



Handbook and Rules

Saturday, March 10,
2012

Planning Committee:

Jay Reynolds – Cleveland State

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Event Schedule

	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
A is for Anatomy	ABC	DEF	GHI	JKL	MNO	PQR	STU	VWX
Aerodynamics	VWX	ABC	DEF	GHI	JKL	MNO	PQR	STU
Amphibians and Reptiles	STU	VWX	ABC	DEF	GHI	JKL	MNO	PQR
Bird Identification	PQR	STU	VWX	ABC	DEF	GHI	JKL	MNO
Bridge Building	MNO	PQR	STU	VWX	ABC	DEF	GHI	JKL
Circuit Wizardry	JKL	MNO	PQR	STU	VWX	ABC	DEF	GHI
Don't Bug Me	GHI	JKL	MNO	PQR	STU	VWX	ABC	DEF
Egg Drop	Build 1*	Build 2*	Build 3*		OPEN DROPPING BETWEEN 11-12:15			
Experimental Design	AIQ	BJR	CKS	DLT	EMU	FNV	GOW	HPX
Keys	HPX	AIQ	BJR	CKS	DLT	EMU	FNV	GOW
Leaf and Tree	GOW	HPX	AIQ	BJR	CKS	DLT	EMU	FNV
Metric Measurement	FNV	GOW	HPX	AIQ	BJR	CKS	DLT	EMU
Mystery Event	EMU	FNV	GOW	HPX	AIQ	BJR	CKS	DLT
Mystery Powders	DLT	EMU	FNV	GOW	HPX	AIQ	BJR	CKS
Pentathlon	CKS	DLT	EMU	FNV	GOW	HPX	AIQ	BJR
Ready, Aim, Fire	BJR	CKS	DLT	EMU	FNV	GOW	HPX	AIQ
Reflection Relay	APS	EIT	BJQ	FKV	CLU	GMR	DNX	HOW
Rock Hound	HOW	APS	EIT	BJQ	FKV	CLU	GMR	DNX
Science Bowl	DNX	HOW	APS	EIT	BJQ	FKV	CLU	GMR
Simple Machines	GMR	DNX	HOW	APS	EIT	BJQ	FKV	CLU
Starry Starry Night	CLU	GMR	DNX	HOW	APS	EIT	BJQ	FKV
Weather or Not	FKV	CLU	GMR	DNX	HOW	APS	EIT	BJQ
What Went By	BJQ	FKV	CLU	GMR	DNX	HOW	APS	EIT
Write It, Do it	EIT	BJQ	FKV	CLU	GMR	DNX	HOW	APS

* Egg drop building will take place during one of the first three time slots. Each team is responsible for signing up for their preferred time slot with the judge. There is a maximum of 8 spaces available per time slot. Dropping takes place between 11 and 12:15 at each team's convenience. No need to sign up...just come to the dropping zone and the contraptions will be dropped first-come, first served.

General Rules of the Tournament

Assistance: None

No coach, parent, or judge may assist a team once the event has begun. Such assistance will result in disqualification of the team in that event and the assessing of one penalty point [i.e. the equivalent of a 'no show' for the event].

Charts: Mystery Powders; Rock Hound

Two events - Rock Hound and Mystery Powders - allow charts but do not require them. These cannot be charts that are purchased or reproduced from commercial charts. A computer may be used for making these charts. Maximum size for charts is 14" x 17" and both sides may be used. Charts cannot contain any part of the material or subject. No illustrations or pictures are allowed on the chart. In order to be used in an event, a chart must be approved no later than Thursday (T-shirt pick up day) before the event. Dots will be used with a signature to show that the chart has been approved. Charts without this approval cannot be used in the event. Use of a non-approved chart will result in disqualification from that event. Charts cannot have more than one piece of paper or one piece of tag board. If a team arrives with two charts, the judge will be instructed not to allow the use of either chart.

Complaints/Concerns

Complaints/concerns should be made only by the head coach [not parents] to an Olympiad coordinator, not to a judge.

Disqualifications:

- **Attending Limited Events** - All student event sessions are closed to coaches, parents, or team members - except for the Egg Drop due to the nature of its location and Science Bowl to visitors from the competing teams. A coach, parent, or team member attending an event will incur penalty point/s for their team.
- **Coaching from the Sidelines** - Any coaching or interference by a parent, coach or spectator in or around an event will result in the disqualification of that team from that event.
- **Disrespectful Comments to Judge** - A team member making a disrespectful comment to a judge or making one aloud about a judge during the event will cause the disqualification of that team in the event. The team will also receive one penalty point for that event. [i.e. the equivalent of a 'no show' for that event]
- **Having too many Sixth-graders** - Any team with more than twelve sixth graders will be disqualified for all events. The team may participate but will not receive a score, ranking, or trophy.
- **Inadequate Number** - In the following events a team must have the required number of contestants or be disqualified.
 - Reflection Relay; Pentathlon; Write It, Do It; Starry Night

- **Elevators** -Students are not permitted in the elevators of any building unless medical need is present. Any student/ participant in the elevators will be disqualified.
- **Throwing of objects in the hallways or off the balcony** - Any student throwing any object (including paper airplanes) will be disqualified.

Event Changes

In the ongoing attempt to address concerns and integrate suggestions for the continued success and smooth running of the Olympiad, please read **ALL** event rules very carefully. Changes may have been made from year to year in the rules or scheduling of an event.

Event Time

Each event is scheduled for a thirty [30] minute session. Please be prompt, as judges have the right to refuse entrance to late teams if the event is already underway. In very rare instances where times must be rescheduled due to equipment breakdown, loss of electricity, and other unforeseen events, adjustments will be made by the judge[s] and/or coordinator[s] to ensure fairness among the teams.

Exclusionary Wording

It is not possible to word everything that is excluded by the rules. Attempts to 'get around the wording' will be frowned upon and could possibly result in disqualification for an event. A simple rule of thumb is that if you feel a need to ask if it is allowable, it most likely isn't.

Goggles

Mystery Powders and Rock Hound requires a team to wear goggles. These must be brought by the team and worn during the event. Each member must wear goggles.

Handwriting for Answers

The cursive handwriting on some answer sheets is atrocious, as is the manuscript for some. All answers must be printed. A judge may lower a team's score in an event if the answers are not printed.

Head-to-Head Events

Medals and six points toward the overall ranking are awarded to one winning team in each half-hour session. If you are not entering one or more of these events, let the lead organizer know at least one month before Olympiad Day.

Informing Judges of Rules

Schools obtaining judges should notify their judges about mandatory meetings, as well as get the judge a copy of the rules for the event and the general rules

weeks prior to the Olympiad. Please ensure that your judge is familiar with the event and is prepared with materials BEFORE Olympiad day, unless specifically arranged with Olympiad officials.

Late Arrivals

In most events, a student may arrive late and only face the penalty of having less time to compete. For some events, late team members will not be allowed to do those stations that may have been missed. In some events, team members will not be allowed into the room and will be disqualified if they are late. Teams that arrive on time should not be penalized by having to wait for late arrivals from other teams.

Late Team List

Team lists not received by the end of the meeting when tee shirts are picked up will result in that team being penalized five [5] points for its total score. Team lists, which do not include the grade level for each member, will receive the same penalty.

Limited Entry

Judges are not to allow coaches, extra team members, or parents into any event - except for Egg Drop. The Egg Drop is the only event that is open to the public for viewing.

