



DSBN REGIONAL GRADE 7/8 TECHKNOWLEDGE CHALLENGE 2006 ELEMENTARY LEVEL SCOPE

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PURPOSE OF THE CONTEST:

NASA has announced a worldwide competition to develop prototypes of a new machine that will excavate lunar “regolith” or moon dirt. From NASA: “Excavation of lunar regolith is an important and necessary step toward using the resources on the moon to establish a successful base for life on its surface. The unique physical properties of regolith make excavation a difficult challenge.”

Your design and engineering team must submit a proposal, complete with a working prototype, design sketches and written documentation to NASA. Each team will be asked to demonstrate the effectiveness of their design by using their prototype to transport as much material as possible to moon station DSBN.

EVENT DETAILS:

Date: Feb. 24, 2006

Time: 9:00 - 3:00

Location: Fort Erie, Stamford, St. Catharines Collegiate, Lakeport, West Park, Grimsby, and E.L. Crossley D&T Centres

The top two finishers at each qualifying contest will compete in the DSBN finals at the Ed. Centre on March 1, 2006 from 3:00 - 6:00 for the right to represent DSBN at Skills Ontario.

SKILLS AND KNOWLEDGE TO BE TESTED:

Using a wide variety of materials provided on the day of the contest, teams of 4 students will design and build prototypes of their lunar excavators using the resources available at the D&T shop. These resources include computers, hand tools and power tools. The students will be judged on their ability to follow the “Design Process” to develop their prototype as well their ability to safely construct and demonstrate its effectiveness.

SAFETY REQUIREMENTS:

Competitors are required to follow all industry safety standards during the competition.



EQUIPMENT, MATERIALS, TOOLS AND SUPPLIES:

Equipment Supplied by the Contest Coordinator: All necessary equipment for design and construction is supplied.

Equipment Supplied by the Competitor: Digital Camera

CLOTHING REQUIREMENTS:

Casual attire.

PROJECT AND COMPETITION EXPECTATIONS:

The materials to be transported must not be handled by the participants. Marbles that fall from the test surface will be placed back in the holding area by the judges. Marbles may not be hand loaded on to the device must be self-unloading using mechanical means at the space station. No direct hand power is permitted (such as pulling a string). The base must sit inside the moon surface. The machine must start entirely above the moon surface.

You may only use the materials provided. Be careful with the materials as you may not obtain replacement parts. You may use the material provided any way you wish.

JUDGING CRITERIA:

One point will be awarded for each marble moved in the 2.5 minute time allotment. One time out period of 2.5 minutes may be given for repairs at the judges discretion. The judging at the DSBN finals will include a poster style presentation for the judges showing the steps followed in the design process to achieve the final product. You should include all design sketches and photos.

JOB INTERVIEW COMPONENT:

Not applicable.

ENTRY:

Teachers should forward a list of competitors participating from their school to the contest coordinator prior to the date of the contest. Invitations will be forwarded by e-mail to each school. Spaces are limited and will be awarded on a first come first served basis.

TRANSPORTATION:

Students are responsible for their own transportation.

TEACHER'S ROLE:

Instructors are expected to acquaint their student participants with all of the enclosed guidelines. Teachers should accompany their students to the competition, but may not assist the competitors during the challenge.

SPECIAL INSTRUCTIONS OR GUIDELINES:

Additional details may be provided on the day of the challenge.

COMPETITION AGENDA:

Arrival: 8:30 am

Competition start: 9:00

Competition end: 2:30

Judging: 2:30 - 3:00

Lunch and refreshments will be provided for students and staff. If any students have special dietary requirements please inform the D&T teacher at the competition site in advance of the competition.