

# Mystery Architecture

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# The Event

Mystery Architecture requires students to build something using only the materials provided by the event supervisor

- The objects are built on site.
- Teams may bring in only **ONE** set of tools for the students to use. This “kit” may include 1 pair of scissors, 1 flat measuring device (ruler or meter stick), and 1 pair of pliers and goggles.
- Nothing other than the items listed above may be brought into the room.
- **STUDENTS MUST WEAR GOGGLES DURING THIS EVENT!!!!**

The device to be built is limited to an **elevated bridge, arch, tunnel or cantilever.**  
Cantilevers may only be assigned at the State and National levels.



A bag of stuff to be used in the construction and the load (if required) will be provided to each team before construction. No other supplies may be used.



The bag used to contain the items and the instruction sheet may not be used in the construction of the device



The primary, secondary, and whether the device must support a load (including the length of time it must be supported) must be specified before the build.



Unless specified by the event supervisor, the device must be free-standing (not connected to the table-top, wall, etc.).



If a load is to be used, the students place the load at the time of testing. Device will be measured before and after testing.

New this year...

# Scoring

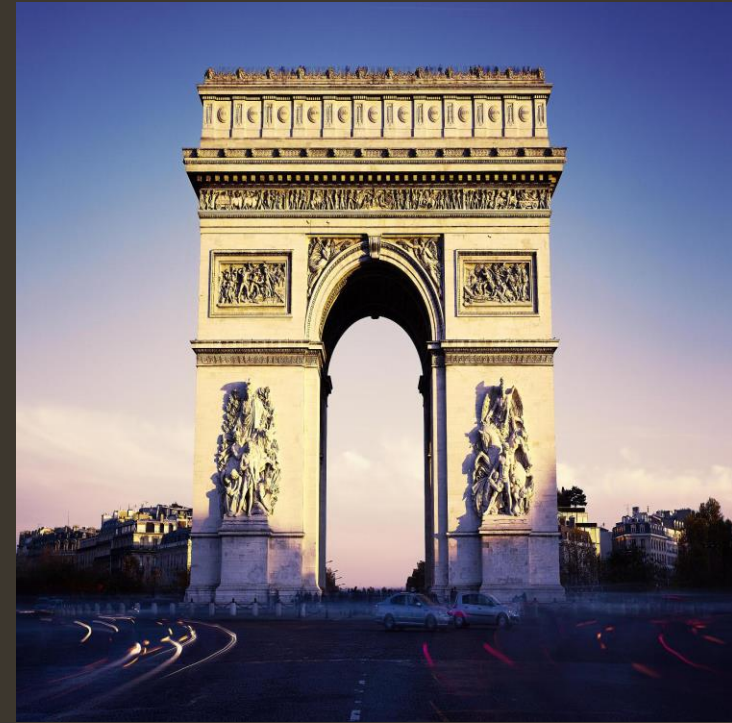
Devices which support the load or stand for the allotted time are ranked before those which do not. In other words, if the device built meets the standards set by event supervisor it will be ranked before those which do not. The secondary measurement is for tie breaking only.

Make sure you check out the resources on the  
National Website...

