

SCIENCE OLYMPIAD ELEMENTARY INVITATIONAL

2009 SCHEDULE & RULES

Saturday, November 14, 2009

9 AM – 12 Noon

Meet in Gaiser Student Center (Stage Area) at Clark College

Each team will have a maximum of 15 students. Each team will be divided as evenly as possible by the team coach into 5 “groups.” If you have 15 team members, then you should have 3 students in each group. If you have 10 team members, then you should have 2 students in each group. If you have 13 team members, then you should have 3 groups with 3 students, and 2 groups with 2 students.

Each team will be assigned a number. The groups will have the designations of A, B, C, D, and E, added to the team number. For example, team #1 will be composed of groups 1A, 1B, 1C, 1D, and 1E. The entire team of 5 groups will rotate together from event to event.

There will be ribbons for first, second, and third place teams in each event as well as a prize for the one group that scores best in each event.

Competition begins promptly at 9:00 AM!

8:00 – 9:00	Coach check-in & pick up your team’s schedule	Fireside Room (PUB 161)
9:00 – 9:10	Welcome	Gaiser Student Center (Stage Area)
9:10 – 9:30	First event	Various rooms in APH, GHL, PUB & SCI
9:35 – 9:55	Second event	
10:00 – 10:20	Third event	
10:25 – 10:45	Fourth event	
10:50 – 11:10	Fifth event	
11:15 – 12:00	Activity / Game for all – Parent Competition (no preparation required)	Gaiser Student Center

AERODYNAMICS

Description: Each group will build a paper airplane to be flown a distance of at least five meters, landing on a predetermined target. Airplanes must be of a folded aerodynamic design. Crumpled wads of paper do not qualify.

Number of Participants: Team divided into groups of no more than 3 each

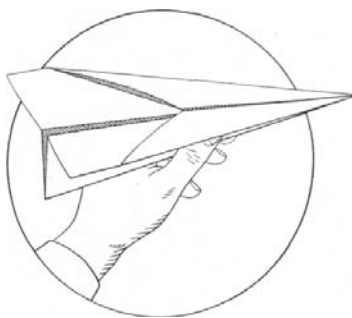
Time: 20 minutes

The Competition:

1. Three sheets of plain white paper will be supplied for each group along with approximately five centimeters of masking tape and a pair of scissors. The event supervisor may (or may not) also provide any of the following: straws, paperclips, or string. Three planes will be constructed.
2. Planes flown in competition must be made on site, during the allotted time, using only the materials provided.
3. Teams will have up to 12 minutes to make and test their three planes. Groups must choose which planes they will fly for their two official flights, with each flight made by a different member of the group. They may fly a plane more than once.
4. Planes will be hand launched from behind a line on the floor at a specified target more than 5 but less than 12 meters distant. The target may be on the floor or on a raised surface.

Scoring:

1. After each flight, the distance will be measured from the center of the target to the nose of the airplane where it comes to rest. The distance from the target will become the flight's score. The group score will be determined by adding the two flight scores together.
2. The lowest score, signifying the closest to the target, will be the winner. In case of a tie, the single best flight will break the tie.
3. The team score will be the total of the five group scores.



BARGE BUILDING

Description: Each group will construct a barge using aluminum foil that can support a cargo of the largest number of objects without getting them wet.

Number of Participants: Team divided into groups of no more than 3 each

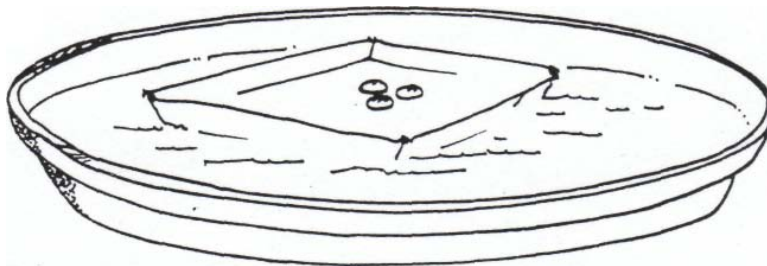
Time: 20 minutes

The Competition:

1. Each group will be given a single 10 x 10 cm piece of aluminum foil by the event supervisor. They have 10 minutes to construct their barge and turn it into the supervisor. No other materials may be used in building the barge.
2. The event supervisor will inform each group of the average mass of each cargo piece before they begin their construction. The cargo may be pennies, washers, paper clips, marbles, or other similar objects. The cargo will not be known until the time of competition.
3. The group must predict the number of pieces of cargo that the barge will hold. The piece that causes the barge to sink will not count in the total cargo. Sinking occurs when water enters the barge.
4. The event supervisor will provide the barge captain with the cargo to be loaded. The group will have 5 minutes to load their barge. Each piece must be loaded on at a time while the barge is floating in a pan of water. The barge must then be loaded until it sinks.

