

National Middle School Science Bowl 2004 Regional Coordinator Manual

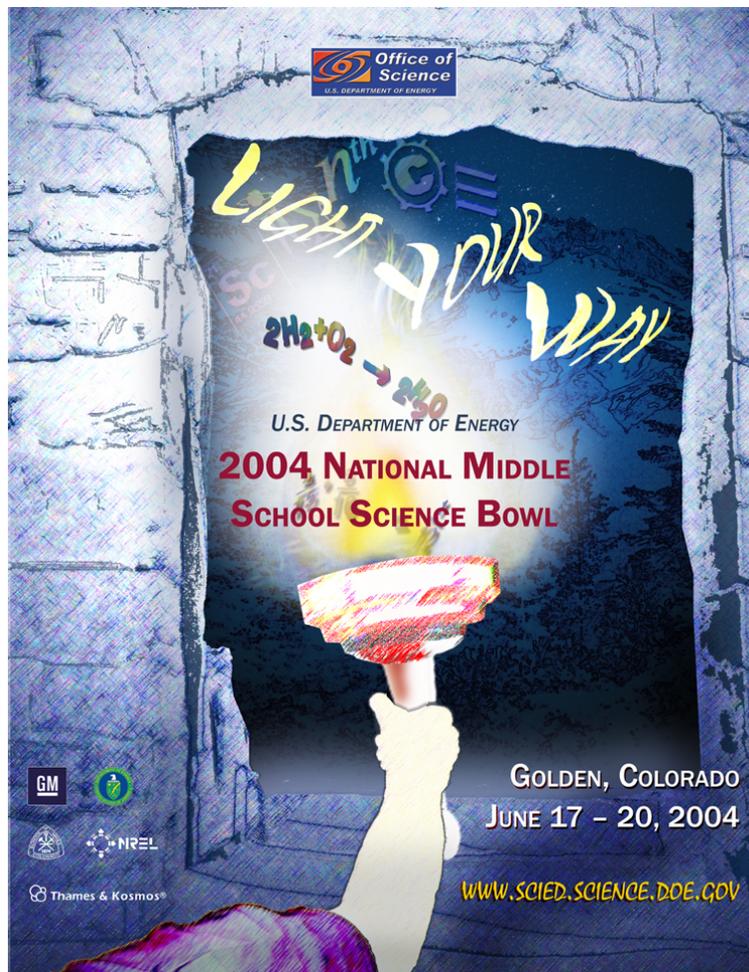


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Overview

Congratulations to you and your facility on being selected to host a regional Middle School Science Bowl. This competition is designed to encourage middle school students from across the nation to excel in mathematics, science, and engineering. Research has shown that students' interest in math and science begins to decline during the middle school years. By capturing middle school students' natural curiosity about the world around them, this program strives to promote the idea that academic success is on a par with athletic success. Additionally, this program hopes to encourage increased participation in mathematics and science courses and careers, especially among populations underrepresented in these fields.

The National Middle School Science Bowl will be held on June 17-20, 2004, and will be hosted by the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) and the Colorado School of Mines, nestled in the beautiful Rocky Mountains in Golden, Colorado. The Middle School Science Bowl is designed for students in grades 6-8, ages 11-14.

DOE Headquarters has put together this Regional Coordinator's Manual to provide you with information necessary to organize a successful regional competition and get your team ready to participate in the National competition. This Manual contains information on the following:

- * Organizing and managing a regional competition that **must** include an academic competition, and may also include a hydrogen car race.
- * Coaches, parents, and students responsibilities and necessary forms
- * Competition rules and duties of officials
- * Publicity, media coverage and corporate sponsorships
- * Sample invitation letters, competition flowcharts, and sample questions.

REGIONAL Middle School Science Bowl

Regional Competition Sites

Ames Laboratory/Iowa State University – Ames, Iowa
Alabama School of Math and Science - Mobile, Alabama
Argonne National Laboratory - Argonne, Illinois
Florida Solar Energy Center/University of Central Florida - Cocoa, Florida
Indiana State University - Terre Haute, Indiana
Jefferson Lab - Newport News, Virginia
Knolls Atomic Power Lab/Northeast Sustainable Energy Association
Mitre Corporation - San Antonio, Texas
Nebraska Natural Resources Conservation Service - Lincoln, Nebraska
National Organization of Black Chemists & Chemical Engineers - San Diego, California
North Carolina State University - Raleigh, North Carolina
National Renewable Energy Laboratory - Golden, Colorado
Pantex Plant - Amarillo, Texas
Princeton Plasma Physics Laboratory - Princeton, New Jersey
Sandia National Laboratory - Albuquerque, New Mexico
Southside High School/University of Arkansas - Fort Smith, Arkansas
Texas A&M University - College Station, Texas

University of Arizona - Tucson, Arizona
University of Portland/Bonneville Power - Vancouver, Washington
Wayne State University - Detroit, Michigan

Regional Competition Schools and Teams

- The maximum number of participating teams in any regional competition is determined by each facility. No more than 3 teams from any school can participate in the regional competition, with a minimum of 4 schools.
- The number of students on a team to travel to the national event will remain four (4). However, at the regional level there may be an alternate student, with the understanding that only four (4) will be allowed to attend the national event.

Academic Competition

- Regional competitions must include an academic competition. A hydrogen car race is optional at the regional competitions. If you are hosting only an academic event, then the winning team of four students will represent your region at the national competition.
- The format for the academic competition may utilize either a round robin format or single/double elimination. Each match consists of two **8-minute halves** with a 2-minute break.

Combined Competition

- For sites that conduct combined competitions, all teams must compete in **both** competitions in order to qualify for the national competition. Those sites conducting a combined competition must structure a point system to determine the overall winner. For example, if there are 20 teams competing, the first place team in the academic competition would get 20 points; second place 19 points, and so on. In the car race, the team with the fastest car in the final heat would receive 20 points; the second fastest car gets 19 points, and so on. The overall winner would be the team with the highest number of points combined from both events. In the event of a tie, the team with the higher academic competition score is the overall winner.
- To assist regional sites with the hydrogen fuel cell car competition, DOE and General Motors will provide **up to 40 hydrogen fuel cell car kits** and a supplemental enhancement activity guide per site. If you order the kits for your regional competition, they must be used **ONLY** for this competition, any unused kits must be returned to DOE.

Costs Involved In Regional Science Bowls

***Reminder* – DOE will not be providing any federal dollars to sponsor regional events.**

Regional sites will be responsible for the following costs:

- Solicitation of teams, including cost of postage
- Lock-out systems and competition timing clocks
- Program printing and reproduction
- Trophies or similar awards for winners
- Meal or snack during the day of competition (optional)
- Training time for personnel working on the regional competition
- Supplies: scoresheet flip charts, markers, paper, pencils, scratch pads, signage, masking tape, race track materials, stop watches, etc.

Funding/Material Sources

- Local businesses, industry, and educational institutions may be solicited for donation of money, food, gifts, services, and facilities. Sponsors should be acknowledged in the program.
- Volunteers should be solicited from your facility, local business, industry, television/radio, education or community institutions.
- Facilities in a given region may loan one another lock-out systems and clocks on alternate dates if funding is not available for the purchase of this equipment. Facilities may want to contact local high schools, colleges or local 4-H Cooperative Extension offices, etc, to see if they will lend/rent their lock-out systems to facilities for the regional science bowl.
- The lock-out buzzer system used in the National Middle School Science Bowl is “The Quizzer.” It is manufactured by Quizzer Limited and sold directly from their factory. Their address is:
Quizzer Limited
P.O. Box 8685
Madison, Wisconsin 53708
Telephone: 606 242-8805
- Local high schools and colleges are also good places to contact for overnight accommodations for regional teams that need to travel far distances. Some schools will open up their gym for schools to camp out on the floor.

