**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 affecting the car are air resistance and surface friction from the wheels rubbing against the ground as it rolls.
2. **What problems related to friction did you encounter and how did you solve them?**The car wasn’t moving. We put tape on the wheels to try to reduce the friction so that the car wouldn’t be slowed down as much.
3. **What factors did you consider to decide the number of wheels you chose in your design?**We didn’t really think much about it. We just went with what looked good. We did consider how they would attach to the car and we wanted two back wheels.
4. **What kind of wheels did you use in each axle? What is the effect of using large or small wheels?**We used discs with masking tape. All wheels were the same size. Having larger wheels at the back would help the mousetrap car to travel further and probably faster too.
5. **Explain how Newton's first, second and third laws apply to the performance of your vehicle.**The first law of motion is about how the car will continue to move as long as the force that’s acting on it is more than the friction. The second law states that force is equal to mass of the object times the acceleration. The third law is related to the car because when the spring is released, it propels the car forward with an equal force and in the opposite direction.
6. **Discuss the effect of the length of the lever arm in the pulling force of your vehicle.**The car with a longer lever arm will travel further and the string will be pulled more, which will spin the wheels/axle tighter and for longer. With a shorter lever, the string won’t be pulled as tight or the wheels won’t be spun for as long.
7. **Discuss the types of energy transformations that occur in your car.**

When the lever was upright, it had gravitational potential energy. Once released, the energy was transferred into kinetic energy. The wheels had kinetic energy when they were moving. The friction from the moving car produced heat. The mousetrap produced sound when it was released.

1. **List the energy types that are wasted in your car.**

Heat energy and sound energy.

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

We used discs and added tape to the wheels to reduce surface friction and the amount of heat that would be produced. Next time we would use a sturdier/heavier base for the car which would also help to limit the amount of wasted energy.