



# SCIENCE OLYMPIAD

™

*Exploring the World of Science*

## **Elementary Science Olympiad hosted by Middle Tennessee State University April 27, 2024**

### **Events**

A is for Anatomy  
Aerodynamics  
Animal, Vegetable, or Mineral  
Barge Building  
Categories  
Crossword Science  
Disease Detectives  
Egg Drop  
Elements, Compounds, and Mixtures  
Estimania  
Extinction is Forever  
Food for Thought and Food for Energy  
How Do you Spell Science  
Magnets  
Monster Match  
Mystery Architecture  
No Bones About It  
Name the Scientist  
Pentathlon  
Rubber Band Catapult

# A IS FOR ANATOMY

## Description:

This event will consist of a written test in which the contestants will view models, slides, and pictures to identify organs from the following human body systems. Both structure and function will be tested in a series of written questions.

1. Skeletal
2. Muscular
3. Digestive
4. Respiratory
5. Circulatory
6. Urinary
7. Nervous
8. Sensory
9. Endocrine

**Number of Participants:** 2

**Approximate Time:** 30 minutes

## The Competition:

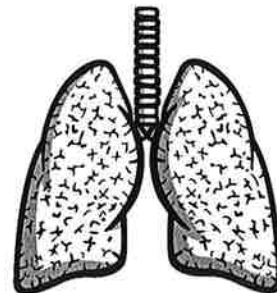
Every team will be given an answer sheet. Team members may consult with each other by writing (no talking). Only one answer for each question will be accepted. Team members will move through 20 stations answering approximately 40 questions. Questions will be at the stations or in a test booklet.

## Scoring:

At the end of the testing period, the questions and answer sheet will be collected from those teams who have not turned in their responses. Time is not a factor in scoring. Correct spelling will be used as a tiebreaker.

## Resources:

Fourth, Fifth and Sixth Grade Science and Health Books



# AERODYNAMICS

## Description:

Each two-member team will build one 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: 2

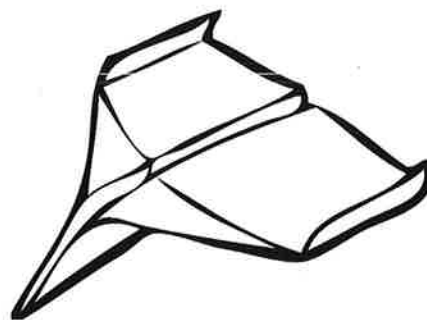
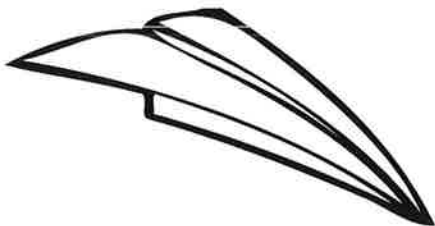
Approximate Time: 30 minutes

## The Competition:

1. Two sheets of plain white paper will be supplied for each team along with approximately five centimeters of masking tape and a pair of scissors. Two planes will be constructed.
2. Planes flown in competition must be made on site, during the allotted time, using only the materials provided.
3. Planes will be hand launched from behind a line on the floor at a specified target, on the floor, more than five but less than 12 meters distant.

## Scoring:

1. After the flight, the distance will be measured from the center of the target to the nose of the airplane where it first landed. The distance from the target will become the team's score.
2. Each team member will fly one of the two planes once. Team score will be determined by adding the two scores.
3. The lowest score, signifying the closest to the target, will be the winner. In case of a tie, the best single flight will break the tie.



# ANIMAL, VEGETABLE, OR MINERAL

## Description:

The objective is to test the ability of the student to classify objects in the correct category - animal, vegetable (plant), or mineral.

Number of Participants: 2

Approximate Time: 30 minutes

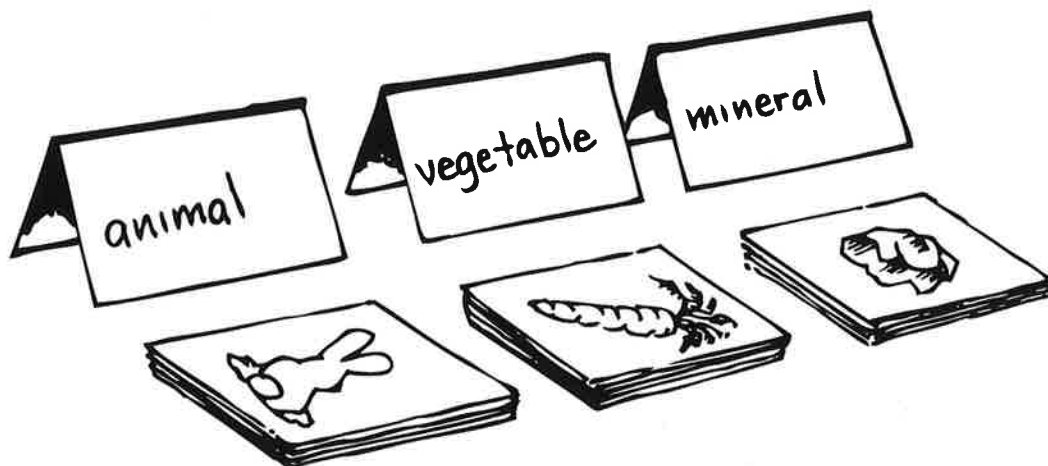
## The Competition:

