Re: Rube Goldberg Project

Dear Parents and Guardians,

College Park Elementary School will be holding our Annual CP Science Fair from Monday, Dec. 8th to Tuesday, Dec. 9th (you will receive an invitation closer to the date, the family night will be held on 12/9). Approximately 12 projects from our CP Science Fair will be selected to represent us at the Irvine Unified School District Science Fair in Feb. 24, 2015, at Irvine High School.

Your child(ren)'s participation in the Rube Goldberg project will give them a new and unique opportunity to learn all about Simple Machines and a tremendous amount about problem solving. My hope is that your family can help guide your 6th grader(s) through this project by being there when they need a push in the right direction or maybe serving as a lab assistant.

This year, we have made a few changes to make this experience more meaningful and fun for your child(ren). The new option of the Rube Goldberg machine is very exciting. While the project has been completely planned out over the summer, we will be learning about this experience together! In addition, student can now choose to work as an individual or as a pair. ***PLEASE NOTE: Encourage your child(ren) to choose partners wisely. IUSD's policy on pair work is both students will earn the SAME GRADE regardless of how the partnership works out or how work is divided up. Email me if you have questions.***

I believe this project is something your child(ren) can thrive at; as long as they get the support and guidance they need from you (Please see 'Guidelines for Parental Help'). This project is intended to be completed **at home**, but your child will be learning all of the steps in science lab by completing our sample project, entitled "Zipline Rube Goldberg." I will also assist you by posting and emailing numerous update letters, "How-to's," and rubrics. All of the information you will need (including due dates and worksheets) is also available to you on my website. **To access, please go to www.iusd.org/cp/ and under "Our Staff," click the science website link next to my name, Jessica Lingenfelter. Click the link to "6th Grade" at the top.** All of the District Science Fair Rules are also available at: www.iusd.org/education_services/Science.html.

In addition, there is one more important date for **Ask-A-Scientist Night**, on **Wednesday, Oct. 15th, 2014**, at **Rancho San Joaquin Middle School**, from **6:00-7:30 PM**, located at 4861 Michelson Rd., Irvine. This is an excellent opportunity for your student to consult with a local scientist about his or her project. While this night is not required, I cannot stress enough that I highly encourage you to attend. This is a very popular event and gets crowded quickly, so please arrive very early to avoid the crowds.

As always, please feel free to email me with any questions, comments or concerns. The better we communicate the more successful we will all be.

Sincerely,

Jessica Lingenfelter
Science Resource Specialist
Irvine Unified School District
jessicalingenfelter@iusd.org

RUBE GOLDBERG TIMELINE

***You are invited to attend the District-Sponsored "**Ask-A-Scientist Night**" on Wednesday, Oct. 15, 2014, from 6:00-7:30PM, @ Rancho San Joaquin Middle School.
This event is HIGHLY encouraged!!!