NATIONAL Middle School Science Bowl – June 17-20, 2004

In 2004, the competition expanded from sixteen to twenty regional winning teams from around the country. Each team will compete in a fast-paced, question-and-answer academic tournament, combined with a hydrogen fuel cell car race. Teams of **four** middle school students will compete in both types of competitions, and will build their cars onsite with the guidance of engineers from DOE, NREL and General Motors. A hydrogen car kit and a supplemental enhancement activity guide will be provided to each winning regional team prior to the national event. The regional winning teams are encouraged to develop a plan and design to bring to the national event in Golden, Colorado, June 17-20, 2004. **No completed cars may be brought to the national event, only the plans and designs.**

National Competition Format:

- In order to aid your winning regional team with the transition to the national competition, it will be necessary for you to understand the format which will be followed at the national level.
- The **academic competition** will have a round robin/double elimination tournament. The 20 teams will be divided into 4 divisions of 5 teams per division. Each team will play every team in the division. The top two teams from each division will continue into the finals for the 8 team double elimination portion of the competition. The questions for the academic competition may be either multiple choice or short answer and will be selected from the following categories: life science, physical science, earth science, general science, and mathematics. Each match will have **two 10-minute halves**, with a 2-minute break.
- For the **hydrogen fuel cell car event**, students will construct their hydrogen fuel cell cars with materials provided to each team. A double elimination race competition will determine the top three winning teams with the fastest cars.

DOE and GM Will Cover The Costs For 20 Official Regional Winning Teams

- Round trip airfare to Golden, Colorado, including transportation from the airport to Colorado School of Mines
- Lodging and meals for three days and nights at the Colorado School of Mines
- Transportation to and from National Middle School Science Bowl events

****For the Science Bowl Coordinator:** All costs associated with attendance and travel to the National Middle School Science Bowl will be at the expense of the laboratory/facility/business.

Important Dates

- **May 8, Midnight (PST)**
All regional events must be completed. The winning team must fill out the national registration form online and submit, **as soon after the regional event as possible**.
- **May 17, 2003**
Forms Completed and Submitted On-Line
Following each of the regional events the following forms must be submitted **on-line** at <http://www.scied.science.doe.gov/nmsb/default.htm>. All coaches and coordinators will be provided a user ID and password to complete the forms on-line.

Coach:

Team Registration with Contact and Demographic Information**
Biographies of Team Members
Media Form
Family Participation in National Event and request for meals (Coach must obtain information from the parents)

Coordinator:

Committee Members, Sponsors and Regional Demographics
Participation in the National Event Volunteer Form

Forms Completed, Signed and FedEx to NREL

The following forms must be completed on-line at <http://www.scied.science.doe.gov/nmsb/default.htm>, downloaded, printed, signed and FedEx to Linda Lung at National Renewable Energy Laboratory (NREL), 1617 Cole Boulevard, MS-1713, Golden, CO 80401-3393, Phone: (303) 275-3044:

Coach:

Coach Medical, Emergency Notification, and Publicity Consent Form **
Team Commitment and Code of Conduct (one form needed for each team member, signed by student, parent, coach and coordinator)
Adult Code of Conduct (signed by coach and coordinator)

Coordinator:

Coordinator Medical, Emergency Notification, and Publicity Consent Form

Parents

Student Medical and Parental Consent to Participate and Media Release Form**

The team photo (with the students and coach clearly identified) and any newspaper/media clips should be FedEx to DOE Headquarters:

Cindy Musick, U. S. Department of Energy, 1000 Independence Avenue SW, SC-1, Washington, DC, 20585. Phone: 202 586-0987

****These forms must be completed before travel arrangements can be made**

- **June 17-20, 2004, Golden, Colorado**

The 2004 National Middle School Science Bowl is sponsored by the U.S. Department of Energy, General Motors, and Thames & Kosmos, and will be hosted by the U.S. Department of Energy's National Renewable Energy Laboratory and the Colorado School of Mines.

Contact Information

If you have any further questions please feel to contact DOE Headquarters or NREL at the numbers and e-mail addresses listed below. Again, I want to express congratulations from the entire Department of Energy on your selection as a regional site and wish you much success in your regional competitions.

Cindy Musick

Middle School Science Bowl Program Manager
Department of Energy
Office of Science-Workforce Development for Teachers and Scientists
1000 Independence Avenue, SW
SC-1
Washington, DC 20585
Phone: (202) 586-0987
FAX: (202) 586-0019
E-mail: cindy.musick@science.doe.gov

Middle School Science Bowl Website: www.scied.science.doe.gov

Linda Lung

Education Program Manager
National Renewable Energy Laboratory
Office of Education Programs
1617 Cole Boulevard, MS-1713
Golden, Colorado 80401-3393
Phone: (303) 275-3044
FAX: (303) 275-3076
E-mail: linda_lung@nrel.gov

Middle School Science Bowl Coordinator: Roles and Responsibilities

The laboratory director, facility manager, education director, utility representative, etc. should appoint one person to coordinate the facility's Regional Middle School Science Bowl. This person will be responsible for planning and executing the regional competition and serving as the winning middle school's point of contact. This individual will coordinate with the national coordinator at DOE Headquarters. **The Science Bowl coordinator will represent his/her facility at the National Middle School Science Bowl by serving as the team's escort and chaperone in Golden, Colorado and will be utilized during the competition as an official.**

The coordinator may organize the facility's regional competition in whatever manner desired. Many sites have a Science Bowl committee with members having specific responsibilities, such as volunteer coordinator, media, sponsors, etc. Since the regional event may be either an academic competition or a combination event, including a hydrogen fuel cell car race, the organization of the competition will vary greatly between the twenty different regions. It may be necessary to hold the combined academic/car race competition over a two day period.

In order to ensure an easy transition to the national competition, we ask that the procedures listed below be strictly followed:

- Regional competitions must be conducted in a timely manner so that the Department of Energy Headquarters can be notified of the winning teams no later than Midnight (PST), May 8, 2004.
- In order to avoid misinterpretation of the rules at the national competition, rules for the regional competition should be consistent with the national competition.
- Solicitation of middle school teams must be done in a manner that is fair and inclusive. All private, parochial and home school students are encouraged to participate. **Only students in grades 6-8, ages 11-14 are eligible to compete.**
- Team registration, medical release, and parental consent forms will be provided for your regional competition. We recommend that you have all participating students fill out the three forms in order to be eligible to compete in your regional competition. Once your event is complete, you are responsible for making sure that all required national forms for your first place team are completed and submitted. The forms for the national competition will be on-line at: <http://www.scied.science.doe.gov/nmsb/default.htm>
- If a coaches' orientation session is conducted prior to your regional event, all participating coaches should be invited.
- In order to qualify to send a team to Golden, Colorado for the National Middle School Science Bowl, a regional competition must be held and coordinated under the leadership of the Department of Energy's Office of Science. The National Middle School Science Bowl will be limited to twenty regional winning teams, from twenty regional sites selected by DOE Headquarters.
- The maximum number of participating teams in any regional competition is determined by each facility. No more than 3 teams from any school can participate in the regional competition, with a minimum of 4 schools. Each individual team is only allowed to participate in **one** regional competition.
- In the event that there are an odd number of teams participating, one or more teams will have a "bye" [no opponent, automatic advancement] in the first round/heat. The "bye" slots are determined arbitrarily prior to drawing lots for the Round #1 bracket placement.
- At the national finals, the team from each facility must be composed of the same team members who competed in the regional. No one may compete in the national finals if they

were not part of the winning regional team.