<https://www.soinc.org/mystery-architecture-b>

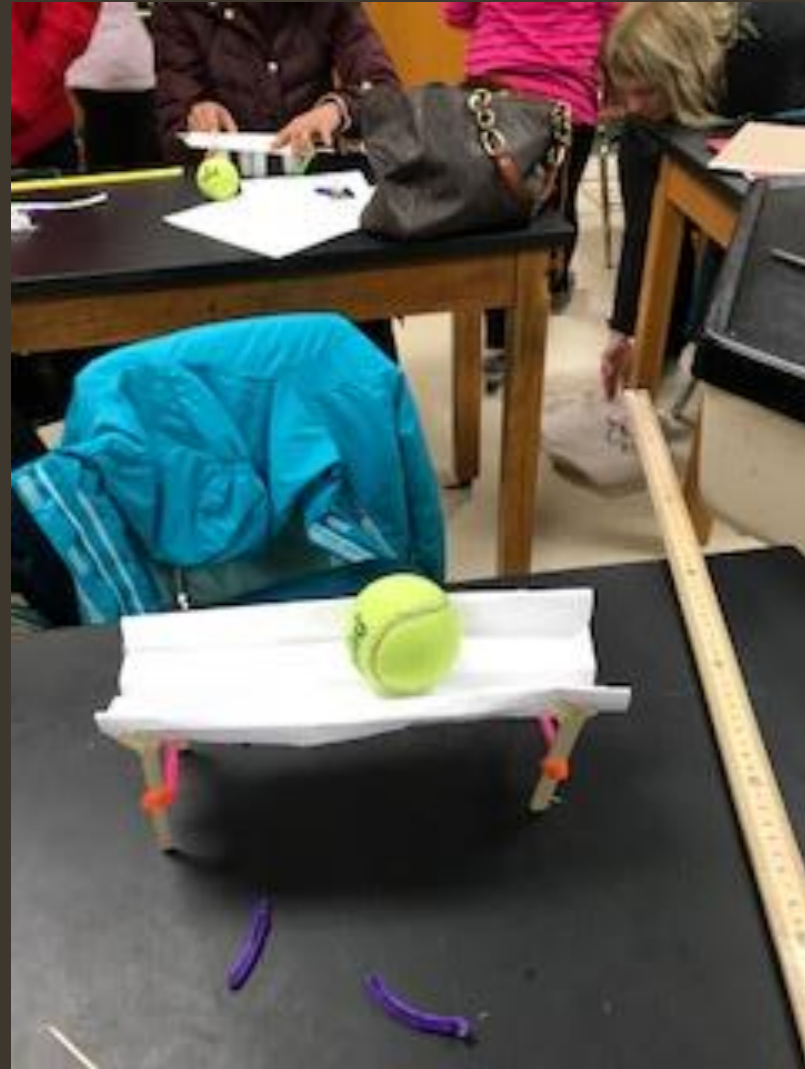