SECTIONS	Suggested Completion Date	Due Date
1. Identify a **Task**. This Task should be a very simple goal. It will be the ending of your Rube Goldberg machine. PARENT/ GUARDIAN SIGNATURE REQUIRED	WEEK OF SEPT. 15TH	WEEK OF SEPT. 22ND -or- SEPT. 29TH
2. Find research on simple machines and/ or get advice***. You will need a minimum of 2 sources. Write your **Background Research** (1 FULL page minimum). Your report should be double-spaced, 14 font size, 1" borders. INCLUDE HAND-WRITTEN NOTES AND BIBLIOGRAPHY ASK-A-SCIENTIST NIGHT IS AN INVALUABLE RESOURCE***	WORK ON THIS AS SOON AS YOUR QUESTION IS APPROVED AND COMPLETE AFTER ASK-A SCIENTIST NIGHT	WEEK OF OCT. 20TH
3. Identify your **Simple Machines**. You must use a minimum of three different Simple Machines in your Rube Goldberg. Include an explanation of how these Simple Machines might be used.	COMPLETE WITH YOUR BACKGROUND RESEARCH	WEEK OF OCT. 20TH
4. Make a list of your **Materials** and gather/ purchase your materials. At least half of your events must not come from a kit.	WEEK OF OCT. 20TH	WEEK OF OCT. 27TH
5. Draw a **Numbered Sketch of Events**. Describe each unique event. A minimum of SIX unique events are required.	WEEK OF OCT. 20TH	WEEK OF OCT. 27TH
6. Start your **Problem Solving Log**. Begin building your Rube Goldberg machine.	Start as soon as you get the "Green Light"	
7. Document success and/ or any design changes that occurred. Video and/ or pictures are recommended.	WEEK OF NOV. 10TH	Graded as part of your Notebook
8. Write your **Reflection** based on your experience during your experiment. Please see my website for "How to's."	WEEK OF NOV. 24TH	Graded as part of your Notebook
9. Reflect on a possible **Future Re-Design**. What additional simple machines could you use to accomplish the same task? How would you use them? How would you go about adding additional unique events?	WEEK OF NOV. 24TH	Graded as part of your Notebook
10. Be prepared to present your project in an **Oral Presentation**. Presentations are limited to 2 minutes.	WEEK OF NOV. 24TH	WEEK OF DEC. 1ST
11. Assemble all sections above to create your **Rube Goldberg Notebook**. Your notebook should include new, proofread and rewritten copies of each of the above sections. *All* hand-written or graded work should be included in the APPENDICES (see correct format for Appendices). This includes any notes taken in your Problem Solving Log.	WEEK OF DEC. 1ST	**DUE DATE MONDAY DEC. 8TH**
12. Complete your **Rube Goldberg Machine**. Submit the model or video of your machine. Please see my website for directions on submitting this project. (Please note: due to space constraints all machines must fit in a 3'x5' space.)	WEEK OF DEC. 1ST	**DUE DATE MONDAY DEC. 8TH**

ALL ASSIGNMENTS SHOULD BE TURNED IN TYPED, SO EACH CAN BE SAVED AND EASILY EDITED.

NAME(S): _____ CLASS(ES):_____

RUBE GOLDBERG RUBRIC

ABSTRACT: 1-2 paragraphs describing the overview of your entire project. It must include a description of the task and steps taken to accomplish it.		**5**
TASK IDENTIFICATION: Includes a description of the task the machine should be able to do. This should be a simple goal.		**5**
BACKGROUND RESEARCH: Information is appropriate and accurate. It should focus primarily on simple machines. Essay is written in student(s) own words. Essay is at least one-page in length at 14 pt. font, double spaced. At least 2 reliable sources are citied.		**5**
NUMBERED SKETCH and MATERIALS: Includes drawing of a numbered Rube Goldberg machine. Each unique event is described. Materials are identified in the description of the event, including **amounts/ quantities** of all items.		**15**
SIMPLE MACHINES: Evidence of three or more simple machines are used in the project		**5**
UNIQUE EVENTS: Evidence of six or more unique events must be used in the project (simple machine types may be repeated). At least HALF of all events may NOT come from a kit. Be creative!		**10**
PROBLEM SOLVING LOG: Includes a log entry documenting work on the machine and any necessary changes. Pictures and/ or video are recommended.		**15**
REFLECTION and RE-DESIGN: A minimum of one-page in length. It must include the following: an introduction, strengths/ weaknesses of your machine, struggles, accomplishments or surprises, people's reactions to the machine, what the problem solving experience has taught you, what you have learned and how you can apply it, where you got supplies and estimated costs, and a descriptive explanation of the follow of energy in your RG machine. What you would do differently in the future to improve upon your machine.		**10**
APPENDICES: This section is NOT included in the page numbers. It should have all rough drafts, notes and hand written entries from your log during your investigation, in order. Copies of research articles need to be highlighted and included. Rough drafts of observations must be included.		**5**
ORAL PRESENTATION: Maximum of 2 minutes to present your project.		**5**
DOCUMENTED SUCCESS: A working model or video proving the machine accomplished the task in ONE trial		**10**
NEATNESS/ ORGANIZATION: All sections are in correct order and typed. A Title Page, Table of Contents and page numbers are included.		**10**

TEACHER NOTES: **TOTAL:** **/100**

34th ANNUAL

IRVINE UNIFIED SCHOOL DISTRICT
SCIENCE INQUIRY PROJECT
RUBE GOLDBERG MACHINE – RULES

Sponsored by The Broadcom Foundation | Supported by Irvine Public Schools Foundation

FEBRUARY 24, 2015

1. All entries to the District Science Fair must come from sixth - twelfth grade students attending a school in the Irvine Unified School District. Entries must follow all Science Fair rules.