- Regional media coverage should be arranged through your local press office, which should closely coordinate with the Department of Energy Headquarters. **However, no questions from the competition may be aired or published, since regional competitions will be using the same set of questions.**
- Training is **mandatory** for **all** personnel working at the regional and national competitions. Moderators and scientific judges **MUST** have knowledge of the scientific material and be able to clearly enunciate the questions and properly pronounce the scientific terms. While rules judges, scorekeepers and timekeepers need not have knowledge of the material they must know the rules and be trained in the proper procedures. Car Race Officials must be knowledgeable about their roles and the race rules and format.
- During each of the regional competitions we recommend that you organize a Science Bowl Central for both the academic and/or car race. This center can also function as the location for registration and returning of official score sheets and heat results to update the ongoing scoreboards.
- Moderators and scientific judges will be given the regional questions prior to the competition which will allow time to review the questions. They are responsible for securing this material and returning the questions to Science Bowl Central following the competition. To avoid problems regarding the security of the questions, moderators or scientific judges should not be related to any participating coach or student.
- Once a team has won your regional event, you must **immediately** notify the national coordinator by completing the registration form on-line at <http://www.scied.science.doe.gov/nmsb/default.htm>. Your winning team's coach will be able to provide the registration information.
- All forms can be accessed at the National Middle School Science Bowl web site. The following forms can be submitted directly online:
 - ✓ Sponsors and Demographics
 - ✓ Volunteer for National Event
 - ✓ Team Registration with Contact and Demographic Information
 - ✓ Bios of Team Members
 - ✓ Media
 - ✓ Family Participation in National Event and Meal Request
- The following forms can be completed on-line, downloaded, signed and FedEx to Linda Lung at NREL, 1617 Cole Blvd, MS-1713, Golden, CO 80401-3393, Phone: 303 275-3044.
 - ✓ Coach Medical, Emergency Notification, and Publicity Consent Form
 - ✓ Coordinator Medical, Emergency Notification, and Publicity Consent Form
 - ✓ Student Medical, Parental Consent and Media Release Form
 - ✓ Team Commitment and Code of Conduct (one for each team member, signed by student, parent, coach and coordinator).
 - ✓ Adult Code of Conduct (signed by coach and coordinator)
- The following must also be sent by FedEx to Cindy Musick, U.S. Department of Energy, 1000 Independence Avenue, SW, SC-1, Washington, DC 20585, Phone: 202 586-0987 and received by DOE Headquarters no later than May 17, 2003
 - ✓ Team photo (if sending a digital photo, the image must be high quality (300 dpi resolution) in a jpeg or tif file. If you have any questions about the digital photos, contact Michelle Rathbun at (202) 586-9929 or by email at michelle.rathbun@science.doe.gov. Team members must be clearly identified.
 - ✓ Newspaper/media clips if available

Tips for Regional Coordinators

Planning the Event

When planning your regional, delegate the workload by forming a committee to handle jobs, such as to find volunteers, to procure funds and necessary equipment, to review the accuracy of questions, etc.

Science Bowl team/committees:

- Sponsors – donations
- Locating a Competition Site
- Recruiting Schools
- Recruiting and Training of Volunteers
- Public Affairs – media
- Food and Beverage – ordering, coordinating pick-up, set-up, and clean up
- Administrative – mailings, receipt of packets from schools
- Question Review
- Seed Teams into Competition Divisions
- Equipment
- Competition Set-up
- Registration
- Graphics – logo design, program, certificates

Timeline: Create a list of important dates at your first meeting

- Date of first mailing to schools
- Date for schools to indicate intention to compete in regional event
- Date registration fee is due (if you have one)
- Date registration and other forms are due
- Date of volunteer training
- Date of competition

Developing Sponsorships:

Mail out sponsor letters in the Fall and ask for a commitment of funds or other contributions by December. Types of donations include:

- Breakfast items (juice, bagels, donuts, beverage items – i.e., grocery store certificates to be used for coffee, tea, etc.)
- Lunch items (cookies, fruit, beverages)
- Store certificates (Einstein Bagels, Dunkin Donuts)
- Money
- Giveaways (pens, stress balls, etc.)
- Lots of groups want to be associated with education initiatives, such as engineering organizations, Optimist's Clubs, Rotary Clubs, local businesses, etc.
- Radio stations can give away CDs, T-Shirts.
- Theaters can give away movie passes.
- Book stores can give away % off coupons
- Federal agencies can supply volunteers

- Soda and pizza companies can donate food or cut you a deal
- Assign a very personable and persuasive person to be in charge of sponsorship to ask for money, items, volunteers, etc.
- Start early - keep at it

Establishing sponsorships/partnerships is a critical component for a successful Science Bowl. These partnerships provide technical as well as financial assistance.

For many facilities and laboratories corporate sponsors have contributed money, gifts, prizes, scholarships, and food for luncheons. High schools, community colleges and universities have allowed the competitions to be held on their campuses free of charge. It is essential that contact with local businesses begin early in order to secure sponsorship for the competition.

Trophies, gifts, and prizes are great donation items by corporate sponsors. Other regional sites have had several local pizza restaurants donate pizza for the competition luncheon.

Department of Energy contractors should be avoided as sponsors since there is a definite conflict of interest. For this reason, and to assist in broadening community education partnerships, it is recommended that facilities obtain sponsors from local private businesses that are not associated with the Department of Energy.

Recruiting Teams:

- Obtain from the State Board of Education a current listing of middle schools and addresses. In many states, the Department of Education can electronically send you mailing labels.
- Early in the school year send a colorful poster/memo about the Middle School Science Bowl to the Science Department chair. Be sure to have a specific date on the poster/memo by which they need to respond to indicate that they intend to compete.
- Once you receive a letter of intention, send out an information packet that includes team registration forms for each team (up to three per school), parental consent forms, medical forms, competition rules, strategies for success, a map to the competition site and the National Middle School Science Bowl poster and brochures, etc. NOTE: To assist the teams, be sure to direct the coach to the MSSB website to view sample questions and resources.
- The regional forms must have a due date. Let the teams know that the slots are filled on a first come basis. Assign someone to handle the school registration forms because they are notoriously late.
- Determine the number of teams that your competition can handle, this will depend on your competition site, equipment available and number of volunteers.

Recruiting Volunteers:

- Recruit volunteers in December.
- Find content experts in every subject area (life science, physical science, earth science, general science and mathematics) to review and amend the questions a few weeks before your competition. This will also help you develop an errata sheet that must be distributed to all of the moderators, scientific judges and Science Bowl Central staff. These same

experts will be your moderators, scientific and appeals judges.

- Moderators must be easily understood by the students, have good hearing and know how to pronounce scientific terms. If necessary, hold moderator tryouts.
- Meteorologists at the local radio or TV stations make good moderators for the final match.
- Recruit enough volunteers and make sure they have meaningful jobs. If you use kids as runners and teenagers as timekeepers or scorekeepers, make sure they are well behaved and under control.
- Recruit children for runners (several schools and youth groups give community service credit for volunteering). Another resource for runners is your volunteer's children.
- Relatives and friends are a great resource as volunteers
- Conduct **mandatory** training for all volunteers
- Train, rehearse, and encourage judging teams to practice, practice, practice!
- It is VERY IMPORTANT to reward your volunteers – (Shirts, luncheon, certificates, etc.)

Words of Wisdom:

- Be flexible.
- Delegate responsibilities.
- Plan well and the competition will run smoothly.
- Start planning early (summer or early fall) to think about who and what you will need.
- Solicit volunteers all year long. Do not limit your recruiting to your office staff.
- Training and practice sessions benefit all volunteers and improve the competition.
- If you have questions, call another coordinator; most coordinators love to share their experience and provide valuable information.
- Surround yourself with an energetic and positive team. Empower and praise them. Don't try to control all aspects of the competition, but you will need to take the responsibility to see that things are done correctly.
- Try to get plenty of rest the final days before your competition.
- Know that you can't please everybody; accept it and move on.
- Make sure that the competition is run fairly for all teams.
- Rounds should be scheduled 30 minutes apart, this allows for sufficient time for teams to travel to the next competition room – any more time is too long.
- Manage your budget.
- Plan for inclement weather.
- After your competition is complete, review lessons learned and make changes and improvements, if necessary. Start planning for the next year's competition right after your regional event.

Sample Timeline

Planning the Regional Event

SEPTEMBER 2003

- Identify Middle School Science Bowl coordinator.
- Identify competition area (counties, entire State, multi-states, etc.) and maximum number of schools in competition.
- Submit request to DOE HQ to host a regional Middle School Science Bowl.

OCTOBER 2003

- Regional Middle School Science Bowl sites will be selected and notified by DOE HQ.
- Determine the date of the regional Middle School Science Bowl.
- Submit Coordinator Commitment form to DOE HQ.

