BLOOMFIELD HALL SCIENCE SOCIETY PRESENTS

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STUDY GUIDE

NEWTON'S WORKSHOP

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Prepare for a high-voltage test of mechanical ingenuity! During Newton's Workshop, participants dive headfirst into the physical sciences, converting raw wood, tubing, and soda bottles into functional feats of engineering. Success requires far more than mere assembly, you will be awarded for performance, teamwork, and breaking down the physics behind your contraptions to a panel of judges. The crown goes to those who can engineer a flawless hand-chuck glider, build a bridge capable of defying heavy rolling loads, and sculpt a rocket that pierces the upper sky. Momentum, calculation, and raw ambition fuse together as practical physics comes alive.

Round 1:
Teams are tasked with constructing a functional hand chuck glider using the given materials. Within the timeframe, teams must construct their glider from scratch, and deliver a compelling presentation explaining the core physics principles behind their model. The glider will also be judged based on multiple metrics such as flight distance, accuracy, design and strength of the glider.

Round 2:
Teams must design and build a structural bridge using the provided materials, capable of supporting varying rolling masses across a span. Within the timeframe, teams combine physical fabrication with an engineering defense, explaining the core concepts behind why their bridge works the way it does

Round 3:
Equipped with identical 2-liter pressure vessels, teams must engineer an aerodynamic rocket using corrugated plastic fins, modeling clay ballast, and other materials. Within the timeframe, participants must carefully balance their design's center of mass and center of pressure to minimize drag, achieve maximum altitude, as well as distance covered during launch trials, and defend the aerodynamics behind their build.

Important notes:
- Delegate cap for all rounds is 3.
- All work to be done on site, no external resources for construction or defense to be allowed, however research of topics and principles relevant to each round prior to the events is encouraged