

# Science Olympiad Tryout Information



The Science Olympiad Team is a group of 25 students who will represent Woodbury at a regional competition at Case Western Reserve University on **Saturday, March 2<sup>nd</sup>, 2013**. Students who make the team will each participate in two or three events across different topics in science. Each member will meet weekly with his/her coaches for each event to practice and study. Students will be asked to review and study material at home as well.

Students who are on the Olympiad Team will need to be dedicated to their success. This means attending all practices and meetings and committing to study their events at home. Students will work out a practice schedule with their coaches that fits everyone's schedules.

To tryout for the Science Olympiad team, you will need to participate in the mini-olympiad. You have the chance to tryout in **5 events**. You may *not* tryout for more than 5 events. You MUST pick at least 2 events from Category 1, at least 1 event from Category 2, and at least 1 event from Category 3. Your 5<sup>th</sup> event can be from any of the three categories. Look at the rules and the study tips and choose wisely what events to tryout for. You will earn points based on how well you do. Increase your chance for success by trying out for events in which you will be successful.

Each event tryout (with the exception of Egg Drop and Aerodynamics), will not take the full after school period. You can plan to tryout for two events on the same day and you should have plenty of time to complete both. Egg Drop and Aerodynamics will take a full after school period, so plan accordingly.

On the back is the schedule for the mini-olympiad. Each event has multiple times that you can tryout. All tryouts will take place between **Tuesday, October 9<sup>th</sup>, and Thursday, October 18<sup>th</sup>**. If you have a conflict with the times your events are being offered, please consult the coach for that event as soon as possible to arrange an alternate time *if possible*. Use your study sheet to practice for the events. Come on time and be prepared. Try your hardest and have fun!

**PARENTS:** If any parents have a particular area of interest or expertise and are interested in helping to coach an event, please contact Mrs. Brodsky at either 295-5560 or [brodsky\\_a@shaker.org](mailto:brodsky_a@shaker.org)

## Event Category List

Category 1:  
(choose at least 2)

A is for Anatomy  
Amphibians & Reptiles  
Bird ID  
Don't Bug Me  
Leaf & Tree ID  
Rock Hound  
Simple Machines  
Starry Night  
Weather or Not  
What Went By  
Circuit Wizardry  
Keys

Category 2:  
(choose at least 1)

Aerodynamics  
Bridge Building  
Egg Drop  
Ready, Aim, Fire  
Reflection Relay

Category 3:  
(choose at least 1)

Write it Do it  
Science Bowl  
Experimental Design  
Pentathlon  
Metric Measurement  
Mystery Powders

## Tryout Schedule

**All tryouts will take place between Tuesday, October 9<sup>th</sup> and Thursday, October 18<sup>th</sup>.  
All tryouts will be AFTER SCHOOL.**

<b>Event</b>	<b>Tryout Day</b>	<b>Location</b>	<b>Tryout Coach</b>
A is for Anatomy	Tuesday, October 9 <sup>th</sup> Wednesday, October 17 <sup>th</sup>	Room 248	Mrs. Halapy
Aerodynamics	<b>Tuesday, October 9<sup>th</sup></b>	Brodsky's Lab	Mrs. Brodsky
Amphibians & Reptiles	Tuesday, October 9 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Room 345	Mr. Carter
Bird ID	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Hochman's Lab	Mrs. Hochman
Bridge Building	Wednesday, October 10 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Circuit Wizardry	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Wednesday, October 17 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Room 301	Mr. Vossler
Don't Bug Me	Tuesday, October 9 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Room 345	Mr. Carter
Egg Drop	<b>Wednesday, October 17<sup>th</sup></b>	Brodsky's Lab	Mrs. Brodsky
Keys	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Leaf and Tree ID	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Hochman's Lab	Mrs. Hochman
Mystery Powders	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Ready, Aim, Fire	Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Reflection Relay	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Rock Hound	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Simple Machines	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Wednesday, October 17 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Room 301	Mr. Vossler