NOVEMBER 2003

- Revised Coordinators Manual is disseminated to all coordinators.
- Posters and brochures are sent to regional coordinators.
- NREL orders and distributes Hydrogen fuel cell car kits.
- Recruiting teams: Issue invitation to middle schools in identified area (see the next two pages for sample letters of invitation for academic and combined competitions).

Sample Letter of Invitation for Academic Competition

Dear [Principal or Science Department Chair]:

On behalf of the Secretary of Energy, Spencer Abraham, we are pleased to announce the Department's 3rd annual National Middle School Science Bowl. The National Middle School Science Bowl is a tournament-style academic competition combined with a hydrogen fuel cell car race that challenges and recognizes students' knowledge of science, mathematics and engineering.

Regional Science Bowls will be held in twenty (20) regional sites across the country, with the winner of each competition qualifying to be invited to compete in the National Middle School Science Bowl. The Regional Science Bowl will be held on **fill in the date** at the **fill in the location**. It will be comprised of teams from **state geographic location from which teams will be allowed to compete**.

The national competition will be held June 17-20, 2004 and hosted by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), in Golden, Colorado. The actual competition will take place on the campus of the Colorado School of Mines also located in Golden, Colorado. This event is sponsored by the Department of Energy's Office of Science, and General Motors.

The regional competition is limited to **fill in maximum number of teams you plan to allow to compete** schools. Teams will be selected on a first-come basis. We expect the slots to fill quickly so please register as soon as possible. **No schools will be registered after fill in your registration deadline**.

Competition is in the form of a **(round robin, single elimination, etc.) academic tournament**. Teams consist of four students and one coach, usually a science or math teacher. After the teams have registered, information packets will be sent to them.

Enclosed are the following forms which must be completed and returned by **date of registration deadline**.

- Registration Form
- Parental Consent Form
- Medical Release and Information Form

We are proud to sponsor a Middle School Science Bowl and hope your school participates. If you have any questions or wish to register a team, please contact me at **list name and phone** or via E-Mail at **list email address**.

Sincerely,

Sample Letter of Invitation for Combined Competition

Dear [Principal or Science Department Chair]:

On behalf of the Secretary of Energy, Spencer Abraham, we are pleased to announce the Department's 3rd annual National Middle School Science Bowl. The National Middle School Science Bowl is a tournament-style academic competition combined with a hydrogen fuel cell car race that challenges and recognizes students' knowledge of science, mathematics and engineering.

Regional Science Bowls will be held in twenty (20) regional sites across the country, with the winner of each competition qualifying to be one of the teams competing in the National Middle School Science Bowl. The Regional Science Bowl will be held on **fill in the date** at the **fill in the location**. It will be comprised of teams from **state geographic location from which teams will be allowed to compete**.

The national competition will be held June 17-20, 2004 and hosted by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), in Golden, Colorado. The actual competition will take place on the campus of the Colorado School of Mines also located in Golden, Colorado. This event is sponsored by the Department of Energy's Office of Science and General Motors.

The regional competition is limited to **fill in maximum number of teams you plan to allow to compete** schools. Teams will be selected on a first-come basis. We expect the slots to fill quickly so please register as soon as possible. **No schools will be registered after date of registration deadline**.

The academic competition is in the form of a **(round robin, single elimination, heats etc.) combination tournament**. Teams consist of four students and one coach, usually a science or math teacher. After the teams have registered, information packets will be sent to them.

NOTE: Coordinators adjust the letter to coincide with the hydrogen fuel cell car competition.
Hydrogen Fuel Cell Car: Each team will receive, prior to the event, a hydrogen fuel cell car kit with educational materials. The teams will build their cars prior to the competition and race them on the day of the regional event.

Enclosed are the following forms which must be completed and returned by **date of registration deadline**.

- Registration Form
- Parent Consent Form
- Medical Release and Information Form

We are proud to sponsor a Middle School Science Bowl and hope your school participates. If you have any questions or wish to register a team, please contact me at **list name and phone** or via E-Mail at **list email address**.

Sincerely,

NOVEMBER 2003 CONTINUED

- Send letters/brochures and contact area businesses/companies to seek sponsorship for regional event, including gifts, prizes, etc. Sponsors will be recognized in the national program (see Tips for Regional Coordinators section for sponsorship information)

DECEMBER 2003 (OR 4 MONTHS PRIOR TO EVENT)

- Notify coaches of selected middle schools
- Provide coaches with Science Bowl information packet including:
 - Competition Rules for 2004: academic and hydrogen fuel cell car race, if a combined event. (See Academic and Car Competition Rules section)
 - Sample Questions: <http://www.scied.science.doe.gov/nmsb/default.htm>
 - Regional Forms as required by your regional competition (see Forms section).
Examples include:
 - ✓ Team Registration Form
 - ✓ Medical Form
 - ✓ Parental Consent Form
- Meet with your public affairs office to discuss your regional event and plan a media strategy

Media Strategy

The National Middle School Science Bowl and the regional competitions are excellent opportunities for positive stories about your facility, General Motors, and the Department of Energy's education activities. With a little bit of planning and coordination through your public affairs office, you can receive press coverage of your regional event and your winning team's participation in the finals.

Tips to Increase Your Media Visibility

- Schedule a meeting early with your public affairs office to discuss your regional event and plan a media strategy, and plan to meet periodically.
- Remember media will want to focus on the "local interest."
- Know your competitors. Request biographies of team members and their coaches including hobbies, club memberships, honors and background information on the participating schools.
- Know your sponsors. Request a background sheet that includes a quote from your sponsors on why they agreed to sponsor the competition.
- Media outlets should include:
 - Public service announcements/calendar of events on radio and TV.
 - Calendar of events in newspapers (dailies, weeklies, advertisers, shoppers, middle school, and Sunday supplement) and magazines.
 - Feature stories in radio, TV, newspapers, and magazines.
 - Meteorologists at the local radio or TV stations make good moderators for the final match and can increase your chances of getting media coverage.

DECEMBER 2003 (OR 4 MONTHS PRIOR TO EVENT) CONTINUED

- Encourage the competitors to contact their local media.
- Have an event website and post photographs promptly after the event for reporters.
- E-mail reporters with event results and photographs.
- Videotape the event and provide footage to local television stations.
- FedEx newspaper clippings or videotapes of all stories about the event to: Cindy Musick, U.S. Department of Energy, 1000 Independence Avenue, SW, SC-1, Washington, DC 20585, Phone: 202 586-0987.
- Notice of coaches orientation meeting (this is optional). The orientation meeting should be held approximately 3 months prior to event.

Coaches Orientation Meeting

If you have a large number of new schools participating in the Science Bowl you may want to hold an orientation meeting for the team coaches participating in your Regional Science Bowl. If you decide to hold a coaches orientation, make sure to invite every coach. This training/orientation session should provide an overview of the competition, the rules and procedures and an actual demonstration of the competition buzzers.

Coaches should be provided a packet that contains:

- Competition rules
- Descriptions of officials' roles
- Sample questions
- Team registration, parental consent and medical forms
- Sample competition flowchart for both the academic and car competitions
- Instructions to build a hydrogen fuel cell car

Coaches should be given an opportunity to use the lock-out buzzer systems in a short "mock" competition. Coaches should be given tips on constructing cars.

Suggested Agenda for the Coaches Orientation:

- Overview of the Middle School Science Bowl
- Review competition rules
- Demonstrate the lock-out system and a "mock" competition.
- Provide tips for building a winning hydrogen car. Reference material can be found on DOE's website: <http://www.scied.science.doe.gov/nmsb/default.htm> for the hydrogen fuel cell cars.
- Explain the competition format of your regional competition.
- Question and answer period

JANUARY 2004 (OR 3 MONTHS PRIOR TO EVENT)

- Deadline for student registration forms from competing schools. If some schools have dropped out, call those on the waiting list to see if they are still interested and if they are, send registration forms.
- Hold coaches orientation meeting (optional).
- Secure lock-out systems and official clocks and race track materials.
- Determine whether or not to have a luncheon in conjunction with the competition and/or awards ceremony.
- Select and order trophies.
- Confirm sponsors.
- Gift bags for all participants (optional), prizes for winners—suggestions for winners include: trophies, calculators, gift certificates, savings bonds, etc.
- Recruit officials/volunteers [moderators, scientific judges, rules judges, timekeepers, scorekeepers, and race judges. Suggestions: post flyers and place a notice in the company newsletter requesting volunteers to assist with the Science Bowl, be sure to include contact names and phone numbers.