Obtaining Judges and Volunteers

All schools/teams, who are not new to the Olympiad, are required to sponsor a minimum of one event and are required to provide judges/volunteers for two events for the Olympiad. This includes judges for the event(s) for which a team is sponsoring. If a team does not sponsor a specific event, the team must provide 2 adult volunteers who will either be assigned to assist a judge or assist the Olympiad staff. This includes setting up equipment and judging *all day*. If your team does not currently sponsor a specific event from year-to-year, please contact the planning committee to be assigned one. This way, your volunteers will know their responsibilities ahead of time. Notify Carolyn Hoover as early as possible when you obtain such volunteers.

Panic

Students and parents do not always relate complete and accurate information to coaches. It would be helpful if a coach receiving complaints would thoroughly inquire about the nature of the complaint and then attempt to verify it with one other person before contacting a coordinator.

Rule Changes

No rule changes will occur after December 31.

Scoring

Overall team scores are based upon the points earned in all twenty-four events. Ranking within core events are based on all teams' performances, with the first place team receiving 11 points, second place receiving 10 points, and so on, with all participating teams receiving at least one point. The winner of each Head-to-Head event time slot will earn six additional points for the respective team's overall score.

Source Book

In two events - Leaf & Tree Identification and Amphibians and Reptiles - a team may bring one [1] source book such as a field guide or key. No charts may be used in these events. No bookmarks of any type are permitted in these source books, nor are page markers.

***** Please note that there is a specific book for Amphibians and Reptiles that will be permitted. See the rules for more details.**

Team Conduct

It is expected that all Olympiad participants attend and compete with the utmost levels of sportsmanship. Coaches and parent chaperones are to do everything in their power to encourage the students to use respectful noise levels while in the hallways, as University classes and Olympiad events will be in progress.

Team Letters and Team Schedules

- Team letters will be assigned as early in the new school year as possible. New teams entering after the first meeting in the fall, need to confirm their team letter with the lead organizer.
- School districts maintaining 10 or more elementary and middle school buildings may bring up to two (2) teams. The two teams will represent different buildings and will be led by two different coaches.
- A team must place its team letter on its answers sheet. Failure to do so can result in a lowering of your score in that event.

Team Size

Each team is restricted to 25 students, with no more than 12 sixth graders represented. The remaining students may be either fourth or fifth grade students. There are no alternates allowed.

Time

Events are supposed to end about three [3] to five [5] minutes before the next event. A judge shall not tarry more than two [2] minutes in beginning an event. It is not fair for teams, which are on time to have to wait for teams, which are late; that basically is a penalty for being prompt. In very rare instances where times must be rescheduled due to equipment breakdown, loss of electricity, etc., adjustments will be made by the judge[s] and/or coordinator[s].

“A FOR ANATOMY”

Description: Identify parts of body systems and their functions

Number of Participants: 2

Approximate Time: 30 min.

The Competition

1. Teams will move from station to station and answer questions about body systems
2. Questions may be used to identify parts of the systems listed below from charts, models, x-rays, etc., or a description will be given and you have to locate the part
3. Questions will be limited to these parts of these systems

2012 topics:

Nervous: Cerebrum, cerebellum, brainstem, spinal cord, neuron, axon, cell body, synapses, receptor, frontal lobe, parietal lobe, temporal lobe, occipital lobe, cerebral, cortex

VISUAL: sclera, cornea, iris, retina, fovea, vitreous body, aqueous body, lens, pupil, conjunctiva, optic nerve, lacrimal gland, visual pathway,

AUDITORY: tympanic membrane, malleus, incus, stapes, eustachian tube, oval window, auditory nerve, semicircular canals, cochlea,

TASTE: tongue, papillae, taste buds

OLFACTION: olfactory hairs, olfactory bulb, olfactory nerve tract

Skin: Epidermis, dermis, hair shaft, hair follicle, arrector muscle, sebaceous gland, sweat gland

2013 topics:

Bones and Ligaments - names, locations, and functions of bones, joints, and ligaments using human and animal skeletons:

Bones that may be included: occipital, parietal, frontal, temporal, sphenoid, nasal, mandible, maxilla, zygomatic, sacrum, coccyx, cervical vertebrae, lacrimal, thoracic vertebrae, radius, lumbar vertebrae, sternum, ribs, true ribs, floating, ribs, false, clavicle, scapula, humerus, ulna, carpals, distal phalanges, metacarpals, proximal phalanges, medial phalanges, ilium, ischium, pubis, femur, tibia, fibula, patella, sesamoid, tarsals, metatarsals, malleus, incus, stapes, atlas [specific vert.], axis [specific vert.], xiphoid process [specific part of sternum], ribs, talus, calcanei

Human joints that may be included: fibrous joints, cartilaginous joints, synovial joints

Synovial joints: ball and socket, hinge, saddle, ellipsoid, pivot, gliding
Ligaments: Anterior cruciate ligament (ACL), Lateral collateral ligament (LCL), Posterior cruciate ligament (PCL), Medial collateral ligament (MCL), Cranial cruciate ligament (CrCL) - quadruped equivalent of ACL, Caudal cruciate ligament (CaCL) - quadruped equivalent of PCL, Cricothyroid ligament, Periodontal ligament, Suspensory ligament of the lens, Anterior sacroiliac ligament, Ulnar collateral ligament (wrist),

2014 topics:

Cardiovascular: vein, artery, capillary, platelets, pericardium, aorta, blood [plasma, including percent, blood cells including percent], superior vena cava, inferior vena cava, left atrium, septum, pulmonary veins, right atrium, pulmonary arteries, tricuspid valve, bicuspid valve, aortic arch, thoracic aorta, abdominal aorta, femoral artery, axillary artery, ulnar vein, internal jugular vein, radial vein, femoral vein anterior tibial vein, posterior tibial vein

Study Links:

<http://www.quia.com/rr/30450.html>

<http://www.smm.org/heart/heart/top.html>

2015 topics:

Respiratory: Septum, sinus, conchae, hard palate, soft palate, larynx
Pharynx, epiglottis, hyoid, thyroid, trachea, bronchi,
Bronchioles, alveoli, diaphragm

Digestive: Esophagus, stomach, small intestine, tongue, liver,
large intestine [ascending; transverse; descending], salivary glands,
gall bladder, pancreas, villi, masseter muscle, appendix,
Spleen, bile duct

Scoring

One point is given for each correct answer.

Team with the greatest number of correct answers wins.

Tie Breaker [if any]--Team with fewest spelling errors wins.

AERODYNAMICS

Description: Build paper airplanes for greatest flight duration and length/accuracy

Number of Participants: 3 teams (2 students each) compete per 30 minute session.

The Competition:

1. Each team member receives only two (2) pieces of ditto paper and approximately five (5) cm of masking tape. Scissors will also be available, if desired. Students may NOT bring in any outside materials, including premade airplanes as models.
2. Each member constructs her/his own airplane - using one or two sheets - which will resemble a winged object. No designs like a helicopter are permitted. One plane will be used in Part I and the other plane will be used in Part II.
3. Each plane is launched by hand by its maker from a predetermined starting point for each part of the event.