1. The contestants will classify pictures, models, or real objects (no synthetic materials will be used) into one of these three categories - animal, vegetable (plant), or mineral. There will be a total of 25 stations and at a given signal the student will move from one station to the next.
2. Each contestant will be required to write a short paragraph on the back of their answer sheet, stating the requirements for determining whether any given substance is animal, vegetable (plant), or mineral. The paragraph will be used in the scoring only in the case of ties.

## Scoring:

The winner will be the team who has the highest number of correct responses as to whether an object is animal, vegetable (plant), or mineral.

In the case of ties the event supervisor will select the best paragraph to determine the winner.



# BARGE BUILDING

## Description:

The purpose of this event is to construct a barge using aluminum foil that can support a cargo of the largest number of objects without getting them wet.

Number of Participants: 2

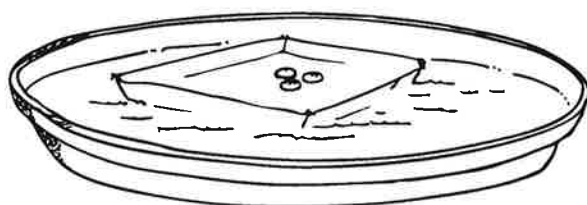
Approximate Time: 20 minutes

## The Competition:

1. Each team of two persons will be given a 15 x 15 cm piece of aluminum foil by the event supervisor. Each team will then be given 10 minutes to construct their barges and turn them into the supervisor. No other materials may be used in building the barge.
2. Each team will then be given 5 minutes to load their barges.
3. The event supervisor will inform each team 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.
4. The student barge captain and his partner must predict the number of pieces of cargo that the barge will hold. The barge must then be loaded until it sinks. The piece that caused the barge to sink will not count in the total cargo. Sinking occurs when water enters the barge.
5. The event supervisor will provide the barge captain with the cargo to be loaded. Each piece must be loaded one at a time while the barge is floating in a pan of water.

## Scoring:

The winner will be the team 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 team predicts their barge will hold 70 pieces and it sinks at 57, their score will be  $57 \times 10$  minus the difference between 70 & 57 which is  $(570 - 13 = 557)$  points. Ties will be broken by accuracy of the prediction. If the judges determine that a contestant intentionally sinks his boat at or near the predicted number, that team will be disqualified and receive participation points only.



# CATEGORIES

## Description:

The game consists of three rounds. Each team begins the round with a blank playcard on which they write their names and round number.

Number of Participants: 3

Approximate Time: 30 minutes

## The Competition:

1. DRAWING CARDS. A total of six category cards are drawn from the deck by the teacher.
2. ANNOUNCING SUBJECT MATTER. From the card, the teacher selects and announces the category subject matter. As each selection is announced, all players write them in the six category blanks on their playcard. The six used cards are then set aside.
3. DRAWING LETTER TILES. The teacher draws a total of six letter tiles. Each is announced. All players write them in the Initial Letter column of their playcard. If a wild letter tile (\*) is drawn, it is marked accordingly on the playcard.
4. MAKING ENTRIES. After the timer is set, each team of three players attempts to enter a word or phrase in each of the 36 blanks on their playcard. Each entry must agree with or fit the category at the top of that column and its "Key Word" must begin with the letter at the left of the row in which it is written. A specific entry may be written only once on the playcard even though it may be valid in another blank. Teams may converse quietly. Loud discussions will give away good answers to competitors!

KEY WORDS. Generally, the "Key Word" in an entry is the first word. However, if the first word or title prefix of an entry is part of the category, the next main word is to be regarded as the Key Word (e.g., River Seine would be under S, Sir Walton would be under W and giant Panda would be under P). A person's last or surname must always be regarded as the Key Word. The articles "a", "an" and "the" are never Key Words. Common surnames given only will be disallowed as guesses unless accompanied by appropriate first names.

Key Words in a row with a wild initial letter (\*) may begin with any letter of the alphabet but need not begin with the same letter (see example below). When time is up, each player must stop writing immediately and pass his playcard to the judge. The judge will validate responses at a later time.



5. This process is repeated three times with different categories. The initial letters, however, may be the same.
6. Categories should be chosen by the teacher that reflects subject matter discussed during the school year.
7. An example chart is shown below. If only a common surname is given it will be disallowed as a guess unless accompanied by an appropriate first name.

Categories	Mammals	Trees	U.S.Rivers	Insects	Units of Measure	Scientists	Body Parts
A	apes	aspen	Allegheny	ant	amperes		artery
M	man	mangrove	Missouri	moth	meter	Mendel	muscle
F	fox	fir		fish fly		Fermi	finger
*	cat	oak	Mississippi	beetle	liter	Einstein	liver
D	dog	dogwood	Detroit	dragon fly	decigram	David Smith**	
*	horse		Snake	spider**		Watt	heart

\* = Free letter  
 \*\* = Incorrect Answer

**Scoring:**

One point will be given for each correct answer.

