**The Mousetrap Car Analysis Report**

Answer the following questions completely (include formulas and/or calculations where appropriate). Your answers may be written below or typed and submitted on SEQTA. It must be a minimum of 300 words.

1. What are the two types of friction that affect the performance of your vehicle?  
   The two types of friction that affect the performance of the mousetrap car is sliding and rolling friction
2. What problems related to friction did you encounter and how did you solve them?

When the car starts moving the wheels will wobble if the surface underneath is uneven/rocky. When the mousetrap car rolled forward the wheels only rolling a little bit and caused the wheels to stop moving. we solved them by balancing the middle of the car.

1. What factors did you consider to decide the number of wheels you chose in your design?  
   When you have four wheels on the mousetrap car, it helps stabilize the car from tipping to the left or right.
2. What kind of wheels did you use in each axle? What is the effect of using large or small wheels?  
   I used CDs for wheels for each axle and the effect of using large wheels should move the mousetrap car a greater distance and if you used small wheels the effect would be that the car would be heavier to move forward due to the size of the wheels.
3. Explain how Newton's first, second and third laws apply to the performance of your vehicle.

Newton’s first law (inertia) is when an object at rest remains at rest, and an object in motion remains in motion at constant speed and in a straight line unless acted on by an unbalanced force. When the mousetrap car doesn’t move until a force of the mousetrap moves the car and doesn’t stop it hits something or friction/gravity stops the car.

Newton’s second law applies to the performance of the mousetrap car by the more the car weighs the slower the car will go. If the car weighs less, the car will go faster due to having less mass, so it won’t need much force to move the mousetrap car. (Formula: F = m . a) (newton’s second law states: the force acting on a moving object is the product of the mass and acceleration).

Newton’s third law states for every action there is an equal and opposite reaction. This law apply to the performance of the vehicle by once the car starts rolling, the friction is pushing against the car with not much force to keep the car moving. as the car keeps rolling forward the force balance to slow down the car completely

1. Discuss the effect of the length of the lever arm in the pulling force of your vehicle.  
   when the lever is winded up onto the axel, once let go the force of the level will let the front wheels of the car move forward.
2. Discuss the types of energy transformations that occur in your car.   
   the potential energy from the car is transformed into kinetic energy to form the level/arm rotating forward. Once the string connected to the lever is released the skewer starts to spin the CDS (wheels) forward to make the car move.
3. List the energy types that are wasted in your car.

Sound energy

Heat energy

1. Discuss how you increased the efficiency of your vehicle (reduced the wasted output energy).

I increased the efficiency of the mousetrap care by wrapping the lever string tightly around the skewer to make sure it doesn’t tangle up when released. When using CDs for the wheels, they help for how far the car goes.