Part I: Duration of Flight

1. The purpose of this part is to construct an airplane that will stay in the air the longest amount of time. It will be launched from the balcony of Waetjen Hall.
2. If two planes are used at once (i.e. in a piggyback fashion), the recorded time will be that plane which is aloft for the shorter duration.
3. Time. The time aloft will cease when:
 - a. A plane becomes lodged in a permanent fixture (e.g. light, seat, the balcony, etc.).
 - b. A plane touches the auditorium floor, stage floor or any wall (sliding time is not counted).
 - c. It ceases moving in air or hits a hanging object (i.e. flight has been interrupted).

Part II: Accuracy and Distance of Flight

1. The purpose of this part is to construct a separate airplane that will fly accurately through targets and travel the longest distance. An area of suitable length (a hallway) will be identified at a later date.
2. Distance. The distance will be determined:
 - a. From the point of launch (marked off by a tape line from the launch point) to the point where the plane initially touches the ground (regardless if the plane hits a wall).
 - b. Distance traveled by the plane by sliding along the floor will not be counted.

c. This will be measured to the nearest centimeter (tape measure will be set and taped to the floor).

d. Determination of the point where the plane touches the ground is the judge's final decision.

3. Two or more hula-hoop targets will be erected (distance determined by judge). Bonus points will be awarded for each hoop through which the airplane passes during its flight.

Scoring: The winner will be determined by combining the scores of both parts as follows:

Part I: The time in seconds multiplied by 200.

Part II: The distance in cm plus a bonus of 20 points for each target through which the plane passes.

Tie Breaker [if any]

Team with the longest time aloft in Part I.

AMPHIBIANS AND REPTILES

Description:

Identify amphibians and reptiles found in Ohio and answer questions about their natural history and biology. Two student participants per team.

The Competition:

- Questions will relate to the identification of amphibians and reptiles found throughout Ohio and information about their natural history and biology (adaptations, habitat, biology, food chain relationships, vocalizations, ecology, current events, etc.).
- There will be 20 stations, which will include one identification (from photo or specimen) with one follow up question at each station. Each question will be worth one point, 40 points total.
- There will be one station where students will have to identify vocalizations. 5 points.
- There will be one station where students can answer one or two open-ended questions worth a total of 5 points.
- Students will be required to bring their own pen or pencil.
- **Students will be required to use (and preferably bring their own, although additional copies will be available) a copy of the Amphibian and a copy of the Reptile identification guides available free from Ohio Division of Wildlife (1-800-WILDLIFE). No other guides or source books will be permitted.**

Scoring:

One point will be awarded for each correct reptile or amphibian identification (20 points).

One point will be awarded for each correctly answered follow up question (20 points).

One point will be awarded for each vocalization correctly identified (5 points).

Up to five points will be awarded for the one or two open-ended question(s) (5 points).

Tie breaker: Spelling and open-ended questions answered with complete sentences.

BIRD IDENTIFICATION

Description: Identify birds of Ohio using many sources and answer questions about birds of Ohio

Number of Participants: 2

The Competition

1. The event will be birds of Ohio, past and present.
2. Team members will go to several stations.
3. Some questions will require written explanation [e.g. what is this type of beak used for? Why can more than one kind of bird live in this habitat?]
4. When a bird is named by a team member, the name must be that which is found in Peterson's Field Guide to Eastern Birds. [e.g. cardinal is incorrect, Northern Cardinal is correct; junco is wrong, Slate Colored Junco is correct.]. However, no guide book is allowed in this competition.
5. Some answers requiring a written explanation may be given more weight than naming a bird, multiple choice, or one-word answers.
6. The following are some of the topics which may be used:
feet, external parts of birds, habitat, identify bird by seeing its wing or silhouette, identify bird by hearing its call, identify bird by egg, use of dioramas to answer questions, mounted birds for identification, identify bird by nest, identify bird from picture, identify bird by its skin, or beaks.

Tie Breaker [if any]

TBA by judge on date of Olympiad

BRIDGE BUILDING

Description: Construct the bridge that spans a set distance, while holding the greatest load in its center.

Number of Participants: 2

The Competition

1. Each **team** will receive 50 plastic straws and 10 straight pins. The straws are purchased from the source listed below and the pins are standard sized dressmakers pins without the plastic balls.
2. Each team will construct a bridge using only the straws and pins.
3. Pins cannot be used to fasten or anchor the bridge to the table in any way.
4. The bridge will be placed so it spans the distance of 18" between two tables. A plastic cross piece will be placed in the middle of the bridge (perpendicular to the long axis of the bridge). The crosspiece is made of a plastic ruler with hooks inserted through the holes at each end. From those hooks, a coffee can will be suspended.
5. Sand will be poured into the coffee can until the bridge topples, folds, or collapses.
6. The amount of sand in the can when the bridge collapses is the score for that bridge.

Scoring

The bridge holding the most wins.

Here is the promised information about the straws students will receive in the Bridge Building event.

<http://www.freyscientific.com/>

The item information is:

Translucent plastic drinking straws. Each measures 7.75". Pack of 250

Item #: 1917519016

Your Price: \$3.20

CIRCUIT WIZARDRY

Description: Test and prediction based upon various simple direct currents

Number of Participants: 2

The Competition

1. The event consists of four [4] parts: A.) Circuit cards or boxes; B.) Prediction sheets; C.) Inference cards with multiple-choice answers; D.) Diagrams with multiple-choice answers.

a. Circuit Cards or Boxes. Team will be given four [4] different mystery circuit cards or boxes to determine the wiring of each. This will be done by the team constructing a circuit tests using a D-cell, bulb and two wires. That circuit tester will be used to determine the wiring of the cards or boxes. The cards or boxes will have from zero [0] to three [3] circuits. A circuit may involve as many as three sites.

b. Prediction Sheets. Team will be given twenty [20] circuit problems and need to predict whether the bulb will light or not light for each.

c. Inference Cards With Multiple Choices. Team will use its circuit tester to test and infer all possible wiring schemes for two inference cards. Every choice for each card will count as one [1] point.

d. Diagrams With Multiple Choice Answers. Diagrams, using symbols, which will be included in a key on the diagram, will have multiple-choice answers. These parts of circuits will be involved power source switch [single pole, single throw; single pole, double throw] wire lamp [bulb] fuse bell buzzer parallel wiring series wiring

2. No team will be advised by any judge as to how to connect wires for the event

3. Points will vary for the parts: One point will be given for each correct answer in Prediction Sheets. All other parts will receive more than one point per answer

4. An answer must be totally correct to receive credit. No credit for partially correct answers. [If a circuit includes ABC and a team lists AB, it receives no credit]

Scoring

The team with the highest score wins

Tie Breaker [if any]

The team scoring best on the diagram section prevails in case of a tie

DON'T "BUG" ME

Description: Identify insects from seven orders and answer questions related to them. Two participants per team.

The Competition

- These seven orders will be used: orthoptera, coleoptera, lepidoptera, diptera, hymenoptera, odonata and hemiptera.
- The competition will be divided into two sections.
 - The first section will include 20 insect identification stations where students will ID the insects to its order, or ID the specimen as "not an insect." Photos, drawings and preserved or living specimens may be used. (20 pts.). Many of the stations will include a follow up multiple choice question related to the natural history or biology of that insect (10 pts.).
 - The second section will include open-ended questions relating to knowledge about the listed orders (adaptations, habitat, body parts, food chain relationships, etc.) (20 pts.).
- Teams will be required to bring their own pen or pencil.
- **Teams will not be allowed to bring in any field guides or source books.** The seven orders will be clearly posted in the room. At some stations, a field guide will be provided for students to use.