Starry Night	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky
Weather or Not	Tuesday, October 9 <sup>th</sup> Wednesday, October 17 <sup>th</sup>	Room 248	Mrs. Halapy
What Went By	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Hochman's Lab	Mrs. Hochman
Write it, Do it	Tuesday, October 9 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Room 345	Mr. Carter
Metric Measurement	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Hochman's Lab	Mrs. Hochman
Science Bowl	Tuesday, October 9 <sup>th</sup> Wednesday, October 17 <sup>th</sup>	Room 248	Mrs. Halapy
Experimental Design	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Hochman's Lab	Mrs. Hochman
Pentathlon	Wednesday, October 10 <sup>th</sup> Thursday, October 11 <sup>th</sup> Tuesday, October 16 <sup>th</sup> Thursday, October 18 <sup>th</sup>	Brodsky's Lab	Mrs. Brodsky

## **Study Suggestions for Mini-Olympiad**

**A is for Anatomy:** For the tryout you will have to answer questions about the bones and skeletal system of the human body. Questions may be used to identify parts of the systems from charts, models, x-rays etc. Or a description will be given and you have to locate the part.

**How to practice:** Acquire an excellent resource or guide book about the nervous and sensory systems. *Bones that may be included:* occipital, parietal, frontal, temporal, sphenoid, nasal, mandible, maxilla, zygomatic, sacrum, coccy, 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),

**Aerodynamics:** For the tryout you will have to construct two planes using 2 sheets of computer paper and 5 cm of masking tape. The goal is to construct a plane that goes the farthest *and* a plane that stays in the air the longest.

**How to practice:** Research plane designs focusing on time in the air. Spend time building, launching, and timing the planes. Have ready a design that will stay in the air for at least 6 seconds. You will have to actually construct the plane at the tryout though.

**Amphibians & Reptiles:** For the tryout you will have to answer questions about amphibians and reptiles of Ohio and their habitat, breeding, external parts, body covering, feeding habits, and identification of animals.

**How to practice:** Acquire an excellent resource for studying amphibians and reptiles. Study such things as identifying specimens from pictures, habitats, breeding, external parts, body covering and feeding habits.

**Bird ID:** For the tryout you will be asked to identify birds of Ohio using many sources and answer questions about birds of Ohio.

**How to practice:** Find a source book all about birds in Ohio. Research and learn about the birds, their habitats, feeding, breeding, body parts, and calls.

**Bridge Building:** For the tryout you will be given 50 plastic straws and 10 straight pins. With just these materials you will need to construct a bridge to support weight. Your bridge must span the distance of 18" between tables. Your goal is for you bridge to hold as much weight as possible.

**How to practice:** Practice constructing a bridge using 50 plastic straws and 10 straight pins. See how much weight your bridge can support.

**Circuit Wizardry:** For the tryout you will have to determine the wiring of circuits, test circuits, predict if bulbs will light based on a circuit's design, and answer other related questions.

**How to practice:** Research to find out what each symbol means. With the help of a parent, build a complex inference card and inference box – 8 terminals (out of plastic index card box with smooth bolts for terminals).

**Don't Bug Me:** For the tryout you will have to identify bugs and information about them. This includes identifying bugs from pictures, drawings and specimens. You will also need to know about the bugs and their parts and habits.

**How to practice:** Locate a field guide or key which contains all 7 orders and helpful information. Construct a chart which has rows being the order and columns being: movement, body structure, mouthparts, habitat, diet and life cycle.

**Egg Drop:** For the tryout you will have to construct a container to hold an egg. You will have SOME of the following possible materials to make your container: cotton balls, twist ties, bubble rap, pipe cleaners, bridal tulling, bamboo skewers, masking tape, poster board, craft foam, string, plastic drop cloth, small weights, etc. You will not know exactly what or how much materials you will get until the day of the tryout. The goal is to build a container that when dropped, will protect the egg inside.

