Mystery Architecture

Event Description: Team of 2 students gets a kit of materials to build with & a goal. Don’t know in advance.

**Ex1** Build a boat that floats & supports the most pennies, max 50
- 10 Popsicle sticks
- 12 in strip of masking tape
- 5 straws
- 2 sheets of colored paper
- 5 pipe cleaners
- 1 colored marker
- 1 plastic cup (9 oz)
- 8 in X 10 in sheet of foil

TB #1: Floats  TB#2: Heaviest Boat  TB#3: Longest Boat

**Ex2** Build a catapult that will launch a marshmallow the farthest distance under its own power.
- 20 Popsicle sticks
- 12 in strip of masking tape
- 1 spoon
- 5 large rubber bands
- 1 sheet of colored paper
- 1 plastic cup (3 oz)
- 12 in string
- 1 colored marker
- 3 large paperclips

TB#1: Holds Marshmallow  TB#2: Narrowest Width
Key Preparation Tips

• Everyone can practice - team, parents, siblings, … **great for teambuilding**

• Debrief
  – Design decisions - what options did you consider? why did you choose..? what would you do differently? what caused…? mid-course changes?
  – Execution/Process - deadline to start building?
  – Teamwork - how did you decide…
  – Observation - did you incorporate others’ ideas?
  – Team discussion about what worked, didn’t

• 40% innate, 60% learned

• 90% teamwork, 10% luck
?? strengths & weaknesses ??
Supplemental: What can be learned

- Basic types of building activities - practice a variety
  - catapults, cantilevers, bridges, towers, boats…etc…
- Engineering techniques & physics
  - Trusses, bracing, pyramids, …
  - Tension, compression, loads, friction, …
- Good building techniques
  - Building something level & symmetric
  - Appropriate choice of materials
  - Making tradeoffs
Key Tournament Day Challenges

• Remember scissors, ruler, pliers
• You may need to compete at 2nd tier objective
  – Can’t get your thing working (won’t launch m’ mallow)
  – Objective too easy (e.g., most boats float w/ 50 pennies)
• Teamwork under stress
• Deadline to start building~!
• Deciding when to start over (save some tape?)
• Will you have to move what you build ???
• No talking in the hallways afterwards!
Supplemental: Resources

- SciOly Wiki
  [http://www.scioly.org/wiki/Mystery_Architecture](http://www.scioly.org/wiki/Mystery_Architecture)

- Handout from 2003 SO Summer Institute
  [http://soinc.org/sites/default/files/uploaded_files/Mystery%20Architecture%20Handout%202003.pdf](http://soinc.org/sites/default/files/uploaded_files/Mystery%20Architecture%20Handout%202003.pdf)

- North Carolina SO website
  => Coaches institute presentation & sample tasks

- Search for example challenges, videos, and basic engineering principles

** Note: rules were a little different in different years