Scoring:

Teams are ranked according to the number of correct responses.

One point will be awarded for each correct insect identification (to order, or "not an insect").

One point will be awarded for each correct multiple choice question.

Up to twenty points will be awarded for correct answers in the open-ended question section.

Egg Drop

Description: To design a container to keep a raw egg from breaking when dropped from a pre-determined height while keeping within a budget.

Number of Participants: 2

VERY IMPORTANT!

THE JUDGES RESERVED THE RIGHT TO DISQUALIFY ANY STRUCTURE THAT DOES NOT CONFORM TO THESE GUIDELINES

Schedule for Event

The first three half-hour sessions of the Olympiad are reserved for building egg structures. Your team must choose a setup time and sign-up ahead of time. All participating students will report to the specified meeting room at their selected building session in order to pick their construction materials and assemble their egg containers. Instructions will be given within the first five minutes of the session. All attempts will be made to start each building session on time and all assembly must take place during the same half-hour session. Dropping will take place between 11:00 and 12:30. Teams may report to the dropping location at any time between 11:00 and 12:00, and dropping will take place on a first come first served basis.

Rules regarding the dropping of the Egg

1. Each team will create a container for an egg that will be dropped up to four times from four different heights. Location of event is still to be determined.
2. All drops will be done by the students from specified heights.
3. Once the building sessions have completed, no changes or adjustments may be made to the structures.
4. Between drops no repairs or changes may be made to the project.
5. The same container must be used for all four drops.
6. If the egg comes loose from the structure and breaks, it is out of the competition. The drop at which the egg broke will be noted.
7. No cracking may occur in order to progress to the next round.

Rules regarding the egg

1. The egg will be a Commercial Standard Grade "A' (Large Size) chicken egg.
2. The egg will be weighed and marked prior to the competition.
3. The egg cannot be tampered with or altered physically or chemically.
4. Each group will receive ONLY one egg.
5. The egg will be inspected before handing it to the student. After the egg is handed to the student it is considered to be in play. If the egg is damaged or broken during construction or any other time prior to the drop the team will be disqualified from this event.

Rules regarding project construction

1. Only the two students per team are allowed into the assembly area to design & build the container. Coaching from adults and other students is not allowed and will result in disqualification of the team receiving coaching.
2. Teams must report to the building session on time and must construct their container within that half-hour session.
3. In order to promote quick thinking, on-the-spot problem solving, and cooperation, the exact materials will not be revealed until two weeks before the event. Students should fill out the requisition form (available on the website 2 weeks before the event) for materials prior to the event. When the students report to the event during their designated build time they will work with a judge to gather their materials. The materials requested must be at or under the budget allotted. All left over materials must be returned to the judges after the build process.
4. What follows is a possible list of materials. Note: If the materials are available, parachutes, wings and rotors will be permitted.

An exact list of materials and requisition form with costs will be published about two weeks before the event. The requisition form must be filled out prior to the event. Failure to do so may decrease build time allotted to the team. A previous example follows this document.

Sample materials:

- A container such as a milk carton, Styrofoam cup, pint ice cream container, cardboard box, etc.

- Cushioning materials such as cotton balls, bubblewrap, newspaper, foamie, etc.
- Binding materials such as tape, string, rubber bands, etc.
- Structural materials such pipe cleaners, Popsicle sticks, plastic embroidery mesh, bamboo skewers, etc.
- Miscellaneous materials may include fabric, weights, and other surprise items that will be offered the day of the event for "purchase" if a team's budget allows.

5. After the materials have been selected an egg will be given to each team. The egg will be placed in a clear sandwich bag in order to contain any mess, but nothing else may be in the bag with the egg, or added to the bag prior to placement in the project.

6. The bag may not be inflated or used as a building material.

7. The container must be constructed so that the egg can be examined between each round. After each drop, the contestants will be required to show their egg to the judges. The egg may not be completely encased or sealed within materials as to make it invisible to the judges. The egg must be easily inserted and removed by the judges. Judges must be able to completely examine the egg without deconstructing essential portions of the project. Other than replacing the egg, no other adjustments may be made between drops, no additional materials may be added, including tape.

Rules regarding scoring

1. As the egg is dropped from each level it will be noted where breaks.

2. Final placement in the event will be awarded based on the level at which the egg breaks. Within each level the lowest budget wins.

3. All contest judge decisions are final

Tie-breaker

Lowest budget. If a tie still exists, lowest mass of structure that will be determined by data collected before drops occur.

NOTA BENE: Because this is an event that cannot be completely isolated, all coaches should make it point to discuss with students and parents (as much as possible) that the judges are in charge.

Also advise parents that no coaching can be provided.

2010 Egg Drop Building Requisition

Team Letter _____

Complete the following form and bring it with you to your scheduled building time. The items are priced for each unit. Write how many you would like and the total cost for each row. Calculate your grand total. Please double check your math before the event to prevent delays in receiving your requested materials. All unused materials will be collected after you finish building your container.

If you do not have this completed, you will have to use some of your building time to do this first.

Total Budget = \$6.00 YOU MAY NOT EXCEED \$6.00 in materials

Item	Price each	Quantity	Cost
(16 oz.) Styrofoam Cup (2 max)	\$1.00		
(8.5 oz.) Styrofoam Cup (2 max)	\$1.00		
½ Pint Milk container (2 max)	\$1.00		
Yarn (1 -12" piece)	\$0.10		
Masking tape (1 -12" strip) (48" MAX)	\$0.10		
Standard Size Paper Clip (10 max)	\$0.10		
Craft Chenille Stick (5 max)	\$0.10		
Rubberband (5 max)	\$0.10		
Craft Stick (10 max)	\$0.20		
Bamboo skewer (8 max)	\$0.20		
8.5" x 11" copy paper (2 max)	\$0.10		
6" x 7" corrugated cardboard (1 max)	\$0.20		
8.875" Foam Plate (2 max)	\$0.50		
Cotton Balls (10 max)	\$0.10		
Balloon (2 max)	\$0.50		
Grand Total			

*****This is just a sample requisition. Each year it will change in budget and available materials, simulating real-world decision making challenges.***

EXPERIMENTAL DESIGN

Description: Use a given set of materials to design an experiment based on the scientific method.

Number of Participants: 2

The Competition:

1. Students will be given a set of unknown materials.
2. Using the materials, students will have to design an experiment and carry it out from start to finish.
3. Students will be provided with a blank lab report that follows the steps of the scientific method (question, hypothesis, materials, method, results, conclusion).
4. Students will need to develop a testable question using the provided materials, fill out the lab report, and conduct a simple experiment that will yield results.

Scoring:

1. Students will be scored using a rubric.
2. Judges will be looking for:
 - a. A testable question
 - b. A reasonable hypothesis
 - c. Inclusion of all necessary materials
 - d. Precise and repeatable method
 - e. Validity of results
 - f. Well-developed conclusion
3. Points will be deducted if students do not clean up their area upon completion.