Scoring:

1. The winner will be the group with the highest score. The score will be determined by the following formula:
(Amount of cargo held x 10) – (the difference between predicted amount and actual amount).
For example: if the group predicts their barge will hold 70 pieces and it sinks at 57, their score will be: (57 x 10=570) minus (the difference between 70 and 57=13) or 570-13 = 557 points.
2. Ties will be broken by accuracy of the prediction.
3. If the judges determine that a contestant intentionally sinks his barge at or near the predicted number, that group will be disqualified and receive participation points only.
4. The team score will be the total of the 5 group scores.



BRIDGE BUILDING

Description: Using only the materials given, each group will build a bridge to span the longest distance possible and support a cup with as many small weights as possible.

Number of Participants: Team divided into groups of no more than 3 each

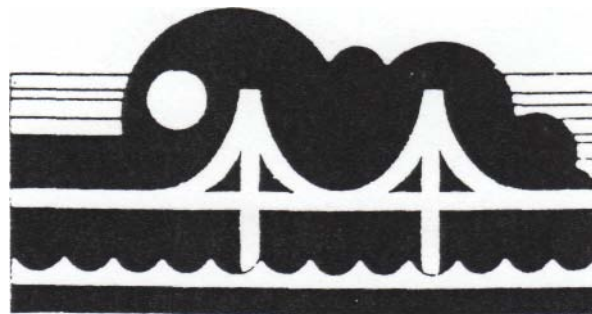
Time: 20 minutes

The Competition:

1. Each group will be given a set of materials selected by the event supervisor. Examples of possible materials include but are not limited to straws, bamboo skewers, toothpicks, spaghetti, clay, marshmallows, gumdrops, 5 ounce paper cup, pipe cleaners, paper clips and/or push pins. If straws are used, they may be crimped and slipped together. No string, tape or other materials may be used.
2. Students are to construct a bridge with a paper cup attached to it. The goal is to build a bridge that spans the greatest possible distance and is able to hold the weight of the cup.
3. The bridge will be suspended on two similar supporting structures, like two chairs, tables, or stacks of books.
4. The bridge must support the cup for 10 seconds.

Scoring:

1. The bridge spanning the greatest distance and supporting the cup for 10 seconds will be declared the winner.
2. In the event of a tie, additional weight will be added into the cup until the strongest bridge is determined.
3. The team score will be the total of the 5 group scores.



CRIME BUSTERS

Description: Participants will use paper chromatography and print identification to solve a simple crime.

Number of Participants: Team divided into groups of no more than 3 each

Time: 20 minutes

The Competition:

1. Students will be asked to make chromatograms from pens, markers, or other writing utensils and use this information to help solve a simple crime. Materials needed for completing the chromatogram and a list associated with various suspects will be provided by the event supervisor.
2. Students will also be given a set of prints associated with various suspects. They will be asked to match the prints found at the scene. Prints can include fingerprints, footprints, shoeprints, and/or tire prints. For fingerprints, students should be able to correctly identify loops, whorls, and arches.
3. After all the evidence is collected, each group will be asked to identify who committed the crime and why they believe this is the criminal.

Scoring:

1. Chromatography will be worth 40%, print identification will be worth 40%, and criminal identification and explanation will be worth 20%. The highest score wins.
2. The team score will be the total of the 5 group scores.



GUMMI BEAR LONG JUMP

Description: Using a pre-made catapult device, students will collect data and determine the best angle of the launching arm to land a gummi bear in the center of a target.

Number of Participants: Team divided into groups of no more than 3 each

Time: 20 minutes

The Competition:

1. Students will be required to wear safety goggles that have a rating of at least ANSI Z87.* If they do not bring their own, the event supervisor will provide them.
2. The event supervisor will provide each group with a miniature catapult** and 5 to 10 gummi bear candies.
3. Each group will up to have 12 minutes to calibrate their catapult by collecting launch data and recording the distance a gummi bear travels with the launching arm at different angles. Measurements should be made for at least 3 different angles.
4. At the end of the calibration period, students will be informed of the distance to a predetermined target. Target distance will be within the range of the provided catapults, not less than .5 meters and not more than 3 meters. Students will adjust their catapult to the desired angle prior to coming to the launch area.
5. Each group will take their catapult and a gummi bear to the launch site and will be allowed one launch.

Scoring:

1. After the launch, the distance will be measured from the center of the target to the place where the gummi bear first landed for the group's score.
2. The lowest score, signifying the closest to the target, will be the winner.
3. In the event of a tie, the winner will be determined by the group that has the most complete data during the calibration phase.
4. The team score will be the total of the 5 group scores.

* One outlet for safety goggles with an ANSI Z87 rating is Harbor Freight Tools for about \$1 a pair.

** A design for building your own practice catapult with preset angles can be found at <http://www.chicagoscienceinthecity.org/GummiLessonPlan.pdf>. This website has a lot of great information, but please note that the Clark tournament will be following the event rules stated above. If you wish to purchase a catapult with variable angles through an Eagle Scout candidate for \$10, contact Chris Grote at 834-6132 or quokka123@comcast.net. These variable angle catapults will be used at the tournament. Chris would also be happy to send you pictures if you would like to build your own.