NOTE: In the example the student will not get credit for blank spaces and a spider is not an insect and David Smith violates rule, direction or first name beginning with a D is incorrect. We need a scientist whose last name begins with a D such as Dirac or Humphrey Davey!



# CROSSWORD SCIENCE

## Description:

The purpose of this event is to test the student's knowledge of scientific terminology. Definitions of science vocabulary words will be presented to students in a crossword puzzle format as illustrated below.

*Note: In this example there are fill-in-the-blank type questions. At the Science Olympiad the students will be given only definitions in the ACROSS and DOWN sections of the crossword.*



### Across

3. Matter takes up space and has
7. One of Newton's laws states that if the force remains unchanged, as the mass of an object decreases, the \_\_\_\_\_ increases.
9. A stone resting on the edge of a cliff has no

### Down

1. Solutions are \_\_\_\_\_ mixtures
4. The idea that all objects fall at the same rate if air resistance is neglected was stated by \_\_\_\_\_
5. The momentum of \_\_\_\_\_

Number of Participants: 2

Approximate Time: 30 minutes

## The Competition:

1. Students will work in teams of two to complete a crossword puzzle of science vocabulary. Definitions of science words will be given in numbered columns marked **Across** and **Down**. (See illustration.) Students will cooperate to complete the crossword puzzle. Talking in quiet voices will be allowed.
2. Students will be timed. The start time and end time will be recorded on their answer sheet.
3. All words placed in the crossword puzzle will be taken from Elementary science textbooks.
4. Between 30 to 50 words will be placed in the crossword puzzle.

## Scoring:

1. One point will be scored for each correct word placed in the puzzle.
2. The most points earned in the shortest time will determine the winners.





# DISEASE DETECTIVES

## Description:

Epidemiology uses science to study disease, injury, health, and disability in communities. This study involves: reasoning skills, such as those used by “disease detectives;” comparison of risks (the chances of becoming sick or injured); and surveys to help describe different groups of people (for example, kids in school classes and people in neighborhoods). The goal of the Disease Detectives event is to have students understand connections between things they may encounter in daily life and various health problems that affect communities, risks for disease/injury, and opportunities for prevention. The event will also help students to understand general categories of causes of diseases and injuries.

**Number of Participants:** 1 or 2

**Approximate Time:** 50 minutes

## The Competition:

1. The contestant or team (if 2) will move to different stations. Each station has an object, which may present a risk or prevention opportunity for disease or injury.
2. At each station, participants will perform various activities, such as:
  - a. identifying and writing the disease or injury problem related to the object at the station.
  - b. describing how the object might be used or modified to prevent the disease or injury problem in populations.
  - c. identifying and describing routes of transmission of disease
  - d. using simple calculations (e.g. addition and subtraction) to make comparisons or risk for different groups of people.
  - e. interpreting a table or graph presenting data related to diseases or injuries.

## Sample Problems:

Stations might include examples of an improper cooking techniques as a risk factor for food-borne infectious disease, a bicycle helmet as a preventive measure for injury, fatty foods as a risk for heart disease, a tobacco product as a risk factor for lung cancer, or a bar of hand soap representing effective prevention of person-to-person spread of infectious disease. The last station might include data for students who visit the zoo on a field trip: of 25 students who visited, 12 petted the lizard; of these, 8 became ill. Of the 13 students who did not pet the lizard, only one became ill. How would you present the risk of illness from petting the lizard? Students might compute risks (e.g.  $8/12$  vs.  $1/13$ ) or draw graphs to illustrate the comparison of risk.

## Scoring:

Responses for each station with a commonly found item could include identification of the possible risk of use or exposure to the item and a possible means for prevention. Each identification station is worth 2 points (1 point for identification of the health problem, 1 point for description prevention). The final data station is worth 2 points (1 point for an appropriate risk comparison, 1 point for an appropriate written explanation).

# EGG DROP

## Description:

The objective is to have a two-person team construct and bring a package to protect an egg (from breaking) to be dropped free fall from a high spot selected by the tournament director.

Number of Participants: 2

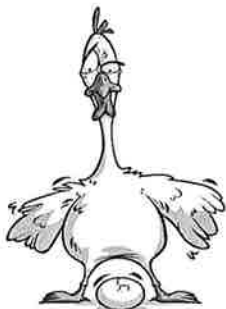
Approximate Time: 20 minutes

## The Competition:

1. All loading of Large, supervisor-inspected Grade A eggs must be completed 30 minutes prior to the beginning of the event. Students are responsible for the egg during loading, dropping and unloading. The student must hand the egg to the supervisor once the drop is complete. Each package should be labeled with school name and number.
2. The package size and weight limitation is no more than 20 cm on a side and no more than 1 kg. Glass and metal may not be used. The package must be constructed by the participants and brought to the tournament. The package may not contain anything that would aid in the package adhering to the target.
3. The package will be dropped free fall by one student from a height determined by the tournament director and announced when teams pre-register for the tournament. There will be only one drop with a time limit of three minutes to prepare for the drop from the time the judge says to begin. A plumb line may be used. Packages may be dropped through an aperture (provided by the supervisor).
4. The drop area will be approximately 60cm x 60cm and made of solid material (e.g., 1/2" plywood) with a target in the center of the area.

