**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Energized Toy Cars**

**Problem**: How does the mass of a toy car affect its potential/kinetic energy?

**Hypothesis**: If the car has \_\_\_\_\_\_\_\_ mass, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Procedure**:

1. Build a ramp 15-25 cm high using books or binders. Use a plastic track to complete the ramp.
2. Measure and mark 1 meter from the start line. This will be the finish line.
3. Release one car at the top of the ram from your start line and use a stopwatch to measure how long it takes until it crosses the finish line.
4. Record the time. Do this three times.
5. Next, use tape to add one washer to the car (it adds mass). Repeat steps 3-4.
6. Continue releasing cars with up to four different washers in your data table.



**Data**:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Trial 1 | Trial 2 | Trial 3  | Average |
| Car |  |  |  |  |
| Car with 1 washer |  |  |  |  |
| Car with 2 washers |  |  |  |  |
| Car with 3 washers |  |  |  |  |
| Car with 4 washers |  |  |  |  |

**Analysis**:

1. How did the travel time change as the mass of the car changed?
2. How does the mass of a car affect how much energy it has? What evidence from the experiment makes you think this?
3. What happened to the energy in the cars when they were released down the ramp?
4. Where is the potential energy in the car equal to zero? At what point during the trial is the potential energy the greatest?

**Conclusion**: Look at the problem this experiment was studying and your hypothesis to make a conclusion. Did this experiment prove or disprove your hypothesis?