2. Each local school will select a specific number of projects to enter the District Science Fair.

3. **Each entry for grade 6 must come from one individual student or a group of 2 students. For grades 7-12, individual projects or group projects are allowed. Group projects for students in Grades 7-12 are accepted for groups of 2 to 3 students.** Any group project requires that each student in the group must be responsible for significant contributions to the project. Group projects for middle school students may be from students in grades 7 and/or 8. For high school, the students in the groups may be either all from a single grade, or from any combination of students in grades 9, 10, 11, and/or 12.

4. **Exhibits must include a project notebook.** It should be neat, well-organized and displayed within the exhibit. The project notebook must include rough drafts. If work is done directly on the computer, all versions of each page must be included.

5. The work on the project should be done by the student. If any outside help or assistance is given, it must be described in the project notebook (example: advice from a local scientist, parental typing of the project notebook, help with building or setting up equipment, etc).

6. **All measurements must use the metric system of measure when applicable.** Use of standard units (inch, feet, etc.) will eliminate the student from being selected for the IUSD Science Fair.

7. Only one space will be provided for each exhibit. Exhibits must have outside measurements **no greater than 3 feet wide by 1½ feet deep and 5 feet high.**

8. Exhibits must be free-standing and constructed of durable material such as peg-board or heavy cardboard. If electrical hook-ups are needed, arrangements must be made at least one week before the Science Fair.

9. Certification Forms are required **before** beginning your project if the data includes experiments involving human subjects, hazardous materials, live vertebrate animals and/or vertebrate tissue sources.

10. No live animals may be displayed. Consider using photographs or drawings instead. If live animals are used in experiments, humane practices must be observed. A Certification of Humane Treatment of Live Vertebrate Animals is required.

11. Student safety is paramount. Any dangerous chemicals, drugs, machinery, or highly flammable materials or open flames may not be displayed at the Science Fair. All electrical equipment must conform to standard electrical safety laws. The district reserves the right to reject projects which are unsafe or unsuitable for display.

12. Students entering projects in the District Fair should be aware that although care will be taken, damage could possibly occur to projects during the time they are on display. The district will not be responsible for lost, stolen, or damaged items.

-OVER-

13. **Projects may be entered in one of four categories:**

    Scientific Inquiry: Biological Sciences: Botany, agriculture, forestry, hydroponics, algae, plant genetics, photosynthesis. Zoology, animal genetics, animal ecology, physiology, animal physiology, anatomy, studies of invertebrates, birds, snakes, bacteriology, health, psychology, etc.

    Scientific Inquiry: Physical Sciences: Physics, electronics, mathematics, computers, lasers, communications, optics, solid state. Chemistry, physical, organic, inorganic, materials, plastics, fuel, soil chemistry. Earth Science, space science, geology, geophysics, oceanography, geography, astronomy, astrophysics, etc.

    Group Projects: 6th Grade Group Projects; 7th and 8th Grade Group Projects; 9th through 12th Grade Group Projects

    Rube Goldberg Machines (6th Grade Only)

14. Scientific Inquiry Projects (individual and group) will be judged separately by grade level and by category; for example, 6th Grade Physical Science, 11th Grade Biological Science, etc. Group projects will be judged in three separate categories: Grade 6, Grade 7-8, and Grades 9-12.

15. Rube Goldberg Machines will be displayed. **Rube Goldberg Machines are not eligible for the Orange County Science Fair.**

16. Students will be responsible for the set up and take down of their projects at **Irvine High School as follows: set up - Monday, February 23, 2015, 3:00 – 6:30 PM; take down - Tuesday, February 24, 2015, 8:00 PM** (after the Awards Ceremonies.)