## Scoring:

Eggs that do not break or show cracks will be ranked first. Those that break or crack will be ranked after those that do not. The farthest distance of any part of the package to the center of the target will determine the score. The package with the shortest distance wins. Ties will be broken by the lighter package (without egg).



# ELEMENTS, COMPOUNDS, MIXTURES

## Description:

The objective is to test the ability of the students to classify materials into one of three categories.

Number of Participants: 2

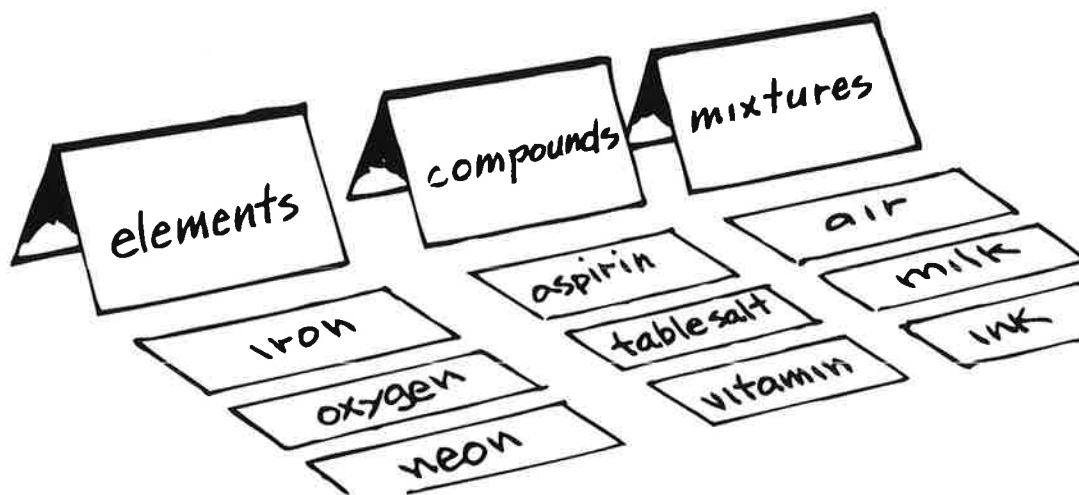
Approximate Time: 30 minutes

## The Competition:

1. The contestants will classify named substances into one of the three categories.
2. Each team will be given a paper and pencil quiz on the basic difference between an element, compounds, or mixtures
3. Each team will move from one station to another on an appropriate signal. About 25 to 30 stations should be set up with students moving each minute.

## Scoring:

A point is awarded for each correct classification of a named substance and one point for each correctly answered question on the quiz. Highest score wins.



# ESTIMANIA

## Description:

Students will be asked to estimate the answers to approximately ten questions requiring an estimate between ten and one million.

Number of Participants: 2

Approximate Time: 30 minutes

## The Competition:

1. The questions will follow the following format:

Sample Questions:

- a. How many pennies in the jar?
- b. How many two-centimeter paper clips could be laid end to end across a standard football playing field?

2. Calculators will be allowed.

3. Students should bring a variety of equipment to help them with their estimations (rulers, cups of various sizes, spoons, etc.)

## Scoring:

Points will be awarded on the following scale:

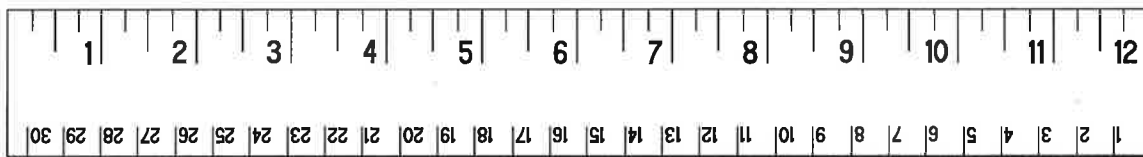
0 - 10% away from answer = 5 points

11-20% away from answer = 4 points

21-30% away from answer = 3 points

31-40% away from answer = 2 points

The team with the most points wins. In case of ties, the least amount of time needed to estimate the 10 problems will determine the winner.



# EXTINCTION IS FOREVER

## Description:

Teams of two students will be quizzed on organisms that: have become extinct; or are on the endangered list; or are on the threatened list; or have been removed from such lists and the reasons behind these organisms' extinction or endangered status.

