Mouse Trap Car Design Report

Lab Partners: _____ _____ _____

1. Explain the basic design features of your mousetrap vehicle. Include the length of the lever arm and other parameters over which you had control.

2. What major problems did you have (don't say "NONE!") and how did you solve them?

3. Estimate the total potential energy available from your mouse trap. This should be determined by an estimate of the average force at the end of your lever and the distance the end of the lever arm traveled.

    a. Length of lever _____

    b. Average force of lever _____

    c. Effective distance the end of the lever traveled _____

    d. Potential energy of mouse trap in Joules

4. Estimate the power of your car, based on the answer to #3.

    a. Total potential energy available _____

    b. Time force was applied to vehicle (coasting doesn't count) _____

    c. Power of car

5. Calculate the average velocity of your vehicle

    a. Total distance traveled _____

    b. Total time of travel _____

    c. Average velocity

6. What is the mass of your vehicle? _____

7. Assume the maximum velocity of your vehicle is twice the average velocity. What is the maximum kinetic energy of your vehicle?

8. Use the calculated potential energy and kinetic energy values to calculate the efficiency of your vehicle.

9. Is the efficiency more than 100% or less than 100%? If it is more, what measured values might have contributed to this error (since we know efficiency cannot be over 100%)? If it is less, where might you be "losing" energy in the system?

10. What would be the effect of adding extra weight to the car?

11. Describe the energy transformations in the car.

12. What improvements would you make if you were to start again from scratch?

Your group has 10 "Participation Points" per group member. It is up to you to decide how to divide them. Be realistic, be honest, be fair.

Name _____ Points _____

Name _____ Points _____

Name _____ Points _____

Name _____ Points _____