17. Judging will take place on Tuesday, February 24, 2015 from 9:00am to 11:00am. Each student must be present for an oral interview with the judges – there are no assigned interview times! **Each student involved in a group project must also be present for the judging.**

18. No one may be in attendance during the judging except the student entering the project and the judges.

19. All decisions of the judges will be final. Entries will be judged in the following areas: knowledge of exhibit and related areas; accuracy displayed by the student; evidence of problem-solving through experimentation; and neatness and attractiveness of exhibit. **At the high school level the judges will give special attention to determining the degree of student involvement in projects performed as part of ongoing sponsored research in University or other laboratories.**

20. District Science Fair winners will be announced at the Awards Ceremonies scheduled for February 24, 2015 at the Irvine High School gym:

    - **1st Awards Ceremony - 6:00-6:45pm:** All Biological Science Projects Grades 6-12. Also, all Group Projects Grades 7 – 12 regardless of topic.
    - **2nd Awards Ceremony - 7:15-8:00pm:** All Physical Science Projects Grades 6 -12 and 6th Grade Rube Goldberg Machines.

21. **Orange County Science and Engineering Fair Information (OCSEF):**
Rube Goldberg Machines are not eligible to participate in the OCSEF!
This information is SUBJECT TO CHANGE.

If you plan on entering OCSEF, you must tell your science teacher. Your science teacher must approve your entry! Be sure to check OCSEF Rules & Regulations before beginning your project.

To be eligible for the Orange County Science & Engineering Fair (OCSEF), students must have participated in the IUSD Science Fair.

Students may enter OCSEF as an individual project, or they may enter as part of a team project with 2 or 3 members total.

- Team projects will be placed in the same categories as individual projects. Judges will have higher expectations for the originality, scientific value, and completeness of team projects done by 2 or 3 authors working together in comparison with the work done by one student.
- All work on team projects must be acknowledged; all team members must be present at the judging interview to be considered for category awards.
- We (IUSD) will limit *6th Grade Group Projects* only to 2 students (not 2 or 3 as stated above).

OCSEF limits IUSD to 125 entrants. Projects selected to enter OCSEF will be determined based on the following criteria:

- Interest by the student in participating in OCSEF.
- Ribbon awarded at the IUSD District Science Fair.
  - Not ALL Blue Ribbon winners at the IUSD Science Fair will be selected to participate in OCSEF.
  - Red Ribbon winners at the IUSD Science Fair may be selected to participate in OCSEF.
  - Honorable Mention winners will NOT be eligible to be selected to participate in OCSEF unless we are unable to fill our 125 allocated entries from the Blue and Red Ribbon winners.
- Input from the student's science teacher.

Registration for OCSEF takes place on-line. For rules, details and deadlines, please visit their website at: www.ocsef.org.

GUIDELINES FOR PARENTAL HELP

I hope the following suggestions will be helpful as your child develops his or her science project:

1. Please remember that the most important ingredient in any science fair project is the sense of accomplishment a student feels when a project has been successfully completed. Do not worry about the project's performance at a science fair. If strengthened scientific thinking and research skills and increased knowledge have occurred, then a prize has truly been won.

2. Although it is to be the student's effort, there is no substitute for a parent's support.

3. Areas in which a parent's assistance may be necessary and welcomed include:

   A. Being an interested listener.

   B. Safety. Be sure that poisons, dangerous chemicals, and open fires are avoided.

   C. Suggest project ideas that your child may choose to investigate.

   D. Provide transportation to libraries, stores, nurseries, museums, or to any source of project information.

   E. Technical work such as typing, help with computer graphics, and building or setting up equipment. (This must be noted in the acknowledgment section of the notebook).

   F. Look over the project for good grammar, neatness, spelling, and accuracy.

   G. Help the child to keep a record of all he or she does and a list of references used.

   H. Realize that a good project doesn't have to cost a lot of money but will take a lot of effort.

   I. Encourage positive interactions when working with a partner. Help guide your child through thoughtful communication and team work.

After reading this, please complete the Google Drive form located on my website.