Experimental Design Scoring Rubric

CATEGORY	3	2	1	0
Hypothesis	Hypothesis is a reasonable predicted outcome and shows knowledge of the content.	Hypothesis is a reasonable predicted outcome.	Hypothesis is unreasonable or is completely unrelated to the topic.	No hypothesis has been stated.
Materials	All materials needed for the experiment are included with no extra materials stated. Method shows how each material will be used.	All materials needed for the experiment are included with no extra materials stated. Method does not include how each material will be used.	Some materials are omitted, or extra materials are added.	Materials section is omitted.
Method	Procedures are listed in clear steps. Each step is numbered and is a complete sentence.	Procedures are listed in a logical order, but steps are not numbered and/or are not in complete sentences.	Procedures are listed but are not in a logical order or are difficult to follow.	Procedures do not accurately list the steps of the experiment.
Replicability	Procedures appear to be replicable. Steps are outlined sequentially and are adequately detailed.	Procedures appear to be replicable. Steps are outlined and are adequately detailed.	All steps are outlined, but there is not enough detail to replicate procedures.	Several steps are not outlined AND there is not enough detail to replicate procedures.
Results	Professional looking and accurate representation of the data in tables and/or graphs. Graphs and tables are labeled and titled.	Accurate representation of the data in tables and/or graphs. Graphs and tables are labeled and titled.	Accurate representation of the data in written form, but no graphs or tables are presented.	Data are not shown OR are inaccurate.
Conclusion	Conclusion includes whether the findings supported the hypothesis, possible sources of error, and what was learned from the experiment.	Conclusion includes whether the findings supported the hypothesis and what was learned from the experiment.	Conclusion includes what was learned from the experiment.	No conclusion was included in the report OR shows little effort and reflection.
Experimental Design	Experimental design is a well-constructed test of the stated hypothesis.	Experimental design is adequate to test the hypothesis, but leaves some unanswered questions.	Experimental design is relevant to the hypothesis, but is not a complete test.	Experimental design is not relevant to the hypothesis.

Keys

Description: Identification will be made by use of classification or dichotomous keys provided at the event.

Number of Participants: 2

The Competition

1. Identification of items from nature will be made using various keys provided at the event.
2. "Items from nature" may mean, but not be limited to, such things as: wildflowers; mammals; reptiles; amphibians; worms; clouds; algae. It does not mean keys contrived for such things as types of candy, types of pasta, styles of shoes, etc.
3. A key can take many forms and one or several of these may be used: dichotomous written in phrases or sentences and those in the form a flow chart.
4. The key will be a revised version of a published scientific key that has been adapted to the needs of our participants and the topic[s] selected for the event.
5. Everyday terminology will not be accepted for the answer. It will be in scientific terminology, even if that terminology is created for that key. [e.g. round red toothpick might be "toothpickus roundus rubra"]
6. If certain terminology is needed to use the key, an explanation will given with the key or those terms will be provided to the coaches and the team is responsible for learning them prior to Olympiad Day. [e.g. If a team must know 'stipule' or 'rachis' to use a wildflower key, those terms will be shown in a diagram or given to the coaches at the November meeting for the team to learn]
7. There will be at least three keys [one easy, one medium, one difficult]. There can be more than three keys

Scoring

The team with the greatest number of correct answers wins.

Tie Breaker [if any]

Team with greatest number of scientific names spelled correctly prevails.

Leaf and Tree Identification

Description: Identify trees using various clues

Number of Participants: 2

The Competition

1. Team will use clues such as leaves, seeds, other tree parts, and pictures to identify trees from a list provided to coaches.
2. A team may bring one field guide [book] with them, but no handmade chart.
3. Students will travel from station to station while answering a question[s] at each station.
4. The parts of this event will be:
 - A. View seeds, pods, fruits and name the tree.
 - B. View leaves and name the tree
 - C. View bark [actual or photograph] and name the tree
 - D. View silhouettes and name the tree
[likely will come from Peterson Field Guide to Trees]
 - E. View twigs and identify tree
5. Identification will be expected by the names given in the following lists.

Scoring

Team with the most questions answered correctly is the winner

Tie Breaker [if any]

Best score on leaf section, then on bark.

Leaves for Identification

Ash, aspen, basswood, beech, birch, box elder, buckeye, catalpa, cedar, cherry, chestnut, coffee tree, cottonwood, cucumber, dogwood, elm, ginkgo, hawthorn, hemlock, hickory, holly, honey locust, hornbeam, hop tree, horse chestnut, locust, maple, metasequoia, mulberry, oak, osage orange, paw paw, poplar, sassafras, sumac, sweet gum, sycamore, tamarack, Tree-of-Heaven, tulip tree, white pine, walnut, willow.

Silhouettes

Cedar, elm, pin oak, shagbark hickory, stag horn sumac, sweet gum, sycamore, tree-of-heaven, tulip tree, weeping willow.

Twigs

birch, catalpa, hawthorn, locust, Osage-orange, stag horn sumac, sweet gum, sycamore

Seeds

Ash, basswood, beech, birch, buckeye, catalpa, cedar, chestnut, coffee tree, cucumber, dogwood, hawthorn, hickory, holly, hop tree, hornbeam, horse chestnut, maple, oak, osage orange, sweet gum, sycamore, tree-of-heaven, tulip tree, walnut

Barks

Beech, birch, cherry, shagbark hickory, locust, red maple, stag horn sumac, sycamore

Metric Measurement

Description

Teams of two students will use various devices to make numerous estimates and measurements expressing their answers in metric units.

Number of Participants

2 students

The Competition

1. Each team of two students will move through stations twice, first time for 30 seconds to estimate and second time for approx. 1 ½ minutes to make actual measurement. Each station will contain the equipment and materials needed to make a measurement or measurements or a set of questions. Students may be quizzed on the various units of the metric system and the conversion among prefixes (100,000 cm = 1 km, for example).
2. All measurements will be made and recorded in metric units. Students are expected to record all digits known with certainty and one estimated digit (Law of Significant Figures). Simple calculations may be necessary to determine the answers at some stations. Calculators will be provided (no outside calculators allowed).
3. Teams will have a limited amount of time at each station (30 sec first time and 1 ½ minutes the second time). Students must move at the indicated time to ensure that all teams have an equal opportunity to use the equipment at each location.
4. An answer sheet will be provided for each team to record their estimates. A second answer sheet will be provided when teams transition to the actual measurements.

Scoring

The scoring of the event will be based on the closeness of the estimates and the number of correct responses. Ties will be broken with the closeness of estimates and correctness of responses on pre-determined tie-breaker questions.

Mystery Design Event

Description: Students will design an item that solves a problem within given materials and guidelines.

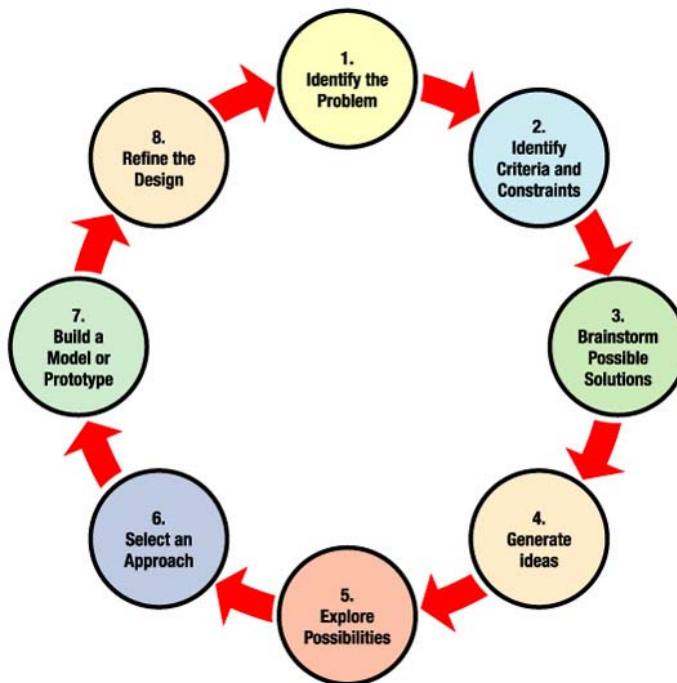
Number of Participants: 2

There are no rules for this event other than being familiar with the engineering design process. When they enter the room, they will be given a scenario, a set of materials that is identical for all teams, and time to design, test, revise, and prepare for final testing before the session concludes.

