SIMPLE MACHINES

DESCRIPTION:
Participants will identify, use, and answer questions about simple machines and recognize the relationships between work, force and distance as they apply to each simple machine. Knowledge of the following six simple machines will be demonstrated: lever, inclined plane, pulley, screw, wheel and axle, and wedge. Students should know and understand the concept of mechanical advantage and be able to estimate it by comparing the ratio of forces or distances.

TEAM SIZE: 1 or 2 students **APPROXIMATE TIME**: 30 minutes

THE COMPETITION:
Participant(s) will move between stations containing pictures or examples of devices made up of one or more simple machines. Teams must move at the time indicated by the event supervisor to ensure that all teams have equal opportunity to use the equipment at each station (e.g. 2 minutes per station). Students may carefully handle and manipulate objects found at each station.

At each station students will answer questions designed to test their ability to:

- Identify the simple machines illustrated
- Identify parts of the simple machines (e.g. load, effort, fulcrum)
- Use equipment to measure some variable(s) such as length, force or weight
- Recognize the relationships between work, force and distance as they apply to each simple machine
- Know and understand the concept of mechanical advantage and be able to estimate it by comparing the ratio of forces or distances
- Perform simple calculations

Possible question formats could include:

- Identifying simple machines as parts of an object (yes or no for each type)
- Matching
- Multiple choice
- True/false

SCORING:
Points will be awarded for correct answers. Questions will be worth either 1 or 2 points. The team with the highest total points for all stations will win. Ties will be broken by a predetermined set of questions.

If a rule clarification is posted on the Macomb Science Olympiad website, the supervisor will score this event accordingly. Please visit: http://macombso.org/index.php/esofaqs.