# Helpful Hints

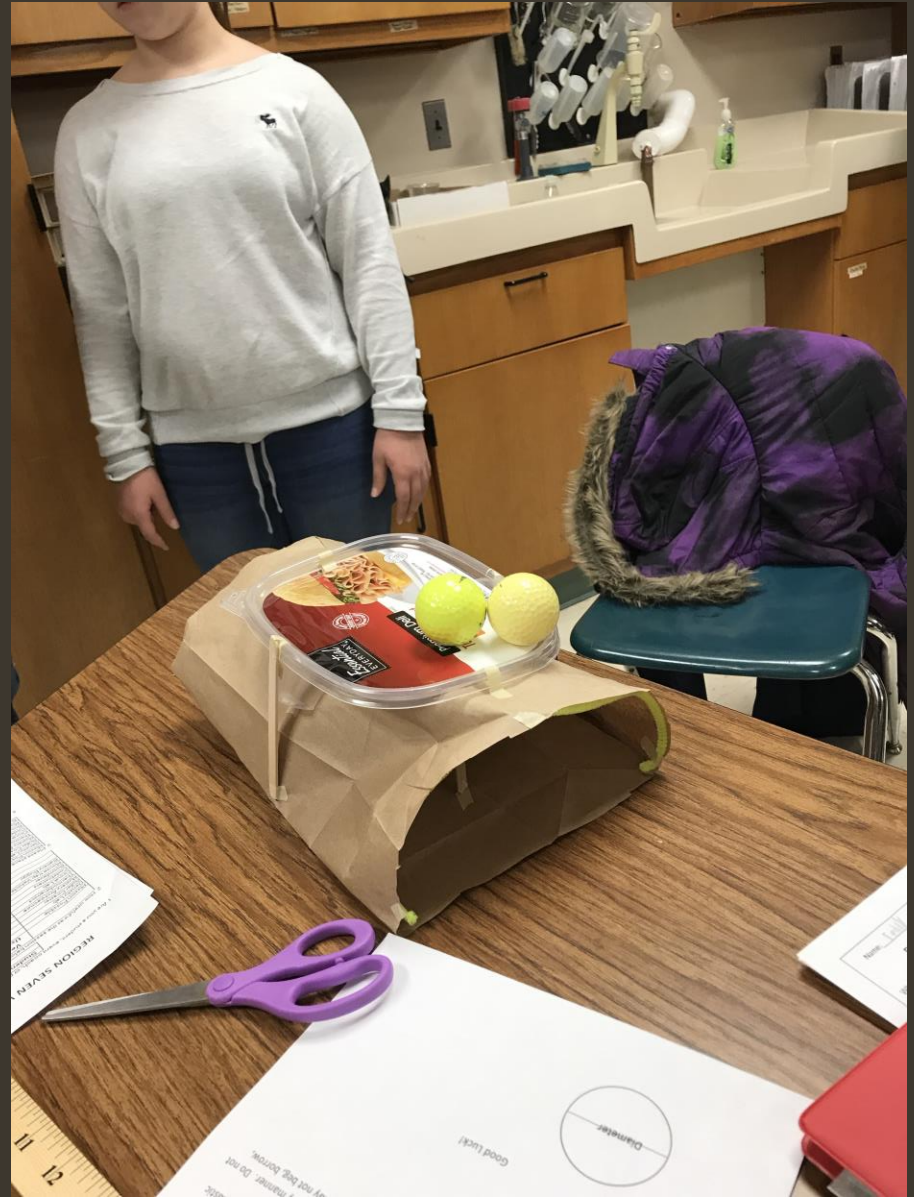
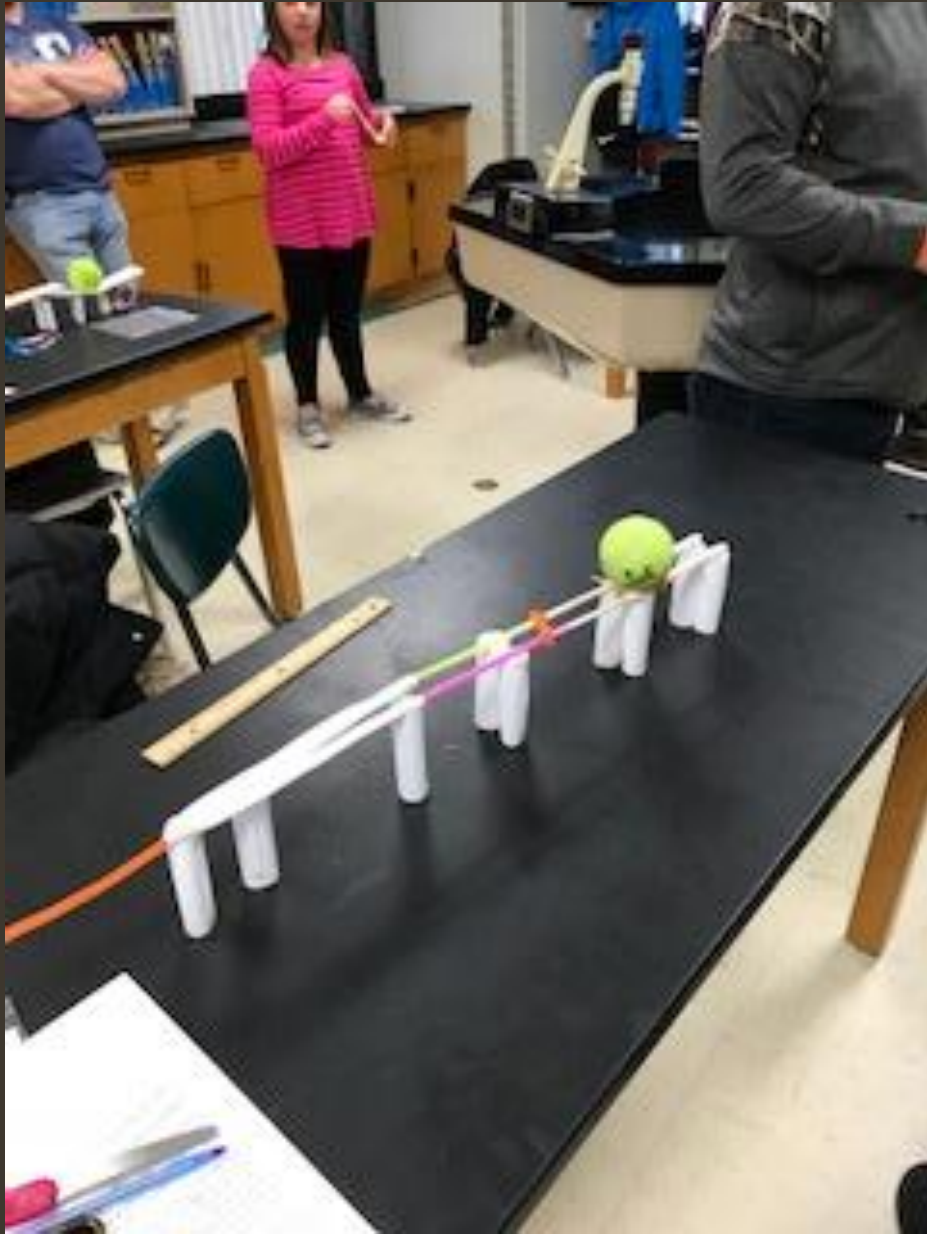