**Number of Participants:** 2

**Approximate Time:** 60 minutes

## The Competition:

1. When shown photographs or sketches, teams will identify endangered or extinct organisms representing local, regional, national, and international species. The common name for the organism will be an acceptable answer.
2. Students will respond to a series of general questions about threatened species including the destruction of habitats and the construction of new, protected wilderness areas; the dangers presented by humans (including hunters and collectors) and the introduction of non-native species to a particular area.
3. Teams may be asked to relate success and failure stories of endangered and extinct species including how, when, where, and why such organisms became endangered or extinct and the conservation efforts that have been utilized or what could be done to protect these organisms.
4. Students may be asked to identify national and/or international organizations working to protect threatened species.

## Scoring:

The team with the most correct responses will be declared the winner. Ties will be broken with pre-determined tiebreaker questions. Time is not a scoring factor.



# FOOD FOR THOUGHT AND FOR ENERGY

## **Description:**

This event is designed to determine a student's knowledge of the basic food groups, the food pyramid, and the three basic food types - carbohydrates, proteins and fats; their function in the body; the additives added to enhance the nutritional content of food, to prevent food from spoiling, to improve color or flavor, or to change physical characteristics; and diet analysis.

**Number of Participants:** 2

**Approximate Time:** 60 minutes

## **The Competition:**

### **Part I**

The contestants will move to 5 different stations and perform various activities such as:

1. Examination of labels of processed foods to determine Kilocalories.
2. Examination of packaging and label reading basics.
3. Identification of a food given the ingredients on the label.
4. Comparison of protein, fats, complex carbohydrates and simple sugar.
5. Understanding of major vitamins and minerals in human nutrition.
6. Shown pictures or specimens of food, state the food group to which each belongs, according to USDA food guide pyramid.
7. Determination of the sugar content of cereals and fast foods (using a graph) or of soft drinks (using a prepared graph and a hydrometer).
8. Diet analysis, as it relates to serving size and food groups.

### **Part II**

The contestants will be given a paper and pencil quiz to determine their knowledge of food groups, nutrients, additives, diet analysis, and nutritional imbalance.

The students should be familiar with the terms - under nourishment, malnourishment, saturated fat, unsaturated fat, plaque, and cholesterol.

## **Scoring:**

Highest score wins. Tiebreaker questions will be asked. Part I = 50%, Part II = 50%



# HOW DO YOU SPELL SCIENCE?

## Description:

Students will be asked to spell words from the earth, life, and physical sciences and give a definition of the word spelled.

Number of Participants: 2

Approximate Time: 30-60 minutes

## The Competition:

1. Words common to K-6 science books will be selected.
2. All teams will compete during one time period.
3. Words will be presented to each team in order selected by random draw of numbers by one team member.
4. The team must:
  - a. Correctly spell the word (first half of time period); and
  - b. Tell what the word means (in addition to spelling for teams remaining in second half of time period).
5. Judges will determine if the criteria has been met.
6. Team members may confer with one another when spelling their word. All other teams must remain silent. Teams interfering or talking aloud during spelling by another team will be disqualified.

## Scoring:

1. Points will be awarded by the order of elimination. The last team standing shall be the winner provided that team correctly spells and defines its last word.
2. A team cannot be declared a winner by elimination alone. In the event that the final team cannot complete its last word, then there shall be a spell-off between the top two teams.



# MAGNETS

## Description:

Each student will identify what objects a magnet will attract and identify materials through which a magnet can attract.

Number of Participants: 2

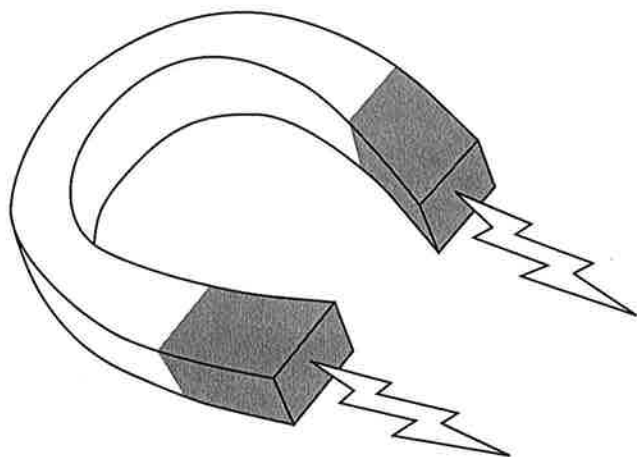
Approximate Time: 20 minutes

## The Competition:

1. Give student a collection of various objects -- a nail, a pin, an eraser, a penny, a crayon, a paper clip, etc.
2. Ask each child to separate objects into two categories -- predict which object will be attracted to and will not be attracted to a magnet.
3. Give each child a magnet to test their predictions to determine which objects were attracted to the magnet. This step should be completed under judge's supervision to verify matches.
4. Show students a piece of paper, a magnet and a paper clip. Ask, "Will the magnet attract the paper clip through this paper?"
5. Repeat procedure asking students to predict and test attraction using magnet and a piece of wood, a magnet and a piece of plastic, a magnet and a glass of water, etc.

## Scoring:

The greatest number of correctly predicted objects will determine the winners.





# MONSTER MATCH

## Description:

Students will be given a set of approximately 30 Science Olympiad monster cards and asked to sort them in pairs of two, three or four.