Resources for design practice prompts:

pbskids.org/designsquad/

Adult training in process:



<http://pbskids.org/designsquad/parentseducators/training/index.html>

Mystery Powders

Description: Identify mixtures of common white powders

Number of Participants: 2

Goggles:

Mystery Powders requires a team to wear goggles. These must be brought by the team and worn during the event. Each member must wear goggles.

The Competition

1. These common white powders may be used. Every mixture will consist of one to four of these powders. You will be told how many are in Mixture A and how many in Mixture B, but not how many in Mixture C.

powdered sugar baking soda flour salt corn starch plaster
of Paris citric acid

2. Each team must bring and wear goggles. If you forget them, you must go fetch them and thereby have less time for the event.

3. Teams will test three mixtures to determine what powders are in each. These materials will be provided to assist in testing.

vinegar water candle aluminum foil clothes pin
iodine solution black paper
magnifying lens red & blue litmus paper

4. No tasting is allowed. Failure to follow this rule will result in immediate disqualification from the event.

5. A team may bring a data chart to assist in the testing process. No pictures or illustrations are allowed on such a chart. If the chart does not receive prior approval [see General Rules], it cannot be used.

6. Each team will light its own candle.

7. Teams must help cleanup as requested by the judge[s]. Failure to do so can result in reduction of points for that event.

Scoring

Team with the greatest number of powders identified is the winner.

Tie Breaker [if any]

Shortest period of time to finish

Pentathlon

This is a ranked event, with final placement counting toward point totals.

Description: 4 members of the team will compete in physical events and answer questions about scientists. They will work individually and as a team.

Number of Participants: 4

The Competition:

1. There will be 4 physical events and complete and 4 questions to answer about famous scientists. A list of scientists is included. The 4 events will include such things as (but no limited to):

- o Jump rope
- o Basketball shooting
- o Soccer ball dribbling
- o Bean bag toss
- o Tire run
- o Throwing at a target

2. The clock will start when the first team member starts the first physical event. Each team member will complete one physical event and then answer a question about a scientist. If the question is answered incorrectly, another question will be given until one is answered correctly. The participant can pass after the question is read if he/she doesn't know the answer.

3. After the participant answers a question correctly, he/she will pass the baton onto the next teammate. This teammate will then complete the next physical activity and answer a question correctly.

4. This will continue until all four team members have completed their activity and answered a question correctly.

5. Then, all 4 team members will complete a joint physical activity together and answer a question together. The clock will stop when the group question is answered correctly.

Scoring:

The team with the shortest amount of time wins.

Tie Breaker (if needed): Team with fewest number of incorrect answers to questions wins.

Scientists to study for Pentathlon: (questions will be in multiple choice format)

Antonelli, Kay
Archimedes
Aristarchus
Armstrong, Neil
Audubon, J J
Barton, Clara
Berezelius, J
Blackwell, Elizabeth
Brahe, Tycho
Cannon, Annie
Carver, George W
Colombo, Matteo
Copernicus, N
Cori, Gerty
Curie, Marie
Cuvier, Georges
Darwin, Charles
Democritus
Diesel, Rudolph
Edison, Thomas
Einstein, Albert A
Eratosthenes
Euclid
Fermi, Enrico
Fulton, Robert
Gagarin, Yuri
Glenn, John
Goddard, Robert
Goodall, Jane
Goodyear, Charles
Hall, Charles
Hawking, Stephen
Hubble, Edwin
Huygens, Christian
Kepler, Johannes
Malpighi, Marcello

Marconi, Guglielmo
Mayer, Maria G
Mendel, Gregor
Mendeleev, Dmitri
Morse, Samuel F B
Moyer, Andrew J
Newton, Isaac
Nightingale, Florence
Pasteur, Louis
Ride, Sally
Roentgen, Wilhelm
Salk, Jonas
Schwabe, Heinrich
Sikorsky, Igor
Steinmetz, Charles
Tereshkova, Valentina
Thompson, J
Van Leewenhoek, A
Volta, A
Von Humbolt, A
Westinghouse, George
Whitney, Eli
Wong-Staal, Flossie
Wright, Orville & Wilbur
Watt, James

Ready, Aim, Fire!

Objective: Each team of 2 people will construct a device to launch a given object a specified distance between 2 and 5 meters.

Possible objects to fling: ping-pong ball, golf ball, marshmallow (full size), or a small wiffle ball.

Every team will receive **up to** 3 half pint-sized and/or pint-sized milk cartons, a large amount of masking tape, and a pair of scissors, access to yarn or string.

Possible building materials:

Up to 10 straws, up to 10 toothpicks, up to 10 craft sticks, up to 25cm square of cardboard, up to 10 pipe cleaners, up to 5 rubber bands (assorted sizes), up to 10 large washers, [approximate size & weight of a quarter].

1. Device may fit within the description of a catapult (spring-style lever) or trebuchet(counterweight or downward force on one end of a lever). However, slingshot (ballista or onager) type devices may not be used.
2. The teams will get 15 minutes to construct their launching device.
3. Each team will receive a bag of building materials. All teams will receive the same materials. The materials listed above may be among them, but the actual materials are not limited to the list. No team or coach will know the actual contents of the bags before the event.
4. Only the materials in the bag may be used, and the bag may NOT be used. No additional materials or adhesives may be used.
5. The team may hold the device securely while shooting, but the base may not be moved in any direction during propulsion. Neither may the launchers contribute any forward motion to the launch.
6. A target will be set up between 2 and 5 meters from the launching line.
7. Scoring is based on a Bulls-Eye concept. Concentric rings will represent the target. The point value will increase as the rings approach the center, or bulls-eye.
8. Two flings will occur. The total of the two flings will be the final score. High score wins.
9. Since three teams will be shooting, the teams will each have their first shot at the target in rotation, and then repeat (Team A, Team B, Team C, Team A, Team B, Team C). The teams will be allowed to make minor adjustments to their second shot while the other two are shooting, but no additional materials may be added to the device.

Tiebreaker

The difference between shots (points) will determine who has the higher ranking.

Example: Team Y :1st shot = 75, 2nd shot = 75, total 150, difference 0. Team Z: 1st shot = 50, 2nd shot = 100, total 150, difference 50. Tie-breaker goes to Team Y.

REFLECTION RELAY

Description: Use three mirrors to reflect a light beam from a source to a target

Number of Participants: 3 (cannot participate unless you have 3 participants)

The Competition

Part I: Movable Mirrors

1. A light source [laser] and three [3] mirrors are provided on site. The team uses these to direct the light off all three mirrors and to the target

2. Obstacles may be placed on the surface and the beam may need to be directed around them.

3. In this part the team may move the mirrors as needed. The judge may require holding them off the table in this part or may have the target off the table's surface.