FEBRUARY 2004 (OR 2 MONTHS PRIOR TO EVENT)

- Arrange for event publicity—work with the public affairs office to contact local newspapers, TV, and radio stations.
- Reproduce information packets for Science Bowl officials—be sure to include the rules and official roles for academic and car race (see Academic and Car Competition Rules section).
- Notify all officials/volunteers of **MANDATORY** training and practice sessions.
- Confirm donated gifts, awards, etc. from sponsors.
- Design program (optional).
- Design tournament flowchart for academic competition and car race, if appropriate.
- Determine speaker for luncheon/awards ceremony (optional).
- Obtain trophies.

MARCH 2004 (OR 1 MONTH PRIOR TO EVENT)

- Mandatory training session for all officials/volunteers with “mock” competition and car race
- Receive competition questions
- Reproduce and send out question packets for moderators and scientific judges
- Finalize and produce program
- Finalize and produce competition schedule, scoreboards and car race heat cards (see Hosting the Event section)

DAY OF EVENT

- Conduct Regional Science Bowl competition
- Photograph winning team

AFTER EVENT

- Immediately upon completion of the regional event, complete all national forms (see Forms section). DOE has automated the forms for the national event. Some will be completed and submitted directly on-line; forms requiring signatures will be completed on-line, downloaded, signed and FedEx to NREL.
- Send thank you notes to all officials, competing schools, and sponsors.
- By May 17, 2004 all forms must be submitted and a team photo sent to DOE HQ.
- FedEx media clips to DOE Headquarters.
- Make travel arrangements for the regional science bowl coordinator to travel to the National Middle School Science Bowl.

JUNE 2004

- Escort team to the National Middle School Science Bowl, or designate an official escort.
- Assist with the competitions at the National event.

Strategies for Success

Teachers and coaches frequently ask how to best prepare their students for the Science Bowl competition. There are various successful strategies your club can utilize. Here are just a few ideas and guidelines that may help.

Forming a Science Bowl Club

If your school doesn't already have a math and/or science club, start one as soon as possible. You don't have to have 30 students interested in science to make a Science Bowl Club. Getting one started usually takes a little effort, but once you get it going, they usually are very easy to keep going year after year. Also, once you do form one, make sure it is worth the student's time. Historically, the more successful teams at science competitions are made up of very enthusiastic students that come from schools with fun, well-organized Science Bowl Clubs (regardless of size). We are talking about quality not quantity.

Team Selection

Selection for your Science Bowl Team can be difficult. Each student should be knowledgeable in all of the discipline areas: life science, earth science, physical science, general science and mathematics. However, the more successful teams have students that are more specialized in different areas. For example: Student A might be better at math and physical science than the rest of his/her team. Student B might be better at life science and earth science than the rest of his/her team. This will give your team a good balance with an expert in each of the 5 disciplines. It is also a good idea to have a few grade levels represented, not just eighth graders. By breaking up your team (3-4 eighth graders and 1-2 sixth and seventh graders) you will still have some veterans this year while giving a few rookies the necessary experience to carry your team next year. Some teachers let the students vote for team members based on knowledge, performance, and attendance. Others hold practice competitions to determine the team. It is ultimately up to you, so choose your team wisely. Most competitions allow non-participants to watch all the matches and to cheer their team's achievements.

Make a Schedule

Make an agenda or study schedule during your first meeting. Your team needs to decide how many hours they will spend per week in the practicing. Initially, practice times may be short, but as the competition nears you may want to schedule more intensive practices. The difficulty of the practice questions is more important than the length of time spent practicing. Brainstorms on what your team thinks are good ideas for review and practice. Decide how long your meetings will last. An hour meeting might be broken up with 30 minutes of review of the subject for the week, and 30 minutes of knowledge games. At least 2 practice competitions are recommended. This will help familiarize the students with the rapid fire, oral presentation for the questions (which is quite different from answering review questions from their text books). Keep the team enthusiastic and focused on the task at hand each week. Bring in science teachers or the school principal to act as practice moderators. Be sure the contest rules are adhered to stringently.

Example Schedule:

Week 1: Introduction (make your schedule)
Review the Rules & Strategies
Week 2: Mathematics and Physical Science
Week 3: Life Science and Earth Science
Week 4: General Science, & Current Events
Thanksgiving Break
Week 5: Mathematics and Physical Science
Week 6: Review Rules & Strategies
Week 7: Practice competition
Winter Break
Week 8: Life Science and Earth Science
Week 9: General Science, & Current events
Week 10: Mathematics and Physical Science
Week 11: Earth & General Sciences
Week 12: Review Rules, Strategies, & Five Disciplines
Week 13: Practice Competition
Week 14: Practice Competition

Study Wisely

As mentioned earlier, each student needs to be familiar with all five subjects. However, students should be concentrating the bulk of their studying/reviewing on their own, 2-4 areas of expertise. Students should concentrate their efforts on learning topics that questions are likely to come from. The oral toss-up questions must be answered in less than 10 seconds and the bonus questions must be answered in less than 30 seconds. Do not waste time studying problems that have long, time-consuming solutions. Focus more time studying things like definitions, formulas, concepts, and short answer problems. By studying wisely the students will be able to spend more time practicing and learning to solve problems quickly.

Most of the questions will be the standard question and answer format in the subject categories (life science, earth science, physical science, mathematics, and general science). During the last 3 rounds at the national event, some of the bonus questions will be “Science Discovery” questions. The timing rules will still apply to these questions -- they will be treated just like regular bonus questions, except the students will have to use the visual projection (graph, diagram, photograph, or micrograph) to determine the correct answer.

Know the Rules & Game Playing Strategies

Make sure each student knows the rules of the competition. This cannot be stressed enough. Every year there is a team that loses points because the students don't know all the rules. Also teach them the strategies of the game for different situations. Believe it or not, this could be your ace in the hole. For example: if your team is in the lead during the second half of the game, recognize that the clock is now your ally. If you are awarded a bonus question, let the students take a few extra seconds to double check with each other to make sure they get the question right. The questions usually get harder as the match progresses. If they are too hasty with their decision, the lost ten bonus points could come back to haunt them in a close match. Being well-versed in the rules and knowing all the strategies of the game, your team will have the edge in a close match and may even triumph over a better team that isn't as strategic.

Practice, Practice, Practice

There is no substitute for hard work and this means self-discipline and practice. Make an effort to duplicate an actual competition as much as possible. Also it is a good idea to rotate the person asking the questions each game. This will allow them to get experience hearing the questions from different tones of voice, accents, and dialects. Don't wait until the month before the Regional Science Bowl to practice the competition. Use old test questions from your previous exams or even Trivial Pursuit and Jeopardy games if you have to. Just get them familiar answering the questions orally and waiting to be recognized before answering.

Keeping It Fun

Don't lose sight of the overall focus of getting your kids interested in science and math. Finding the right combination of fun games and interesting study tools could take a little work. There are many new and interesting ideas out there. The worldwide web is an excellent place to get some great knowledge games, CD-ROMs and interactive study tools. Just remember that the more students enjoy it, the more they'll want to do it, and the more successful they'll become. Given the proper motivation, preparation, and encouragement, your team will have a successful and rewarding science bowl experience. You can then channel your Science Bowl Club's enthusiasm and momentum to do other fun things throughout the year. For example: the National Science Olympiad program, Math Counts, Odyssey of the Mind, or the Destination ImagiNation program.

Establish Team Goals

There can be only one overall winner of the regional competitions, but participation itself is important. Involve the students in the establishment of realistic goals for the team in this competition year. Celebrate and document these goals in posters and team practice sessions. Many National champions build on the success of each year until the championship is won.

