

SCIENCE OLYMPIAD BACKGROUND



**If You Answer Yes to Two or More of These Questions,
Plan Now to Participate in This Year's Science Olympiad**

**DO YOU TEACH OR WORK WITH STUDENTS IN ONE OF THE GRADES
K-12?**

**ARE YOU CONCERNED ABOUT DECLINING ACHIEVEMENT IN SCIENCE
CLASSES?**

WOULD YOU LIKE TO SEE STUDENT INTEREST IN SCIENCE INCREASE?

**DO YOU WISH WE COULD CAPTURE THE KIND OF INTEREST,
ENTHUSIASM, AND COMMITMENT FOR SCIENCE THAT WE SEE
EXHIBITED FOR SPORTS?**

**ARE YOU READY TO LEARN HOW TO INCREASE STUDENT SCORES AND
INTEREST IN SCIENCE AND IMPROVE COMMUNITY PERCEPTION OF
SCIENCE EDUCATION?**

If you answered yes to two or more of these questions, then we invite you to become part of the renaissance in science education by starting a Science Olympiad in your school, district or state. We would like to share the excitement and successes that have been experienced at Science Olympiad Tournaments all across the country. Plan now to join the over 10,000 teachers and schools that participated in last year's Science Olympiad Tournaments.

WHAT IS THE SCIENCE OLYMPIAD?

The Science Olympiad is an international nonprofit organization devoted to improving the quality of science education, increasing student interest in science and providing recognition for outstanding achievement in science education by both students and teachers. These goals are accomplished through classroom activities, research, training workshops and the encouragement of intramural, district, regional, state and national tournaments. The Science Olympiad tournaments are rigorous academic interscholastic competitions that consist of a series of thirty-three individual and team events for which students prepare during the year. The competitions follow the format of popular board games, TV shows and athletic games. These challenging and motivational events are well balanced among the various science disciplines of biology, earth science, chemistry, physics, computers and technology. There is also a balance of events requiring knowledge of science facts, concepts, processes, skills and applications. In addition, during the day there are open house activities consisting of science and mathematics demonstrations, activities and career counseling sessions which are conducted by professors and scientists at the host institution. These occur concurrently with the events.

Many states and regions have organized physics, biology or chemistry olympiads, but few have combined all disciplines in one large Olympiad. The excitement of many students from all science areas competing and cheering one another on to greater learning caused one school district to coin the phrase "intellete". When they searched for a place to house their newly won Olympiad State Championship trophy, the only location available was outside the principal's office in the "athlete" showcase, so they convinced the school board to build an "intellete" showcase. An intellete is any person who demonstrates outstanding performance in an academic or intellectual pursuit (in this case, science). One of the goals of the Science Olympiad is to elevate science education and learning to a level of enthusiasm and support that is normally reserved only for varsity sports programs.

SCIENCE OLYMPIAD SUCCESSES

The Science Olympiad is modeled after successful Olympiad tournaments held in Delaware and Michigan which were introduced by Jack Cairns, Science Supervisor, Delaware Department of Public Instruction, and Dr. Gerard J. Putz, Regional Science Consultant, Macomb Intermediate School District in Michigan. In these states, the following observations have been made:

If success can be measured by the number of students attending the competition, then the Olympiads are successful. Attendance has increased each year in both states. In Michigan, attendance increased from 600 students participating the first year to over 6,000 after three years. In Delaware, 95% of the public secondary schools participate. After students attend the Olympiad for the first time, they usually return each year until they graduate from high school.

If success can be measured by increasing science enrollments at home schools at a time of falling enrollments, then the Olympiads are successful. Many schools report increased student interest in science and increased enrollment in science classes. Some schools have reported a doubling of science class enrollments and a need to hire more science teachers.

If success can be measured by the number of science teachers across the nation who support the effort, then the Science Olympiad is successful. Last year, over 10,000 teams from all 50 states participated in the Science Olympiad programs. This year over 40 states and over 100 regions will host secondary tournaments.

Although some events require an individual from one team to compete against other individuals from other teams, most events require teamwork, group planning and cooperation. The emphasis is on learning, participation, interaction, having fun and developing team spirit. Coaches and students are reminded of the words of Bill Koch (Olympic Cross Country Ski medal winner), who said, "Winning isn't everything. The striving for excellence is – it's the trying and the caring that is important – winning is a bonus."