**How to practice:** Research protection, cushioning and packaging. Begin designing and testing an egg drop container following the rules of the event. Be sure to drop the container with the egg in it from at least 20 feet with adult supervision.

**Experimental Design:** For the tryout you will have 25 minutes to conduct an experiment given a set of unknown materials. You will be given a question that needs to be answered, and using the given materials, you will design an experiment that can answer that question. You will then actually perform the experiment and fill out a basic lab report to go along with it.

**How to practice:** Learn the steps of the scientific method. Practice doing simple experiments with materials at home. Ask a family member or friend to put together some random materials for you to conduct an experiment with.

**Keys:** For the tryout you will have to use scientific keys in order to answer questions and identify items.

**How to practice:** Use the library or the internet to try to locate 3-4 keys. Hint: usually identification guides have keys.

**Leaf & Tree ID:** The tryout will consist of a test of identifying leaves and bark from trees.

**How to practice:** Obtain a Peterson's Field Guide to Trees. Become familiar and comfortable using your field guide. Identify 8 trees near your home. Name and describe each.

**Mystery Powders:** For the tryout you will have to test unknown powders in order to determine what they are. Possible powders include flour, powdered sugar, citric acid, salt, baking soda, cornstarch and plaster of paris. You will be able to use iodine, water and vinegar in order to test the powders.

**How to practice:** Construct and complete a chart with the rows being the testing substances (the powders) and the columns being the tests (vinegar, water, etc.).

**Pentathlon:** For the tryout you will be asked questions about famous scientists. The questions will be multiple choice and will be all about famous scientists and what they are famous for.

**How to practice:** Learn about famous scientists! Make yourself flash cards with the name of the scientist on one side, and a few facts about what they are known for on the other.

**Ready, Aim, Fire:** For the tryout you will have to construct a device to launch a given object a specified distance between 2 and 5 meters. Possible objects to fling include ping-pong ball, golf ball, marshmallow or a small waffle ball. You will be given the following materials to build your device: up to 3 half pint-sized milk cartons, a large amount of masking tape, scissors, yarn or string. Some other possible materials include straws, toothpicks, craft sticks, cardboard, pipe cleaners, rubber bands and large washers.

**How to practice:** Practice building a device to launch an object between 2 and 5 meters. You may use any of the materials from the list above. Practice launching a ping pong ball, golf ball, whiffle ball or marshmallows.

**Reflection Relay:** For the tryout you will have to use a mirror to reflect the beam of a laser. There will be two parts. The first part will require you moving the mirror so that the laser hits a target. Your score will be based on how quickly you do this. The second part will require you to setup two mirrors with the laser off, so that when the laser is turned on, the beam hits both mirrors and the target. Your score will be based on how close the laser beam is to the target.

**How to practice:** Find or borrow a small mirror. Obtain an inexpensive laser pen and clump of clay. Practice moving the mirror so that when you turn on the laser, the laser beam will hit the target.

**Rock Hound:** For the tryout you will need to identify various rocks and minerals based on the properties of these items.

**How to practice:** Define in relation to rocks: color, density, relative hardness, shape, texture, Moh's hardness scale, scratch test. Obtain a Rocks and Minerals Filed Guide to study from.

**Science Bowl:** For the tryout you will take a general science quiz. The event is a quiz show that covers general science knowledge that is typically learned in 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>, grade. The tryout will ask multiple choice questions covering various areas of science.

**How to practice:** Read through the glossary of your science book! Do a Google search for science quizzes online- there are lots of them! Get a science fact book from the library.

**Simple Machines:** For the tryout you will have to identify various simple machines and answer questions about them. You might need to use equipment to measure some variable, such as length, force or weight.

**How to practice:** Read about simple machines. Define in relationship to simple machines: length, force, weight. What is mechanical advantage? How is MA calculated for each type of simple machine?

**Starry Night:** For the tryout you will need to identify such things as: constellations, stars, phases of the moon, order of the planets, famous astronomers, and identification of other related astronomy terms.