Set goals that will challenge the team. Schools competing for the first time win many regional competitions. Don't be intimidated because your school has not participated in the past.

Miscellaneous

- ❖ Make sure the principal, teachers and administrative staff at your school know that the Science Bowl Club is an active program and that you are the person in charge.
- ❖ Find out about your school's policy regarding use of the school facilities and equipment. Do they allow use of shop facilities, computer lab, etc.?
- ❖ The lock-out buzzer system used in the National Science Bowl is The Quizzer. It is manufactured by Quizzer Limited and sold directly from their factory. Their address is:

Quizzer Limited
P.O. Box 8685
Madison, Wisconsin 53708
Telephone: 606-242-8805

Also suggested is a company called Zee Craft, which rents equipment. Their telephone number is 800-662-7475.

If your school has similar programs such as the knowledge bowl, their clubs may use comparable buzzer systems. Ask if you can borrow their equipment.

A team can also build a competition buzzer. The schematic and materials list is located on the MSSB website: <http://www.scied.science.doe.gov/nmsb/default.htm>

The last recommended option to practice would simply be using eight different fluorescent pieces of paper. The student can be acknowledged according to color.

- ❖ Official clocks to time the rounds of competition and the questions can be purchased from a local sporting goods store or you may want to utilize the clock in the room. We recommend stopwatches to time questions.

- ❖ When practicing, set up the room the same as an actual competition room. (See picture)



- ❖ Get your students familiar with the roles of the officials. (On National MSSB website)

Resources

- ❖ Inform your science club of current events in the subject areas used in competition, as well as energy related events.
- ❖ Some of the best resources are the Glossaries in the back of books.
- ❖ Some publishing companies offer complimentary textbooks to educators for review. Contact the sales representative from your region by e-mail or phone and ask for information to acquire these resources for your Science Bowl Clubs.
- ❖ National Middle School Science Bowl web site is <http://www.scied.science.doe.gov/nmsb/default.htm>

Resources for Middle School Science Bowl Academic Questions

References - 2004

- 1) Rocks and Minerals, Roger Peterson, Houghton Mifflin, 1976
- 2) Stars and Planets, Peterson Field Guide, 2000
- 3) Connected Mathematics, Prentice Hall, 1998
- 4) Physical, Life and Earth Science, Prentice Hall, 2002
- 5) Pre Algebra, Martin-Gay, Prentice Hall, 2001
- 6) Invitation to Biology, Helena Curtis, Worth Publishing, 1998
- 7) Discover Magazine, various recent additions
- 8) Nature Magazine, various recent articles
- 9) Scientific American Magazine, various recent articles
- 10) Astronomy Magazine, various recent articles
- 11) National Geographic Magazine, various recent articles
- 12) Muse Magazine, various recent articles

See MSSB web site for additional sample questions at www.scied.science.doe.gov/nmsb.

**SAMPLE QUESTIONS
ROUND ROBIN**

TOSS-UP

1) PHYSICAL SCIENCE *Multiple Choice* When an airplane's ailerons move in opposite directions they usually cause a plane to:

- W) pitch
- X) yaw
- Y) roll
- Z) stall

ANSWER: Y) ROLL

BONUS

1) PHYSICAL SCIENCE *Multiple Choice* Calcium, strontium, and barium are commonly called what kind of elements?

- W) halides
- X) inert
- Y) alkali metals
- Z) alkaline earth

ANSWER: Z) ALKALINE

TOSS-UP

2) EARTH SCIENCE *Multiple Choice* In which of the geological time periods, did dinosaurs first appear:

- W) Jurassic
- X) Triassic
- Y) Cretaceous
- Z) Tertiary

ANSWER: X) TRIASSIC

BONUS

2) EARTH SCIENCE *Short Answer* In what layer of the Earth's atmosphere does most of our weather occur?

ANSWER: TROPOSPHERE

TOSS-UP

3) MATH *Short Answer* If 2 sides of a quadrilateral are parallel and the other sides are equal but NOT parallel, what is the quadrilateral known as?

ANSWER: TRAPEZOID

BONUS

3) MATH *Short Answer* Find the area of a triangle whose base is 8 and whose height is 6:

ANSWER: 24

(Solution: $A = 1/2bh$)

TOSS-UP

4) LIFE SCIENCE *Multiple Choice* A series of amino acids joined together will make a:

- W) polysaccharide
- X) DNA
- Y) sugar
- Z) protein

ANSWER: Z) PROTEIN

BONUS

4) LIFE SCIENCE *Multiple Choice* When a nerve message reaches the end of an axon it sends a message or impulse across the space between the nerves to continue its message to the next nerve by a substance best known as:

- W) synaptic nodes
- X) neuromotor stimululi
- Y) neurotransmitters
- Z) intersynaptic dosimeters

ANSWER: Y) NEUROTRANSMITTERS

TOSS-UP

5) PHYSICAL SCIENCE *Multiple Choice* Which of the following moves in the form of a longitudinal compression wave:

- W) ocean wave
- X) sound wave
- Y) light wave
- Z) electromagnetic wave

ANSWER: X) SOUND WAVE

BONUS

5) PHYSICAL SCIENCE *Short Answer* What is the resistance of an electric drill that draws 8 amps on a 120 volt line?

ANSWER: 15 OHMS

(Solution: $I = V/R$, $R = V/I$, $R = 120/8 = 15$)

TOSS-UP

6) GENERAL SCIENCE *Short Answer* Ergot, *Amanita muscaris*, *Penicillium* and smut are all organisms that belong to which one of the five classical Kingdoms of life?

ANSWER: FUNGI

BONUS

6) GENERAL SCIENCE *Multiple Choice* When the moon appears through the night as a thin crescent, the sun's light:

- W) is being blocked by the earth
- X) still illuminates about half the surface of the moon
- Y) is only hitting the crescent region
- Z) only shines during the day

ANSWER: X) STILL ILLUMINATES ABOUT HALF THE SURFACE OF THE MOON

TOSS-UP

7) MATH *Multiple Choice* If a biker traveled at an average speed of 3 meters/second for 100 seconds, the length of the biker's path was about:

- W) 33 meters
- X) 300 meters
- Y) 100 meters
- Z) 1 kilometer

ANSWER: X) 300 METERS

BONUS

7) MATH *Short Answer* If a perfect number is an integer equal to the sum of all its divisors, except the number itself, what is the lowest perfect number?

ANSWER: 6

(Solution: $6 = 1 + 2 + 3$)

TOSS-UP

8) LIFE SCIENCE *Multiple Choice* Most animal eukaryotic cells have:

- W) a cell wall, nucleus, and cytoplasm
- X) a plasma membrane, nucleus, and cytoplasm
- Y) a cell wall, nucleus, and nucleolus
- Z) a cell wall, nucleus, and mitochondrion

ANSWER: X) A PLASMA MEMBRANE, NUCLEUS, AND CYTOPLASM

BONUS

8) LIFE SCIENCE *Short Answer* What is the term used by Charles Darwin that he believed was the principle mechanism of evolution and way that nature chose certain members of a population to survive over others?

ANSWER: NATURAL SELECTION

TOSS-UP

9) GENERAL SCIENCE *Short Answer* In order from the beginning, what are the first 5 letters of the Greek alphabet?

ANSWER: alpha, beta, gamma, delta, epsilon

BONUS

9) GENERAL SCIENCE *Short Answer* Rounded to the nearest whole number, what is the temperature in Fahrenheit of a substance at -40°C ?

