SCIENCE OLYMPIAD ELEMENTARY INVITATIONAL

2010 RULES & SCHEDULE

Saturday, November 13, 2010
8:45 AM – 12:15 PM
Meet at Clark College

Each team will have a maximum of 15 students. They 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. Students must remain in the same group for all five events. The entire team of 5 groups will rotate together from event to event.

Since this tournament is to test students' knowledge and understanding of scientific concepts, we encourage your team to prepare and practice beforehand. If you'd like to make this a more spontaneous experience, we know your students will still enjoy themselves, but please do not be disappointed that this is not a "come and learn" activity with full explanations of principles and techniques. Complete tournament information (including registration forms, rules and schedule) may be found on the Southwest Washington Regional Science Olympiad website at http://www.clark.edu/special/scienceolympiad/ by mid-September.

There will be ribbons for first through fifth place teams in each event as well as a prize for the one group that scores best in each event.

TENTATIVE SCHEDULE	
8:00 – 8:30	Coach check-in & begin assembling with team
8:45 – 9:00	Welcome & head off to event rooms
9:00 – 9:30	First event
9:40 – 10:05	Second event
10:15 – 10:35	Third event
10:45 – 11:05	Fourth event
11:15 – 11:35	Fifth event
11:45 – 12:15	Awards

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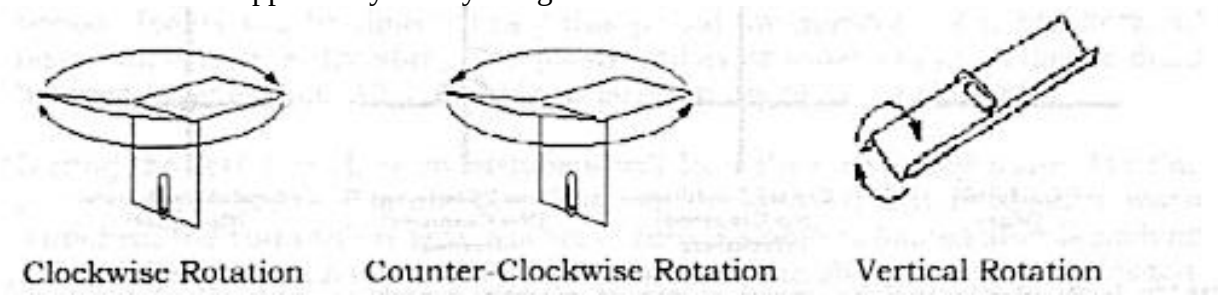
CHOPPER CHALLENGE

Description: Participants build and test 2 choppers (rotary flying devices) using only materials they are given.

Number of Participants: Team divided into groups of no more than 3 each (5 groups per team)
Time: 20 minutes

The Competition:

1. Each group will be given one sheet of 8 ½ by 11 inch 60-90 lb. card stock and 2 standard paper clips to construct 2 choppers that use rotation to slow their descent. Tools (such as pencils, a straight edge, and scissors) will be provided but may not be part of the choppers.
2. Each chopper must be made using a single piece cut from the sheet of cardstock provided and one paper clip. The pieces for the two choppers need not be the same size and/or shape.
3. The event supervisor will identify at the event which two directions the choppers to be built for the competition are expected to rotate.
4. Each chopper must rotate in a different direction, as shown below, and they must be labeled with the direction they are intended to rotate. The drawings only illustrate the direction of the rotation. The choppers may be any design.



5. Students may test their devices in the building area but will not be allowed to test them from the official drop location.
6. When it is their turn, groups will release their choppers, one at a time, from the height specified by the judges. All groups will release their choppers from the same height.

Scoring:

1. The judges will measure and record the time required for each chopper to reach the ground/floor. Time will continue if the chopper bounces off an object, but will stop if the chopper gets stuck and stops.
2. If a chopper does not rotate in the direction labeled, its flight time will be divided by 2.
3. The group's score will be the sum of the flight times for the two choppers.
4. The longest total time wins.
5. Ties will be broken by comparing each group's single longest flight time.
6. The team score will be the total of the 5 group scores.

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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 (5 groups per team)
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**, 5 to 10 gummi bear candies, measuring devices, and a piece of paper. Students should bring pencils.
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 $2 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 variable angle catapult which is similar to those that will be used at the tournament for $10, please see order form with registration materials.

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LEAF AND TREE FINDER

Description: Participants will be asked to identify various trees by using an identification key and leaf and tree part samples.

