NAME:_____ 6A 6B Due Date:_____

Mousetrap Cars
Planning – Invention – Experimentation

Your Task:
Create a Mousetrap car that travels at least 2 meters (approximately 7 ft). We will do some research work on cars one day in class, and you are welcome to work on your car with me during lunches at school, but the assignment is largely **HOMEWORK**.

Learning Targets:
I can design a car that is powered solely by a mousetrap
I can identify the forces involved in moving and stopping my mousetrap car
I can identify the types of energy involved in moving and stopping my mousetrap car
I can explain Newton's Laws of motion in relation to my mousetrap car
I can explain why I designed my car the way I did

Timeline/Due Dates:
First version due January 3, (the first day after we get back after winter break) bring in your car on Monday for Time Trials!
Final competition will be held on January 4th for 6A and January 6th for 6B

Guidelines:
1. You must use only one Victor mousetrap (I will provide you with one) to power your car.
2. You must build the car yourself, but you may have some guidance and help from an adult.
3. The mousetrap must be the only thing powering your car.
4. You must document your time working on the mousetrap car (including research, construction, testing,…)
5. You must draw your plans for your car.
6. You should test your car at home before bringing it to school on Monday, January 3rd.
7. There will also be worksheets for you to fill out to help you demonstrate your understanding of the forces and energy involved in your mousetrap car.

Resources:
The wiki page has a link to videos, pictures, diagrams, and more information. Just click on the MOUSETRAP CAR RESOURCE PAGE at http://qdailyscience.pbworks.com
In addition, here is a great website: www.docfizzix.com/

(Rubric for Evaluation on Back)

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Learning Target	Developing	Proficiency	Mastery
I can create a mousetrap car that is functional, creative, and complete (including supporting papers)	Mousetrap car functions and moves forward; work log at least started; design and testing show a little thought and time investment/effort	Mousetrap car functions and moves at least 2m; work log completed; design and testing show solid thought and time investment/effort	+ many hours spent on design, construction, and testing or car shows extreme creativity and high quality construction
Time Investment	2-4 hours of quality, productive work	4-7 hours of quality, productive work	7+ hours of quality, productive work
Performance of mousetrap car	1-2 m of movement	2.0-5.0m of movement (plus bonus for winning speed and or distance)	5+ meters of movement (plus bonus for winning speed and or distance)
I can diagram the forces at work on an object.	Arrows showing the direction of pushes and pulls on an object are mostly correct	Arrows showing forces completely correct and mostly labeled	Arrows showing forces completely correct and labeled; sizes indicate strength of forces
I can accurately measure time and distance.	Distance measured accurately to the nearest 0.1 m; units correct	Distance measured to nearest 0.01m	+ converted between m, cm, and mm (0.001m=0.1cm=1mm)
I can calculate rates like speed.	Can calculate speed in structured setting (given formula and guidance)	Can make necessary measurements and calculate speed with units present	+ can use speeds to calculate time and/or distance
I can identify and explain different types of energy	Can label/describe where an object has different types of energy	+ can describe the transformation of energy from one type to another	+ can calculate the amount of energy in an object