- Purchase a good pair of scissors for this event. Students will need to cut small pieces.
- Practice tearing or cutting pieces of tape in half, length-wise. This will give you more tape to work with.
- Remember triangles are the strongest shape.
- Rolling paper into straws will make it stronger and last longer.
- Cross bracing is very important.

# Pictures









**Example Tasks:** (Hint—think triangles and cross bracing)

Create the tallest free-standing arch which will hold a tennis ball at its highest point. The ball may be attached to the arch. The arch must hold the ball for 10 seconds. The tower will be measured to the top of the arch, this will be considered the height of the arch. The secondary measurement will be the width of the arch.

**Materials:** 1 sheet of copy paper, 10 Oreos, 10 Twizzlers, and 30 cm of tape.

Create the longest bridge which will hold a can of soup at its midpoint. The part of the bridge which holds the can of soup must remain at least 5 cm from the table top for 10 seconds. The bridge may be attached to the table top at two points with tape. The length of the bridge will be the distance between furthest support beams. The secondary measurement will be the height of the bridge bed to the bottom of the load.

**Materials:** 1 sheet of copy, 2 plastic spoons, 2 pencils, 2 thumb tacks, and 10 paperclips.

## Alternate tasks:

- Create a free-standing tunnel which will hold 100ml of water at its highest point. The tunnel must be at least 15 cm in diameter. The cup may be taped to the top of the tunnel. The tunnel must hold for 10 seconds. The height of the tunnel will be measured to the top of the cup (when supporting the water). The secondary measurement will be the width of the tunnel before testing. Materials: 2 sheets of paper, 4 straws, 2 popsicle sticks, 1 paper ice cream cup, 3 pipe cleaners, 30 cm of tape.
- Create the longest free-standing bridge which will hold a tennis ball, ten centimeters from its center-point. The area holding the ball must not fall below 15 cm from the table-top. The length of the bridge bed will be considered the length of the bridge. The secondary measurement will be the width of the bridge bed. This distance must be maintained for 10 seconds. Materials: 1 sheet of paper, two straws, two plastic cups, 30 cm of string, one thumb tack and 20 paperclips.
- Create the tallest cantilever which will hold a ping-pong ball as its counterbalance. The fulcrum is to be a plastic cup. The cantilever be free-standing for 10 seconds at testing. The secondary measurement will be the width of the cantilever at its base. Materials: one plastic cup, 30 cm string, one plastic bag, 4 straws, 2 paperclips, two sheets of paper and 30 cm tape.

- Sample Tasks Continued...
- Build the tallest free-standing tower possible using the supplies that you have been given. The tower must hold a golf ball at its highest point for at least 10 seconds. The height of the tower will be measured to the top of the ball. The secondary measurement (tie breaker) will be the circumference of the tower's base. Materials: 3 toothpicks, 3 craft sticks, 2 pipe cleaners, 2 sheets of paper, and 20 paperclips.
- Build the longest bridge using the supplies that you have been given. The bridge must be able to hold a golf ball 10 cm from the left pylon. While the ball is in place, the bed of the bridge must remain at least 6 cm above the table top. You may secure the bridge to the table at only one spot. The length of the bridge will be considered the distance between the closest pylons. The secondary measurement (tie breaker) will be the distance between the first and second pylon (from the left). Materials: 3 toothpicks, 3 craft sticks, 2 pipe cleaners, 2 sheets of paper, and 30 cm of tape.