COOPERATION AND COMPETITION

The Science Olympiad Steering Committee concurs with research done by Drs. David and Roger Johnson, Dr. Madeline Hunter, Dr. Benjamin Bloom and Dr. Harry Wong that cooperation and teamwork, practicing toward an objective, improving skills through competition and making learning exciting through motivational activities are essential ingredients in attaining academic excellence. Dr. Bloom, in an article titled, "Talent Development vs. Schooling," described the process by which individuals reached extremely high levels of accomplishment. One of his conclusions was that competitions played a major role in the success of each talent area participant. "In each talent

field there are frequent events (recitals, contests, concerts) in which the child's special capabilities are displayed publicly, and there are significant rewards and approval for meritorious accomplishments." He said children are spurred to greater learning efforts in anticipation of the public event and that such public events are a means of making the child's progress and development real and important. He concluded that they also bring participants into direct contact with one another and provide opportunities to exchange experiences and to observe and get to know outstanding peer and adult models of the talent.

Other research conducted by Calvin W. Taylor of the University of Utah has concluded that "extra-curricular training experiences and accomplishments do show noticeable predictive power of later adult performance, achievement, and accomplishments". The value and implication of being involved in such extra-curricular activities as the Science Olympiad is apparent for developing productive high performing adults.

With regard to predicting college success other than SAT scores and school grades, Educational Testing Service observed that "productive follow-through" defined as persistent and successful extra-curricular accomplishment" indeed was the strongest predictor of leadership and significant independent accomplishment and clearly useful in predicting most overall college success.

EVENT DESCRIPTIONS FOR ELEMENTARY SCHOOL TOURNAMENT

The Elementary Science Olympiad consists of events from the three broad areas of science education: (1) science processes and thinking skills, (2) science concepts and knowledge and (3) science application and technological skills.

Some of the events require individual participation while others are team competitions. Although these rules will be followed as closely as possible, some modifications may be made and announced prior to the Olympiad. We have selected 22 events to be run at our tournament this year.

ELEMENTARY SCIENCE OLYMPIAD EVENTS^{TSF}: (Brief descriptions of elementary events to be run on April 21, 2012).

1. **A IS FOR ANATOMY** - This event consists of a written test in which the contestants will view models, slides, and pictures to identify organs from various human body systems.
2. **AERODYNAMICS** - Each person of a two-member team will build one paper airplane to be flown a distance of at least five meters toward a predetermined target.
3. **BARGE BUILDING** - Each team will construct a barge of aluminum foil that can support a cargo of the largest number of pennies without getting them wet.
4. **CALCULATOR CONTEST** - This event allows students to demonstrate their knowledge of problem-solving using a hand-held, non-programmable calculator.
5. **CAN RACE** - A team of two students will race a can against other teams in a drag race format.
6. **DEEP BLUE SEA** - Each team of two students will work cooperatively to answer questions and identify ocean flora, and fauna, physical features and phenomena related to marine science.
7. **DON'T BUG ME** - The contestants are to distinguish insects from non-insects, identify various body parts, characteristics, habitats, ecological significance, life cycles, and major classes and orders of arthropods.

8. ELEMENTS, COMPOUNDS, MIXTURES - Each participant will classify materials into one of the three possible categories.
9. GRAB A GRAM - Teams of three students cooperate to pick up given materials in an amount not to exceed fifty grams. There will be at least two rounds of competition using different substances in each round.
10. HOT AIR BALLOONS - This event requires a team of three students to build and fly a paper hot air balloon.
11. LEAF & TREE FINDER - The participant will be asked to identify various trees by using an identification key and leaf and tree part samples.
12. MAP READING - Individual contestants will be given two-part questions which can be answered by using various kinds of maps.
13. NAME THE SCIENTIST - Students will be required to identify prominent scientists and their contributions to their field(s).
14. NO BONES ABOUT IT - A team of two (2) students will match each of 10-15 different kinds of bones with appropriate skeletons or charts of various animals.
15. ORIENTEERING - Participants will follow a set of directions using their skills of pacing and using a magnetic compass.
16. PENTATHLON - 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.
17. ROCK HOUND - Students will prepare charts, identify various rocks and minerals and describe their characteristics.
18. RUBBER BAND CATAPULT - A team of two students will design and construct a catapult device to shoot a rubber band at a target that is placed within a given range.
19. SIMPLE MACHINES - Participants will be asked to identify, use and answer questions about simple machines.
20. STRAW EGG DROP - Each pair of students will make a device to hold a raw egg made out of straws and masking tape to be provided on site. The device containing the egg will be dropped from a fixed height to target.
21. STRAW TOWER - This is a competition in which each team (2 people) attempts to build the strongest straw tower. Each team will construct a tower using only 50 drinking straws and 20 straight pins.
22. WRITE IT/DO IT - This event tests a competitor's ability to communicate with a colleague.