Trial/Pilot Event

Contact the organizers of your tournament to find out what trial/pilot events will be held.

SHOCK VALUE

1. **DESCRIPTION**: Students will compete in activities involving basic knowledge of electricity, magnetism and electrical devices. The event may include hands-on experimentation and/or problem solving. A typical event will consist of both a theoretical portion (e.g. questions requiring knowledge about north and south magnet poles) and a practical portion (e.g. questions requiring knowledge on constructing a circuit with a light bulb and battery).

A TEAM OF UP TO: 2 **APPROXIMATE TIME**: 50 minutes

2. **THE COMPETITION**:

A) The competition will consist of tasks and questions related to electricity, magnetism and electrical devices such as light bulbs, batteries and motors. The event supervisor may provide some mathematical relationships, and will notify teams ahead of the tournament if such a sheet will be provided, but the students are expected to know the concepts outlined below.

i) Basic electrical circuit theory (e.g. concepts of voltage levels, current flow and direction, electrical pathways, volts, amperes, ohms, schematics)

ii) Basic electrical device concepts (e.g. battery polarity, parallel vs. series wiring of components, light bulb and motor connections, dry vs. wet cells)

iii) Basic electrical circuit construction / analysis (e.g. switches, power source, voltmeter measurements, light bulb/motor connections, 'kitchen' built batteries)

iv) Basic magnetism concepts (e.g. North and South poles, Earth's magnetic field, electromagnet principles, magnetic vs. nonmagnetic materials, magnet shapes / types)

v) Basic magnetic applications (e.g. use of a compass to determine directions / poles of a magnet, operation of an electromagnet, use of magnets in motors)

B) Supervisors are encouraged to use measurement equipment (e.g. compasses, voltmeters, etc) wherever possible or provide students with data sets collected by equipment following demonstration of the data collection. If used, data will be presented in a tabular and/or graphic format and students will be expected to interpret the data.

C) Students are only allowed to use a non-programmable calculator. No notes, books, or computers will be allowed to be brought into the event. The event supervisor will provide any needed measurement equipment such as voltmeters or compasses.

3. **EXAMPLES OF SHOCK VALUE STATIONS/ QUESTIONS:**

A) The Event Supervisor provides circuit components including wires, batteries and a light bulb. Students will be asked to connect the components in such a way that that the light bulb shines the brightest it can. Students will also draw a diagram of their circuit and be able to label and give a description of why this configuration is the optimal one.

B) Students are asked to identify which objects out of the following list will be attracted to a common magnet: textbook, nickel, paperclip, soccer ball, chewing gum, water bottle, hood of a car

4. **SCORING:** Points will be awarded for correct answers and/or proper technique. Ties will be broken using a designated task or question(s). The event supervisor will identify the tie breaker question(s) or task(s) on the answer form provided to the students at the beginning of the competition period. If more than one competition period is used, the tie breaker(s) will be the same for all periods.