Number of Participants: Team divided into groups of no more than 3 each (5 groups per team)
Time: 20 minutes

The Competition:

1. The event supervisor will provide tree field guides or dichotomous keys for the portions of the event that need them. Some parts of the event require the students to not use the guides. Students should not bring a field guide or make their own keys. Students should bring pencils.
2. Leaves and trees to be classified will be those that can be found on the Clark College campus.
3. Each group will be given a packet or move to stations with objects from trees and several guide sheets to use in the identification of the materials provided.
4. An answer sheet will be given to the students on which they will be asked to identify some leaves and tree parts and then answer questions about each of them.
   Sample Questions:
   1. *Show a picture (or have a real acorn) and ask what tree it came from:*
      a) Ash b) Apple c) Oak
   2. *Use an identification key to identify a leaf:*
      a) Maple b) Elm c) Pine

Scoring:

1. Each question will be given a point. The group with the most points wins.
2. If there is a tie, time may be used as a tie breaker.
3. The team score will be the total of the 5 group scores.

Excellent resources for this event that are available at most bookstores or libraries:
Golden Guide: Trees by Zim and Martin, Golden Press
Trees of North America by C. Frank Brockman and H. Zim, Golden Press

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MYSTERY ARCHITECTURE

Description: This event is designed to test the students' ability to think on their feet. They will be given a bag of materials to build a freestanding tower as high as they can. The tower should be constructed to support a tennis ball at its top.

Number of Participants: Team divided into groups of no more than 3 each (5 groups per team)
Time: 20 minutes

The Competition:

1. Each group will be given a collection of building materials. All groups will receive exactly the same materials. The materials might include: paper cups, drinking straws, paper clips, tape, string, paper, etc. (This list is only an example. The actual materials may be anything that the event supervisor considers appropriate.)
2. Each group will have a maximum time of 10 minutes to construct a free standing tower to support a tennis ball at its highest point. The top of the tennis ball must be higher than any part of the structure.
3. Only those materials supplied by the event supervisor may be used to construct the tower. Each group may bring scissors, a ruler and a pencil. Each group may bring their own tennis ball to use while building their tower, however, all towers will be measured using the same tennis ball provided by the event supervisor.
4. The group is to inform the judges when their tower is finished. They will place the tennis ball provided by the event supervisor on top of their tower. The tower must remain standing for at least 10 seconds to be ranked. After 10 seconds, judges will measure the height and base.
5. The tower must be completely free standing. It cannot be attached to the tabletop, floor, wall or ceiling.

Scoring:

1. The height of the tower and the width of its base will be measured as precisely as possible by the judges. The top of the tennis ball will be considered the highest point of the tower. The width of the tower will be measured at its base. The largest diameter of the base will be recorded.
2. All towers that support the tennis ball for 10 seconds will be ranked above those that do not. The towers will be ranked according to their height. Tallest first, etc.
3. In the event of a tie, the winner will be the tower with the smallest base measurement.
4. The team score will be the total of the 5 group scores.

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PONDERING POWDERS

Description: Participants will be asked to make observations and identify common white household powders.

Number of Participants: Team divided into groups of no more than 3 each (5 groups per team)
Time: 20 minutes

The Competition:

1. Vials containing one to three powders will be placed in vials marked A, B, C, ... Mixtures could include: sugar, baking soda, flour, salt, plaster of Paris, corn starch, white sand, and gelatin. Mixtures will ONLY be selected from the items listed. Students should bring pencils.
2. Mixtures will contain no more than three powders. The number of vials and how many powders can be in a sample will be announced at the beginning of the event.
3. Students will be given twenty minutes to make observations and correctly identify as many powders as possible.
4. Each group of students will fill out a check off sheet with a list of possible observations and possible powders.
5. Groups will be supplied with the following materials to aid in the identification of the powders: test tubes/paper cups, vinegar, water, iodine solution, magnifying lens, and black paper. A candle flame test station may also be provided at the event supervisor's discretion. Students will not be allowed to bring other materials for testing.
6. No tasting or touching of powders will be allowed!
7. Safety precautions MUST be used. The event supervisor will supply splash-proof safety goggles (or teams can bring their own). If a candle test is used, an adult must man this station at all times.
8. Each group of students may bring a chart or notes (completed before attending the tournament and not larger than one side of 8.5" x 11" piece of paper) describing the powders' reactions to the above materials.

Scoring:

1. The group with the greatest number of correct observations and powders identified in the shortest period will be declared the winner. For example, if several groups identify six powders correctly, the group with the shortest time will be the winner even if another group finishes ten minutes earlier but identifies only five powders correctly.
2. The team score will be the total of the 5 group scores. In case of a tie, total time for the 5 groups will be used to determine the winner.