4. No coaching or clues will be provided by the judges

NOTE: Target is 8x11 sheet of paper, 2 minute max time

Part II: Mirrors Fixed

1. A light source and three fixed mirrors on stands are provided at the site

2. The team must align the mirrors while laser is off so its beam will reflect to the target when the laser is turned on.

3. Obstacles may be placed on the surface and the beam will need to be directed around them

4. A maximum of three [3] minutes is allowed for setting up the mirrors in this part.

5. A team may bring supplies [string, paper, homemade protractors, etc., but no light source] to aid in this part.

6. No coaching or clues will be provided by the judge

NOTE: table is 6ft, target – 8 ½ x 11 box

Scoring (eyeball it)

Part I: Team is timed from when the beam is turned on and until it hits the target.

Thirty [30] are awarded for each mirror the beam hits in sequence and thirty [30] for the target.

A perfect score would be 120.

Part II: Thirty [30] points are awarded for each mirror the beam hits in sequence and 30 for the mirror.

A perfect score would be 120

Tie Breaker [if any]

Fastest time completing Part I

ROCK HOUND

Description: Identify rocks and minerals using a rock identification and information chart made by the team and answer questions relating to geologic features from pictures.

Number of Participants: 2

Goggles:

Rock Hound requires a team to wear goggles. These must be brought by the team and worn during the event. Each member must wear goggles.

The Competition

There will be two parts: (A) Rock and Mineral Identification; (B) Geologic Feature Identification

Part I: Rock and Mineral Identification

1. The team makes its own rock chart. See General Rules section on charts. Words only; no drawings or illustrations
2. The team has twenty (20) minutes to identify as many rocks and minerals as possible from a group which can include, but is not limited to the following: basalt, bituminous, coal, conglomerate, gneiss, slate, granite, limestone, marble, obsidian, fluorite, pumice, quartzite, sandstone, halite, pyrite, schist [garnet] scoria, shale, calcite, copper, galena, graphite, feldspar [pink], gypsum, hematite, kaolinite, mica [biotite], talc, quartz [several varieties]
3. Each team receives one small dropping bottle with a very limited amount of acid. If excessive amounts are used on rocks and the team runs out, the team receives no additional acid.
4. Items for testing hardness, scratch, etc., will be provided. The amount of acid received will be limited.

Part II: Geologic Features

1. Pictures or models relating to geologic features will make up this part of the test.
2. These may include, but not be limited to such things as: talus
slope geyser anticline fault line tectonic
plates glaciers volcanoes

Scoring

Team with greatest number of correct responses wins

Tie Breaker [if any]

Team with best spelling on Part II

SCIENCE BOWL

This is a Head-to-Head event. Medals will be awarded to the winning team in each 30-minute time slot.

Description: Head-to-head competition answering questions and buzzing in to see which team answers

Number of Participants: 4

Audience

1. No student participating in Science Bowl at a later time may view any session, nor can any student from any school except those competing during that session.
2. No adults may view any session except the one in which their school is competing.
3. These rules will be posted on the doors to the auditorium.

The Competition

Toss Up Questions

1. Each team member has a buzzer. Team buzzing in first gets to answer.
2. If a person buzzes in before the question is finished, that team member must answer without hearing the remainder of the question. If the question is missed, it is then read in its entirety and the other two teams get to buzz in for an answer.
3. If a question is read in its entirety and missed by the buzzing team, it is not reread, but the other two teams get a chance to buzz in for an answer.
4. Once read in its entirety, a question is not repeated for any team.
5. Team members cannot speak to each other on a Toss Up Question. The team member buzzing in must answer without assistance from fellow team members.
6. The team answering a Toss Up Question correctly receives a Bonus Question.
7. If no team buzzes in for a Toss Up Question, the judge proceeds to the next Toss Up Question

Bonus Questions

1. Only the team answering the Toss Up Question may attempt to answer the Bonus Question. That team does not need to buzz in for the Bonus Question.

2. A team may confer on a Bonus Question for a number of seconds determined by the judge
3. The first response to the Bonus Question constitutes the team's answer.
4. After the Bonus Question, a new Toss Up Question will be given for which all teams may vie.

Scoring

Toss Up Question: A correct answer is one [1] point and an incorrect answer is minus one [-1] point.

Bonus Question: A correct answer is one [1] point and no deduction is made for an incorrect response to a Bonus Question.

The highest scoring team in each session wins.

Tie Breaker [if any]

- A. Team with the greatest number of Bonus Questions answered.
- B. If still tied, there shall be one more toss up question

SIMPLE MACHINES

Description: Identify, use and answer questions about simple machines

Number of Participants: 2

The Competition

1. Teams move to various sites in the room, which contain a picture or example of a simple machine.
2. Teams identifies the machine and answers a question or questions about it, sets it up properly as per instructions and/or uses equipment to measure some variable such as length, force or weight
3. The simple machines involved are:

Lever	Inclined Plane	Pulley
Screw	Wheel and Axle	Wedge
4. There is at least one question about each of the six types listed above
5. Teams moves to a new site when instructed by the judge
6. At least two question involve math and use of mechanical advantage, but worded in a such a way that only one possible answer will exist for each
7. Improper calculations reaching a correct answer will not count. [i.e. dividing one wrong number by another wrong number to reach a correct number for the answer will not count]

Scoring

Team with the highest score is the winner

Tie Breaker [if any]

The highest score in the section relating to pulleys

STARRY, STARRY NIGHT

Description: Identify celestial objects and answer questions about astronomical facts and concepts

Number of Participants: 2

The Competition

Part I: Portable Planetarium

1. A team identifies the following in a portable planetarium: at least 5 constellations; at least 5 stars; at least 3 planets; at least 3 phases of the moon; [perhaps] constellations of the Orion sky; constellations of the Ursa Major sky; constellations of the Cassiopeia sky; & constellations of the Summer Triangle sky.
2. Penlights are provided for this part
3. Late arrivals are disqualified from this part of the event

Part II: Written Questions

1. The team has to:
 - a. Distinguish between rotation and revolution
 - b. Demonstrate knowledge about units of time [day month year] and their astronomical bases.
 - c. Arrange a group of bodies according to relative sizes from largest to smallest
 - d. Arrange a group of objects according to their distances from either the sun or earth
 - e. Demonstrate knowledge about the celestial sphere and the following: zenith horizon, four directions, ecliptic, celestial meridian, north celestial pole
 - f. Demonstrate knowledge about the member of the solar system
2. Team turns in one [1] answer sheet with only one [1] answer per question and may consult only by writing; no talking allowed.
3. Teams may be shown photographs, diagrams, films, slides, or planetarium simulations of star fields and asked to identify indicated stars and constellations

Scoring

Team with the most correct answers will be the winner

Tie Breaker [if any]

Team scoring highest in the written part of the event

Starry Night Study Guide

Students should be familiar with the night sky for the time of the year for the competition as well as the seasonal skies.

The top of the Starlab cylinder faces north, so this is important information to help orient the search for certain constellations. Also, the dial panel of the projector is on the north side of the sky in the Starlab. Students should be aware of this in order to choose the place to sit or know where to start looking.

Useful websites from this presentation and other sources:

- <http://heavens-above.com>
- View from Indianapolis - Astronomy for Kids at <http://www.dustbunny.com/afk/>
- **Excellent!!!** Stargazer - set your latitude and date. Click on stars to see the names and click and drag to see the different directions with the horizon as a reference. <http://www.oras.org/stargazer/applet.html>

-
-

It was suggested that students find the Big Dipper to help orient self and find other constellations in relation to it.