ANSWER: -40

TOSS-UP

10) MATH *Short Answer* Identify the quotient, dividend, and divisor for $15 \div 3$:

ANSWER: QUOTIENT = 5; DIVIDEND = 15; DIVISOR = 3

BONUS

10) MATH *Short Answer* Give the product of $(x + 7)^2$ in standard form:

ANSWER: $x^2 + 14x + 49$

TOSS-UP

11) PHYSICAL SCIENCE *Multiple Choice* Ultrasonic sound frequencies are typically considered to be

- W) above 20,000 kilohertz
- X) below 20,000 kilohertz
- Y) above 20,000 Hertz
- Z) below 20,000 Hertz

ANSWER: Y) ABOVE 20,000 HERTZ

BONUS

11) PHYSICAL SCIENCE *Multiple Choice* Predict which object made of the following metal will sink in a pool of Mercury, which has a density 13.5 grams per cubic centimeter:

- W) aluminum, which has a density of 2.6 grams per cubic centimeter
- X) iron, which has a density of 7.9 grams per cubic centimeter
- Y) lead, which has a density of 11.34 grams per cubic centimeter
- Z) uranium, which has a density of 19.5 grams per cubic centimeter

ANSWER: Z) URANIUM, WHICH HAS A DENSITY OF 19.5 GRAMS PER CUBIC CENTIMETER

TOSS-UP

12) EARTH SCIENCE *Short Answer* In what layer of the Earth's atmosphere does most of our weather occur?

ANSWER: TROPOSPHERE

BONUS

12) EARTH SCIENCE *Short Answer* Lines on a weather map connecting places of equal air pressure are called:

ANSWER: ISOBARS

TOSS-UP

13) LIFE SCIENCE *Short Answer* What main artery carries oxygenated blood immediately away from left ventricle of the heart?

ANSWER: AORTA

BONUS

13) LIFE SCIENCE *Short Answer* What is the vector that transmits Rocky Mountain Spotted Fever to humans?

ANSWER: THE TICK (ACCEPT: DERMACENTAR)

TOSS-UP

14) GENERAL SCIENCE *Short Answer* On the Kelvin temperature scale give the whole number value that is the closest to absolute zero.

ANSWER: 0

BONUS

14) GENERAL SCIENCE *Multiple Choice* Stars appear to have different colors because they have different:

- W) distances
- X) ages
- Y) temperatures
- Z) names

ANSWER: Y) TEMPERATURES

TOSS-UP

15) MATH *Short Answer* Solve the following equation: $-4 + x = -5$

ANSWER: -1

BONUS

15) MATH *Short Answer* Give the median for the following data set: 32, 59, 68, 70, 84

ANSWER: 68

(Solution: mean or average is 62.6; median is middle, not average)

TOSS-UP

16) EARTH SCIENCE *Short Answer* Identify the type of structure associated with the following man-made structures in the United States: Hungry Horse, Yellowtail, Glen Canyon, Grand Coulee, and Hoover

ANSWER: DAMS

BONUS

16) EARTH SCIENCE *Short Answer* What is the name of the boundary between the troposphere and the stratosphere?

ANSWER: TROPOPAUSE

TOSS-UP

17) PHYSICAL SCIENCE *Multiple Choice* The electrons that are shared in chemical bonds between atoms are most accurately called:

- W) inner electrons
- X) quantum electrons
- Y) valence electrons
- Z) jumping electrons

ANSWER: Y) VALENCE ELECTRONS

BONUS

17) PHYSICAL SCIENCE *Multiple Choice* In grams per milliliter, which of the following is closest to the density of ice:

- W) 0.26
- X) 0.92
- Y) .99
- Z) 3.00

ANSWER: Y) .99

TOSS-UP

18) LIFE SCIENCE *Short Answer* What is the protein found in red blood cells that carries oxygen:

ANSWER: HEMOGLOBIN

BONUS

18) LIFE SCIENCE *Short Answer* What is the vector for the germ which caused the black plague?

ANSWER: FLEA

TOSS-UP

19) EARTH SCIENCE *Short Answer* With a Mohs' hardness of 10, what is the hardest mineral known?

ANSWER: DIAMOND

BONUS

19) EARTH SCIENCE *Short Answer* Most of the ozone in the Earth's atmosphere is present in which layer?

ANSWER: STRATOSPHERE

TOSS-UP

20) GENERAL SCIENCE *Short Answer* What is the mineral that has tricked so many people into thinking it was the real precious metal gold that its common name is "fool's gold" ?

ANSWER: IRON PYRITE

BONUS

20) GENERAL SCIENCE *Multiple Choice* Early astronomers observed lights that wandered among the stars, today we know these are:

- W) sun spots
- X) asteroid belts
- Y) constellations
- Z) planets

ANSWER: Z) PLANETS

TOSS-UP

21) GENERAL SCIENCE *Short Answer* What is the term used for the unusual infectious agents that cause mad cow disease?

ANSWER: PRIONS

BONUS

21) GENERAL SCIENCE *Short Answer* George Washington Carver found over 100 uses for the organic molecules derived from what common plant?

ANSWER: PEANUT

TOSS-UP

22) EARTH SCIENCE *Short Answer* What is the name of the form of oxygen that is present in the atmosphere that protects life on Earth by absorbing much of the ultraviolet radiation from the sun?

ANSWER: OZONE (ACCEPT: O₃)

BONUS

22) EARTH SCIENCE *Short Answer* What are the names of the tides that occur when the sun's tidal bulges and the moon's tidal bulges are at right angles to each other?

ANSWER: NEAP TIDES

TOSS-UP

23) MATH *Short Answer* The identity element for multiplication is what number?

ANSWER: 1

BONUS

23) MATH *Short Answer* After a discount of 20%, the price of a motorcycle was \$10,000. What was the original price of the motorcycle?

ANSWER: \$12,500.00

TOSS-UP

24) LIFE SCIENCE *Short Answer* Mendel did most of his original experimentation using this type of plant:

ANSWER: PEA

BONUS

24) LIFE SCIENCE *Short Answer* Where is intercellular fluid normally found?

ANSWER: OUTSIDE OF CELLS (ACCEPT: IN BETWEEN CELLS OR IN THE INTERSTITIUM)

TOSS-UP

25) PHYSICAL SCIENCE *Short Answer* Whole multiples of the fundamental tone are usually called:

ANSWER: HARMONICS (ACCEPT: HARMONIC OVERTONES OR PERFECT OVERTONES)

BONUS

25) PHYSICAL SCIENCE *Short Answer* If an atom of fluorine has an atomic number of 9 and an atomic mass of 18.998 , how many protons and neutrons are in the nucleus?

ANSWER: 9 PROTONS

Rules and Guidelines for the 2004 National Middle School Science Bowl

Purpose:

The purpose of the National Middle School Science Bowl is to encourage student involvement in math and science activities, improve awareness of career options in science and technology, and provide an avenue of enrichment and reward for academic science achievement. The national competition will include a day of academic competition, where the students answer questions about science and mathematics, and a day of “hands-on” science and engineering when the teams will design, build, and race model hydrogen fuel cell cars. Awards will be given for the academic and race car competitions.

The National Renewable Energy Laboratory (NREL), the U.S. Department of Energy’s (DOE) premier laboratory for renewable energy research and development, will host the 2004 National Middle School Science Bowl, scheduled for June 17-20, 2004. Teams qualifying as regional competition winners will be eligible to participate in the national competition. Teams who win at the national level receive prizes including trophies, plaques, cash awards, medallions and gift certificates.

General Procedures:

1. The DOE selected 20 regional sites to host regional middle science bowl events. Each regional competition may send **one** winning team to the 2004 National Middle School Science Bowl. Organizations interested in being considered as a future regional competition site should contact Cindy Musick at cindy.musick@science.doe.gov.
2. Regional competitions **must include an academic competition**, and will have an option of having a hydrogen fuel cell model car race. All regional competitions must be completed by May 8, 2004.
3. Questions for the regional and national academic competitions will be provided by the DOE.
4. The list of student team members and their coaches must be provided to the Department of Energy immediately following the regional competition and no later than **May 8, 2004**.
5. Travel arrangements for students and coaches will be made by the DOE.
6. Teams at the National Middle School Science Bowl represent their communities and the DOE. Team members who do not follow the guidelines for appropriate conduct and sportsmanship during the National Middle School Science Bowl may be disqualified and sent home early at their own expense.