**How to practice:** Go to the planetarium at the Natural History Museum. Obtain a sky chart. Observe stars and locate at least 3 constellations in our winter sky. Identify the major stars in each constellation.

**Weather or Not:** For the tryout you will have to identify the following: cloud formations, weather patterns, meteorological tools, weather symbols and terminology.

**How to practice:** Collect weather maps from at least 3 different Plain Dealer newspapers. Learn to read each. Obtain a cloud identification book. Observe clouds outside on at least 3 days. Record date and cloud type. Watch the weather segment 3 nights and report on the systems that affect the weather in our area.

**What Went By:** For the tryout you will have to identify animal tracks, skeletons, fur and scat. You will have to determine what animal left these remains.

**How to practice:** Begin assembling a collection of pictures from the internet, magazines, encyclopedias, Nature Stores, etc. of animal tracks, fur skeletons and scat.

**Write it, Do it:** For the tryout you will be given a figure made out of legos. You will have to write instructions on how to recreate that figure for a partner. Your partner should be able to make the lego structure from scratch based on your directions. You must be clear and accurate.

**How to practice:** Practice writing instructions on building a prototype out of legos. Practice first with 5-10 legos, building your way up to 15. Use different colors and sizes. Give your instructions to a friend to try and recreate your structure.

**Metric Measurement:** For the tryout you will have two tasks. The first task will be to fill a sandwich bag with 50 grams of a given substance. The goal is to be closest to 50 grams without measuring first. The second part will be to answer questions based on measuring items in the metric system.

**How to practice:** Carry 50 grams in a plastic bag for HOURS and HOURS to begin getting the feel for 50g. Compare your 50g to other things. Try to “grab” 50g of other items. Construct a chart for 5 objects at home. The rows should be the objects and the columns: volume, area, width, weight, mass. What is a trundle wheel?

## Tryout Calendar

My 5 events are:

Category 1: \_\_\_\_\_ & \_\_\_\_\_

Category 2: \_\_\_\_\_

Category 3: \_\_\_\_\_

5<sup>th</sup> Event: \_\_\_\_\_

**Choose 1 time to come tryout for each of your events. DO NOT WAIT UNTIL THE LAST DAY TO SQUEEZE EVERYTHING IN!**

<b>Tuesday, October 9<sup>th</sup></b>		<b>Wednesday, October 10<sup>th</sup></b>		<b>Thursday, October 11<sup>th</sup></b>	
A is for Anatomy Weather or Not Science Bowl Don't Bug Me Amphibians & Reptiles Write it Do it Aerodynamics		Circuit Wizardry Simple Machines Bird ID Metric Measurement What Went By Experimental Design Leaf & Tree ID	Bridge Building Keys Reflection Relay Mystery Powders Rock Hound Starry Night Pentathlon	Circuit Wizardry Simple Machines Don't Bug Me Amphibians & Reptiles Write it Do it Bird ID Metric Measurement What Went By Experimental Design	Leaf & Tree ID Ready, Aim, Fire Keys Reflection Relay Mystery Powders Rock Hound Starry Night Pentathlon
<b>Tuesday, October 16<sup>th</sup></b>		<b>Wednesday, October 17<sup>th</sup></b>		<b>Thursday, October 18<sup>th</sup></b>	
Don't Bug Me Amphibians & Reptiles Write it Do it Bird ID Metric Measurement What Went By Experimental Design Leaf & Tree ID	Ready, Aim, Fire Keys Reflection Relay Mystery Powders Rock Hound Starry Night Pentathlon	A is for Anatomy Weather or Not Science Bowl Circuit Wizardry Simple Machines Egg Drop		Experimental Design Leaf & Tree ID Bridge Building Keys Reflection Relay Mystery Powders Rock Hound Starry Night Pentathlon	Circuit Wizardry Simple Machines Don't Bug Me Amphibians & Reptiles Write it Do it What Went By Bird ID Metric Measurement