**Number of Participants:** 2

**Approximate Time:** 15 minutes

## The Competition:

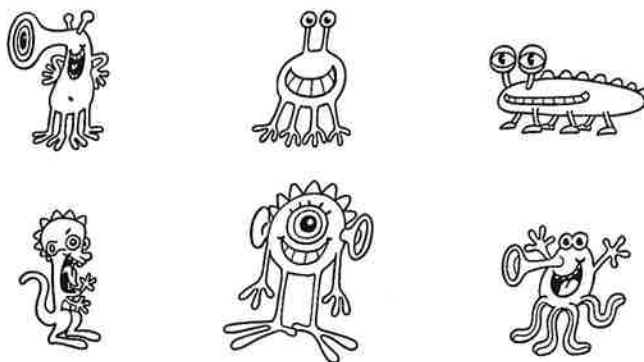
1. Students will be given a set of approximately 30 monster cards or other similar "creature cards".
2. The Supervisor will ask students to match (pair) the monsters by 2's, 3's or 4's according to one characteristic that they have in common (e.g., black hands).

For Example:     5 pairs of 2 monsters that are alike = 10  
                          4 pairs of 3 monsters that are alike = 12  
                          2 pairs of 4 monsters that are alike = 8

3. Students must also identify and record in writing the characteristic that identifies each pair.
4. Supervisors may choose to have one set of monsters matched by two (2) characteristics that are alike (e.g., hair and eyelids).

## Scoring:

One point will be awarded for each pair correctly matched according to the characteristic identified by students. Ties will be broken by shortest time to complete the Monster Matching.



NOTE: Six (6) full-size MONSTER CARD SETS (30 cards 2.8 x 3.6 inches each) on card stock with directions may be purchased in the Science Olympiad online Store at [www.soinc.org](http://www.soinc.org).

# MYSTERY ARCHITECTURE

## Description:

This event is designed to test the student's 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: 2

Approximate Time: 30 minutes

## The Competition:

1. Each team of two students will be given a bag of building materials. All teams 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 supervisors feel are appropriate).
2. Each team will have a maximum time of 20 minutes to construct a tower to support the 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 in the bag, and the bag itself, may be used to construct the tower. No other materials or adhesives may be part of the finished tower. Students may bring scissors, a ruler and a pair of pliers, which they will provide, to use as tools while building the tower. Each team may bring their own tennis ball to use while building their tower, however, all towers will be measured using the same tennis ball (regulation size and weight) provided by the event supervisor.
4. The students are to inform the judges when they finish their tower. They will place the tennis ball provided by the event supervisor on the top of their tower. The tower must remain standing long enough for the height and base to be measured.
5. The tower must be completely free standing. It cannot be attached to the tabletop, floor, wall or ceiling.
6. No coaching of the students will be allowed during the competition. Remember, we are assessing the student's ability to think on their feet.

## Scoring:

1. The height of the tower and the width of its base will be measured as precisely as possible by the judges. Since no building materials are to extend above it, 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 will be ranked above those that do not. The towers in each of these groups will be ranked according to their height. Tallest tower first, the shortest tower last.
3. In the event of a tie, the winner will be the tower with the smallest base measurement.

Note: supervisors should determine the acceptable measurement with the same equipment that is available to students.

# NO BONES ABOUT IT

## Description:

A team of two (2) students will identify bones and pictures of bones at stations throughout the room. They will also be required to answer questions found on cards at the stations pertaining to bones. Only the SCIENTIFIC NAMES of the bones will be accepted as correct!

**Number of Participants:** 2

**Approximate Time:** 30 minutes

## The Competition:

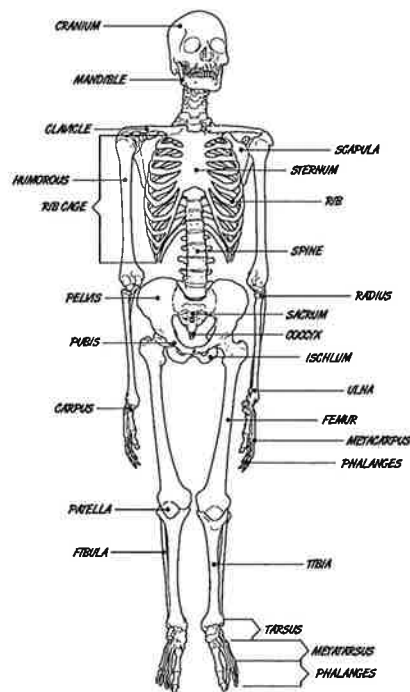
Stations will be set up in the room with provided bones and pictures of bones (HUMAN AND ANIMAL). The two participants will move from station to station with all the other teams only on the direct command of the testing official. (There will be 30 seconds at each station.) The team will be asked to record answers to the questions found at various stations on the provided answer sheet. Questions will relate to the identity of the bones or picture of the bones and also MAY include questions on orientation, articulation, number of this type in the human body, function, type of joint, range of motion, etc.

