The Mousetrap Car

Description

Our classroom has been asked to bid on a contract from a major toy corporation to construct a durable, lightweight, and an aerodynamically-shaped vehicle that is propelled by the spring of a single mousetrap. These vehicles must be designed to travel a predetermined distance at the fastest velocity possible. We are also required to create a one-page magazine advertisement describing the vehicle's prominent features for selling purposes. The corporation also wants us to come up with ideas on how we can mass produce these vehicles from our classroom. **Individually**, you will submit your prototype and ideas for approval.

What you already know

- Safety procedures associated with working in the classroom
- Safety related aspects to specific tool and machine operations and usage
- How to research information (library and the Web)
- Draw thumbnail sketches
- Transfer your sketches to 3-dimensional material for fabrication
- Draw a final Orthographic drawing of the finished product
- Construction of a final product

What you will learn

- Produce a "working drawing"
- Create a magazine advertisement to sell your vehicle
- Construct, test, and modify your vehicle design
- Follow your specifications to meet the requirements
- How to utilize the "man-power" of the classroom to mass produce a product (manufacturing process)
- Friction (traction and friction reduction)
- How energy can be transferred (linear to rotational)
- New construction techniques

Features and Specifications

- The main body of your vehicle is to be constructed from a wood blank that is 8 cm by 30 cm, the axles will be steel rods, string will be used to transfer power from the engine(mousetrap) to the axle, and glue guns will be used for assembly **(all classroom provided)**
- The vehicle must be at least 15 cm in length
- The car is to be designed using engineering principles (minimum usable mass, friction (more or less), and aesthetics
- Only **one (1)** "Victor" mousetrap may be use to propel the vehicle and the spring **cannot** be modified in any fashion **(classroom provided)**
- You may modify the "arm" (lengthen) to propel the vehicle using coat hangers, etc. **(student provided)**
- Wheels can be made from wood **(classroom provided)**, CD's, or anything found at home (e.g. broken toys) **(student provided)**
- You will be given classroom time to complete your drawings, magazine advertisements, and production proposals
- There will be no sharp objects protruding from your vehicle **(safety)**
- **Your vehicle must be able to travel 3 metres.** Time permitting, you may decorate your vehicle

Your tasks…

1. Create thumbnail sketches for your prototype
2. Assemble your vehicle
3. Test and modify your vehicle
4. Draw a single view (front, side, or top) orthographic drawing of your final project
5. Shop practice and safety

Hint: Review and incorporate the rubrics into your project!