absence.

 *During construction, we will use hot glue guns and basic tools, such as a hammer or screwdriver. If you prohibit your child from using these items, please email me at* *whutchison@goldenrams.com* *by Feb. 20 to indicate your preference.*

 The basic track will be provided. Student groups will supply the “base” for the project. This is usually a piece of wood cut to 2’ x 3’ or 1’ x 4’. If nobody in the group can supply this, I do have some from previous years that I can supply. A helpful suggestion if you are supplying the base is to drill holes in the base prior to bringing it to school. This helps with placing and supporting dowel rods or whatever the group chooses to use to hold the track up. Students may also spray paint the base BEFORE bringing it to school if they wish. No spray painting is allowed at school. Regular paint may be brought in and used if they group decides on that. \*\****please do not go out and spend tons of money on supplies for this project. I stress to the students that they need to be resourceful and construct and decorate the coaster out of things lying around. I tell them to check places like a garage, shed, storage room, or old craft bin for unused items.\*\****

This is your child’s project and all construction must take place in school (except what was mentioned above.

Thank you for your support,

Mrs. Hutchison

After reading, please sign the bottom of this letter and have your child return it to me by Feb. 21

Student name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_