## Scoring:

There will be 25 stations, with 2 questions per station. Each question will be worth 2 points, for a total of 100 points. The team with the highest point total will be the winner. In case of a tie the team with the answers spelled correctly will place ABOVE the team with the incorrect spelling.

SAMPLE QUESTIONS: (Answer in CAPS)

- A. Identify this bone:  
TIBIA  
B. Location of this bone:  
RIGHT LOWER LEG
- A. Identify this bone:  
MANDIBLE  
B. Function of this bone:  
ITS MOVEMENT, CHEWS & GRINDS FOOD
- A. Identify this bone:  
SCAPULA  
B. How many of these bones are in the human body?  
TWO
- A. Name the bone that is colored in red on this picture  
HUMERUS  
B. How tall would you estimate this animal is?  
20-40 CM
- A. Is this skull an example of a predator or a prey?  
IF EYES ARE FACING FORWARD=PREDATOR



# NAME THE SCIENTIST

## Description:

Students will be required to identify prominent scientists and their contributions to their field(s).

**Number of Participants:** 1

**Approximate Time:** 1 hour

## The Competition:

The competition will be in two parts. Part I: students will play a concentration game in a group of four that consist of matching the scientist to their invention, discovery or contribution. Part II: is a quiz on some of the scientists' contributions to science. For example: Name the French chemist \_\_\_\_\_ who discovered a method for processing milk to reduce the bacteria content.

## Scoring:

In the concentration game each student will receive one point for each successful match. 6 x 6 matrix is used for concentration game (18 scientist cards + 18 contribution cards). In the quiz each correct answer will be one point. High score wins.

## **Sample List of Scientists and/or Inventors:**

Benjamin Franklin

Galileo

Wilbur Wright

Thomas Edison

Alexander Graham Bell

Edwin Powell Hubble

Carolus Linnaeus

George Washington Carver

Sally Ride

Sir Henry Cavendish

Robert Fulton

Joseph Priestly

Linus Pauling

Albert Einstein

Johann Kepler

Michael Faraday

Edward Jenner

Madame Curie

William Harvey

Andre Ampere

Sir Isaac Newton

Anton Van Leeuwenhoek

Eli Whitney

Edward Teller

Robert Goddard

Wilhelm Rontgen

John James Audubon

Louis Pasteur

James Watt

Sir Humphrey Davy

Gregor Mendel

Charles Darwin

Jonas Salk

Neil Armstrong

Antoine Lavoisier

John Dalton

Samuel F.B. Morse

Rachel Carson

Robert Koch

Robert Bunsen



# PENTATHLON

## Description:

Five physical skills are interspersed with science questions in an obstacle course that will be run in a relay race style where each student passes the balloon to the next student. The team must be balanced with 2 to 3 boys and 2 to 3 girls.

**Number of Participants:** 4-5

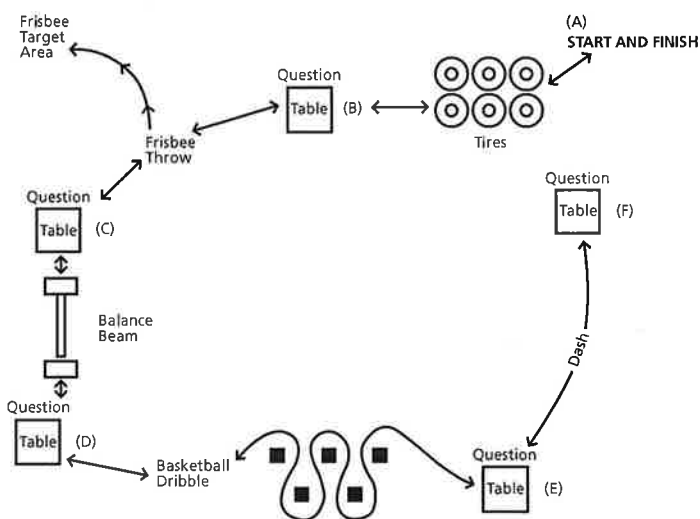
**Approximate Time:** 20 minutes

## The Competition:

1. Appropriate athletic attire is advised (running shoes, etc.). Change of clothing is recommended during inclement weather.
2. The physical activity will include such events as: a dash, crossing a balance beam, dribbling a basketball between a row of safety cones, running through six tires on the ground, a Frisbee throw for accuracy. All of these events must be done while carrying a fragile object (such as a water-filled balloon or an egg) without breaking it.
3. One student will be placed at each position, A-D. Students cannot pass the balloon to the next student until the question is answered. The last student completes station D & E.
4. General science questions will be asked at tables where students stop very briefly between events. Questions should be answered as rapidly as possible to avoid loss of time.
5. Each physical obstacle and academic question must be completed correctly before proceeding to the next station. Students could be given four Frisbees and moved closer after each miss, and students should be given questions of ever-decreasing levels of difficulty so they could be successful.

## Scoring:

1. The total team time to complete the event will be kept by timekeepers.
2. Penalty points are assessed for broken fragile objects (50 seconds added to team time for each broken object).