Know what phase the moon is in on the day of tournament. Big round circle in Starlab is full moon

Past students stated that accuracy with the laser pointer was important.

The Orion Sky is what is visible in March. The clusters around Orion make a large oval.

- Orion is high in sky
- Know the names of the bright stars in Orion : Sirius, Betelgeuse, Bellatrix, Rigel
- To the west of Orion is Procyon, and just north of that is Gemini
- The astronomer mentioned a connection between Capella and Castor (in Gemini) and Pollux (in Gemini) and Procyon
- Know which planets are visible in each sky

The Big Dipper Sky is visible in Spring:

- Jupiter and Saturn are visible near Virgo
- Follow the handle of the Big Dipper to find Arcturus and Regulus in Leo

Summer Triangle Sky:

- Three bright stars overhead with very little inside: Vega in center, Altair and Deneb off to the east
- Antares in Scorpius
- Cygnus the Swan

- Virgo is to the west with the bright star named Spica
- Square of Pegasus to east

Cassiopeia Sky is Fall sky:

- Cassiopeia is high in sky
- Pegasus is south, then Pisces and Aquarius south of that
- Big Dipper is low in north

Circumpolar Constellations include:

- Big Dipper (Ursa Major) in Northeast Sky
- Little Dipper (Ursa Minor)
- Curled around Ursa Minor is Draco
- Cassiopeia
- Cepheus: the house shape
- Perseus
- the Pleiades
- Aries

WEATHER OR NOT

DESCRIPTION: ANSWER QUESTIONS ABOUT METEOROLOGY USING MANY SOURCES.

NUMBER OF PARTICIPANTS: 2

THE COMPETITION

1. THE TEAMS SPEND THEIR TIME AT VARIOUS STATIONS RELATING TO ITEMS FOUND IN THE LIST BELOW.

2. EACH TEAM WILL HAVE EQUAL/AMPLE TIME AT EACH STATION.

SCORING

EACH CORRECT ANSWER IS ONE [1] POINT AND THE HIGHEST SCORE WINS.

TIE BREAKER [IF ANY]

BEST SCORE ON CLOUD IDENTIFICATION SECTION.

TOPICS

A. WEATHER INSTRUMENTS: RELATING TO AIR PRESSURE, WIND SPEED, RELATIVE HUMIDITY, TEMPERATURE, PRECIPITATION, ETC.

B. CLOUD

IDENTIFICATION: CIRRUS STRATUS CUMULUS NIMBOSTRATUS STRATOCUMULUS ALTOSTRATUS

CUMULONIMBUS CIRROSTRATUS CIRROCUMULUS; ALSO A DRAWING SHOWING CLOUDS FROM EARTH'S SURFACE UPWARD WITH A SCALE OF ALTITUDE AND CLOUDS TO BE LABELED

C. LAYERS OF ATMOSPHERE: TROPOSPHERE, TROPOPAUSE, OZONE LAYER, STRATOSPHERE, STRATOPAUSE, MESOSPHERE, MESOPAUSE, THERMOSPHERE

D. HYDROLOGICAL

CYCLE: EVAPORATION, HEAT, CONDENSATION, PRECIPITATION, TRANSPIRATION, ABSORPTION, RESPIRATION, AND SURFACE WATER

E. WEATHER MAPS: FROM THE PLAIN DEALER; WHATEVER SYMBOLS THAT NEWSPAPER USES, FRONTS, PRECIPITATION FALLING IN VARIOUS LOCATIONS, TEMPERATURES

F. GASES: FIVE [5] MAIN GASES OF THE ATMOSPHERE IN ORDER OF ABUNDANCE

G. INSTRUMENT READING/PROBLEM SOLVING: THERMOMETERS,

BAROMETERS, WIND VANE, AND MINIMUM-MAXIMUM THERMOMETER FROM ILLUSTRATIONS; DETERMINING PH OF RAINWATER WITH PH PAPER; DETERMINING WIND CHILL AND RELATIVE HUMIDITY FROM CHARTS; EXPLAIN CONDENSATION ON JAR; GRADUATED CYLINDER TO MEASURE RAINFALL

H. PHENOMENA: IDENTIFY SNOWFLAKE, HAILSTONE, TORNADO, WATER SPOUT, DUST DEVIL, HURRICANE, FROST, DROUGHT, FLOOD, FOG, SMOG, AURORA, RAINBOW, AND HALO FROM PHOTOGRAPHS

I. DIAGRAMS: FORMATION OF HAILSTONES, EARTH-SUN POSITIONS IN SEASONS, STRUCTURE OF TORNADO [WALL CLOUD, CUMULONIMBUS CLOUD, FUNNEL, DEBRIS CLOUD], ORDER OF COLORS IN RAINBOW, CROSS-SECTION OF THUNDERSTORM [COLD AIR, WARM AIR, RAINFALL, CUMULONIMBUS, ANVIL TOP, LIGHTNING], WIND PATTERNS WHERE LAND & WATER MEET, PRECIPITATION PATTERNS ON BOTH SIDES OF MOUNTAIN RANGES, STRUCTURE OF HURRICANE, JET STREAM.

WHAT WENT BY

Description: Identify and provide information about various different items representing evidence that was left behind by some thing.

Number of Participants: 2

The Competition

1. Teams move from station to station
2. Items are displayed with questions to be answered about them
3. Items may include, but are not limited to, such things as footprints, tracks, tire tracks, animal scat, fur, chewed sticks and nuts, horns, antlers, slime trails, remains left from an animal which was devoured, scents, etc.
4. Teams identify what went by and, perhaps, answer a question about it. Examples: Is it the left or right foot, the front or the back? In what direction was it moving? What happened at this site? [bird of prey captured it].
5. It is limited to things from Ohio.

Scoring One point is awarded for each correct identification and one point for each correct answer. The highest score wins.

Tie Breaker [if any] Team with the greatest number of identifications spelled correctly

WRITE IT, DO IT

Description: Team describes and builds an object

Number of Participants: 2

The Competition

1. One team member enters the room, listens to directions from the judge, and is given a pre-assembled object made of Legos.
 - A. That team member has a maximum of 12 minutes to write a description of the object, while the second team member is waiting in the hall.
 - B. No drawing or diagrams are allowed in the description. Abbreviations are allowed, including those created by the team.
 - C. No writing that is in the form of a configuration of the layers is permitted. While no list of rules can be made to encompass all illegal descriptions, several are included on the following page. A simple rule of thumb is, if you wonder if your method of describing the object is illegal, it most likely is.
 - D. When the first half of the time period (a total of 15 minutes into the time period) is over, the team member who did the writing leaves the room.
 - E. The directions and a set of pieces of Lego are left for the other team member.
2. The second team member enters the room to assemble the object.
 - A. This team member uses the written description and the unassembled Lego pieces to construct an object as identical as possible to the original.
 - B. When finished, or time expires, the teams directions and object are turned into the judge.
3. A maximum of 16 Lego pieces will be used. Only these colors will be used: red, white, black, blue and yellow. Pieces with this many pegs will be used: 4, 6 and 8 [a peg means the round projection on the top, each of which bears the name Lego]. Lego pieces can be either "thick" or "thin". See photo.



Scoring Team with the greatest amount of pieces in the proper location and position wins.

Tie Breaker: the least amount of time to assemble the object is the tie breaker.