STEAM Project 2017-2018
Robotics

Objective: To build a machine capable of picking up a mass at ground level and transporting it to a raised platform a distance of 10' away.

Requirements:

1. Must be constructed using provided materials
    a. You will be provided 3 electric motors, a package of jumbo popsicle sticks, assorted gears, assorted rubber bands, four wheels, pulleys, a metal rod, super glue, a hot glue gun, and other materials TBD by teaching staff.
2. Powered by provided electrical components (No manual pushing/pulling)
3. Design process must be detailed in "Design Journal"
    a. Must create an initial "Written Proposal" detailing plans for approval
    b. Must include a hand-drawn design rendering
    c. Must include a 3-dimensional (digital) or miniature prototype of design
    d. Should contain pictures and notes of design process
4. Groups will conduct an informative presentation utilizing the guidelines of the attached presentation rubric.
5. Groups must maintain a budget log accounting for all materials used. A price list for items will be provided.
6. Group members must determine how the project ties to the curriculum of each of their respective teachers.
    a. Justification to be done verbally with each teacher. Appropriately identifying ties to curriculums will be a major factor in individual classroom grading for this project.

Trial(s):

1. Groups will be allowed three "final" trials to ensure reliability and accuracy of collected data.

Data to Gather:

1. Total mass of machine and mass moved
2. Acceleration
3. Time
4. Distance
5. Speed (if accelerators don't work)

Use the data to calculate the following:

1. Work
2. Power
3. Force
4. Acceleration
5. Kinetic energy

Event Days Scheduled:

- December 20th (Introduction)
- January 3rd (All Day)
- January 4th (All Day)
- January 5th (Morning)

- January 16th (Presentation Day)

All-Around Competition

- All groups will be awarded points (1-12) in the following categories, with the top overall point earners receiving a prize!
    - Fastest to pull 1 kg
    - Most mass pulled
    - Most visually pleasing drone
    - Best presentation
    - Cheapest drone
    - Lightest drone