# RUBBER BAND CATAPULT

## Description:

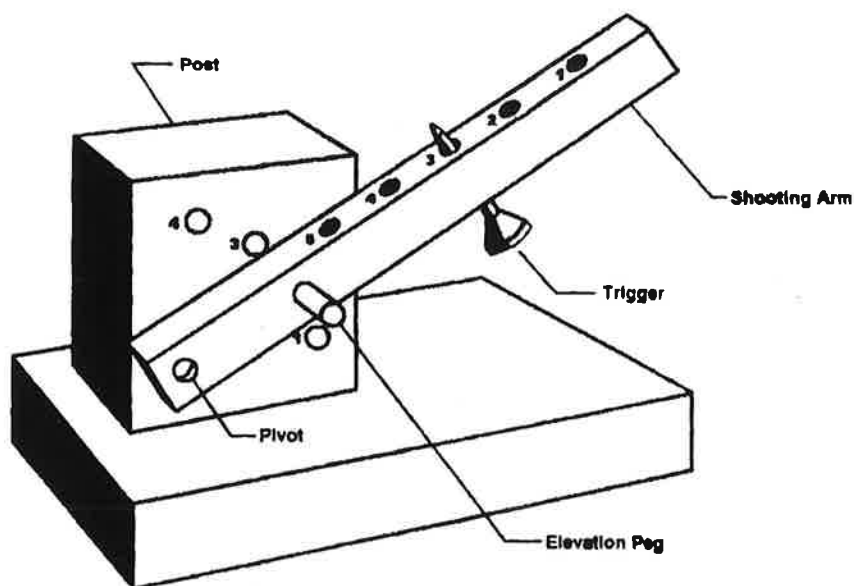
A team of two (2) students will design and construct a catapult device to shoot a rubber band at a target that is placed within a given range.

Number of Participants: 2

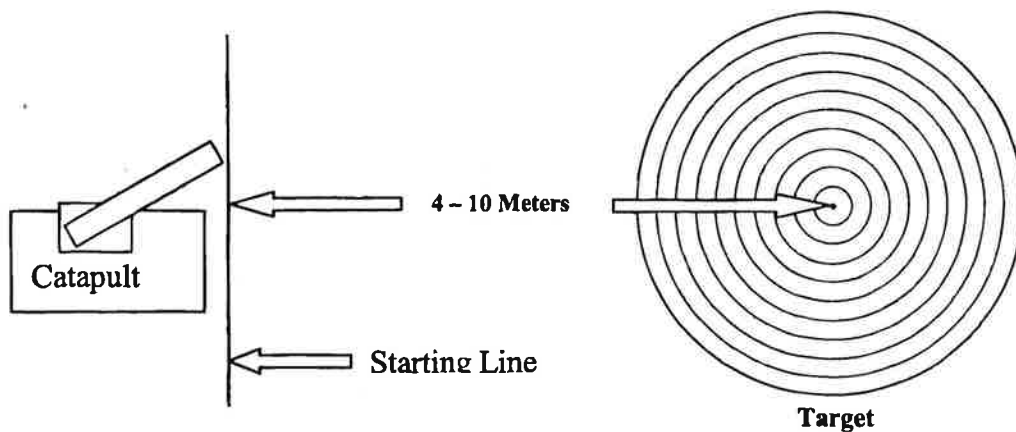
Approximate Time: 20 minutes

## The Competition:

1. Students are to design, construct and bring to the tournament a catapult device similar to (but not limited to) the sample below.



2. Catapults are NOT limited to the above design and may be of any size and any material, with as few or as many shooting positions as needed to hit a target.
3. Evidence should be collected and presented on a data table which includes the base positions, shooting arm positions, and the distances traveled
4. The target consists of three to twenty concentric rings with a dot at their center. The smallest ring is approximately 8cm in diameter with approximately 5cm between rings. The center dot is approximately 2cm in diameter. The center of the target will be located between four (4) and (10) meters from the starting line.



5. No part of the catapult may extend beyond the starting line.
6. Contestants will shoot three (3) different rubber bands.
7. Rubber band maximum size limit: 22 cm. (length, not circumference) measured with the rubber band suspended freely, under only its own weight, from a nail or similar object. Rubber bands may not be knotted, linked together or attached to any other material.

**Scoring:**

1. The score for each shot will be determined by the smallest ring (highest number) any part of a rubber band is touching or inside of when it comes to rest. The smallest ring is worth twenty (20) points, with each successively larger ring worth 1 less point.
2. In addition to the 20 points for the smallest ring, an "X" will be awarded for all shots where any part of the rubber band is touching or within the center dot.
3. The final score will be equal to the sum of the numerical scores for all three shots.
4. The greatest number of points determines the winner.
5. Ties will be broken in favor of the team with: first, the most Xs; second, the most twenties (20), continuing with nineteen's (19) thru ones (1). Any remaining ties will be broken in the same manner comparing each shot, 1st thru 3rd, in order.
6. If ties still exist, the team with the best-prepared data table will win.

Turn in catapult, marked with team name and number, prior to the start of the tournament.