Mission Possible Division B

- What is Mission Possible?
  - Students design, build, test, and document a Rube Goldberg-like device
  - Device must use specific Starting and Final tasks defined in the rules
  - Device uses a sequence of consecutive simple machine transfers.
General Tips

- When in doubt ask questions.
- Make sure your students are following the safety and construction parameters defined in the rules.
- Go over required materials and procedure with your students before coming to the competition.
- Your students need to be prepared to explain their device and its operation.
- Take your time. You have 30 minutes.
General Tips...Again

- Something in the device will probably break in transit. Bring spare parts and tools necessary to fix the device.
- Try to stop your students from procrastinating.
- Labeling the device and having the TSL (Transfer Sequence List) are just as important as the device itself.
- The starting and ending tasks are worth the most points. Make sure they are the most reliable.
Simple Machine Types

- Lever
  - Can use each class of lever as a unique transfer start. Will only count 3 total lever transfers like the rest.

- Pulley
  - IMA > 1. No pulley systems with only fixed pulleys.

- Inclined planes
  - Push/pull object at least 10cm up the plane.

- Wedges
  - Must separate two touching objects.

- Screws
  - Must complete at least one full rotation. Must have a clearly visible mark to prove it completed one rotation.

- Wheel and Axle
  - Must complete at least one full rotation. Must have a clearly visible mark to prove it complete one rotation.
Start Task

- Drop an unaltered, regulation-sized racquetball into the device.
- Must be dropped from a location higher than the entire device.
- Have the students practice the drop.
Ending Task

- Ring or strike a bell to signal the end of the device operation.
- This bell must be **audible** by the judges.
- Demonstrate bell to judges before starting
Action Sequence List

- Make sure it is submitted to the Event Supervisor at impound.
- Follow the template given on the National Science Olympiad website.
- Unscored actions and transfers must be documented in the ASL, but do not number them.
- Number the actions intended to be scored in the ASL, and label these actions within the device.
Possible Issues

- Make sure the students understand section 4.
- A simple machine transfer is from one simple machine to a different simple machine. In order to get three scorable transfers of the same type the initial simple machine must be the same and the final simple machine must be unique.
  - Examples
    - Screw->Pulley, Pulley->Screw, Screw->Lever
      - Will receive 2 scorable screw transfers, and one Pulley transfer.
    - Screw->Pulley, Pulley->Screw, Screw->Pulley.
      - Only receive 1 scorable screw transfer and one scorable Pulley transfer.
Resources

- National Science Olympiad Website
  - https://www.soinc.org/mission_possible_b
  - Use the sample TSL on this site as your template.

- Kansas Science Olympiad Website
  - http://webs.wichita.edu/scienceolympiad/
  - Go to the For Coaches section
  - Sign up to the listserv
    - Send us your questions
Questions?