Eligibility Rules

7. Any current public, private, or home-school students in grades 6-8 may form a team for the competition. Teams shall consist of **four** students and one or two coaches. The coaches may be parents or teachers. The team attending the national event must consist of the same students as the regional winning team. **At the regional level there may be a fifth student as an alternate, with the understanding that only four students will be allowed to attend the national event.**
8. No school may compete in more than one regional event.
9. The maximum number of participating teams in any regional competition is determined by each facility. No more than 3 teams from any school can participate in the regional competition, with a minimum of 4 schools
10. To be eligible for the National Middle School Science Bowl, a student must have competed on the team that won a selected Regional Middle School Science Bowl competition
11. The winning team from each regional tournament is **invited** to participate at the National finals June 17-20, 2004. By **May 8 2004**, the winning team's coach must inform the DOE National Coordinator of its availability to participate at the Nationals. All teams must arrive and depart on the designated dates and participate and attend all activities throughout the duration of the National Middle School Science Bowl. If the entire winning regional team of four students are unable to participate in all activities, the second place team will be invited to replace them. There will be no exceptions to this rule other than unanticipated medical emergencies. Any waiver must be approved by the DOE National Coordinator.

Rules for Selecting a Winning Team

12. Regional competitions must include an academic competition. A hydrogen car race is an optional activity at the regional event. If you are hosting an academic event only, then the winning team of four students will represent your region at the national event.
13. For sites that conduct combined competitions, all teams must compete in both competitions in order to qualify for the national competition. Those sites conducting a combined competition must structure a point system that gives equal weight to both types of competition and then determine the overall winner. For example, if there are 20 teams competing, the first place team in the academic competition would get 20 points, second place 19 points, and so on. In the car race, the team with the fastest car in the final heat would receive 20 points, the second fastest car gets 19 points, and so on. The overall winner would be the team with the highest number of points combined from both events. In the event of a tie, the team with the higher academic competition score is the overall winner.

Competition Structure: Regional

14. All regional events must have an academic component but they have the option of choosing

their tournament style, e.g., single elimination, double elimination, only round robin, or a combination of both. However, it is strongly recommended that both a round robin and a double elimination format be included since the nationals will have both. A hydrogen car race is an optional activity at the regional event.

Competition Structure: National

15. There will be two separate competitions at the National Middle School Science Bowl – a question and answer contest and a model hydrogen fuel cell car race. The question and answer contest will use a round robin format for the preliminary rounds and a double elimination format for the final rounds. For the preliminary rounds at the Nationals, teams will be placed in four divisions by drawing lots with the number of teams per division as equal as possible. During the round robin format, each team will play every other team in its division. At the end of each game, regardless of the overall score, two points are awarded for a win; one point for a tie; and zero points for a loss. There will be no tie break questions during the round robin matches.
16. At the Nationals, the top two teams in the four divisions will be the “8” teams that advance to the double elimination final rounds. The final portion of the nationals’ contest will use a double elimination format. No advancing team is eliminated from this segment of the competition until it has lost two matches. The team captains of the eight teams will draw numbers to determine the order of the final rounds. After the initial round, a competition flow chart will be followed to determine opposing teams.
17. In the building and racing model hydrogen fuel cell car contest, each team will be provided materials to build a car. A double elimination race competition will determine the top winning teams with the fastest cars.

Rules for the Academic Competition

1. Two types of questions will be used: toss-up and bonus questions. A toss-up question, may be answered by any member of either team that is playing. The toss up question must be answered correctly in order for a team to be offered a bonus question.
2. No team will have more than one opportunity to answer a toss-up question.
3. Questions are either multiple-choice or short answer. The only acceptable answer to a multiple-choice question is the one read by the moderator.
4. Once read in its entirety, a question will not be re-read.
5. On toss-up questions, the first player on either team to activate the lock-out buzzer system wins the right to answer the question. No player may buzz in until AFTER the moderator has identified the subject area of the question, e.g., Physical Science.
6. Before answering the questions, the team member must be verbally recognized by the

moderator *or scientific judge*. (*Before the match, this person will be identified.*) If not recognized, it is treated as a non-answer and the moderator will not indicate whether the answer was right or wrong.

7. No consultation is allowed on toss-up questions.
8. Should a player answer a toss-up question before being verbally recognized or should consultation among any of the team members occur, any answer given does not count (the moderator does not say whether the answer given was correct or incorrect) and the team loses the right to answer the toss-up question. The question is then offered to the opposing team.
9. On a toss-up question, the first answer given is the only one that counts. However, if a student gives both a letter answer and a scientific answer, both parts must be correct.
10. If the answer to a toss-up question is wrong and the question was completely read, the other team is given the opportunity to answer the toss-up question, unless time expires before the second team has buzzed in. The second team is allowed a full 5 seconds to buzz in after the first team has answered incorrectly or has answered without being recognized, unless time expires.
11. The answer to the bonus question must come from the team's captain including when the question has been interrupted. Moderators should ignore an answer from anyone but the captain on the bonus question.

Timing Rules

12. The match is played until either the time expires or all the toss-up questions have been read. Regional competitions will have two 8-minute halves with a 2-minute break [halves at the Nationals are 10 minutes]. Each half begins with a toss-up question.
13. After reading a toss-up question, the moderator will allow 10 seconds for the two teams to respond before proceeding to the next toss-up question. Timing begins after the moderator has completed reading the toss-up question.
14. A student who has buzzed in on a toss-up question must answer the question promptly after being verbally recognized by the moderator *or scientific judge*. After recognizing a student, the moderator will allow for a natural pause (up to 3 seconds), but if the moderator determines that stalling occurred, the team loses its opportunity to answer the question and it is offered to the opposing team if eligible.
15. After a team member has answered a toss-up question correctly, the team is given the opportunity to answer a bonus question. The team will have 30 seconds to begin to give its answer to the bonus question. Consultation among team members is allowed on bonus questions.

16. On a bonus question, the signal “5 SECONDS” will be given by the timekeeper after 25 seconds of the allowed 30 seconds have expired. Additionally, the timekeeper will indicate the end of the 30-second bonus period by saying “TIME.” If the team captain has not begun the response before the timekeeper calls “TIME,” the answer does not count. If the team captain has begun the response, he/she may complete the answer.

Scoring

17. Toss-up questions are worth 4 points, and bonus questions are worth 10 points.
18. If a toss-up question is interrupted, the student recognized, and the answer correct, the team will receive 4 points. If the answer is incorrect, 4 points are added to the opposing team’s score, the question is reread in its entirety, and the opposing team has an opportunity to answer the toss-up question with the chance to answer the bonus question if correct.
19. The double interrupt. If a toss-up question is interrupted, the student recognized and the answer is incorrect, 4 points are added to the opposing team’s score. The question is then reread in its entirety. However, if a student on the opposing team interrupts the re-reading of the question, the player is verbally recognized and gives an incorrect answer, 4 points are added to the other team’s score. The moderator will give the correct answer and move on to the next toss-up question.
20. If the moderator inadvertently gives an answer to a toss-up question without giving either team a chance to respond, no points are awarded and the moderator goes on to the next toss-up question.
21. If a toss-up question is interrupted, the student is NOT recognized and blurts out an answer, the result is a non-answer. No penalty points are awarded to the opposing team. The moderator will not indicate whether the answer was right or wrong and the question is re-read in its entirety to the opposing team.
22. If the moderator inadvertently gives the answer to a toss-up question before allowing the second team to respond (after an incorrect answer, or an answer given without the team member having been recognized) the next toss-up question will be read to the second team in place of the inadvertently answered question.

Summary of Scoring:

Type of Question	Points Awarded
Toss-up	+4 points, & eligible for bonus
Bonus	+10 points
Incorrectly Answered Interrupted Toss-up	+4 points to opposing team
Unrecognized Interrupted Toss-up or Unrecognized Toss-up	+0 points

Challenges

23. Challenges to questions and responses will not be permitted during the National Middle School Science Bowl. However, challenges regarding rules, the score, or protocol issues may be made only by the team members, who are actively competing. The Scientific Judge and the Moderator may consult during the match regarding responses. All decisions of the judges are final.
24. Should a question arise during a competition, the competition and the clock will be stopped until the question is resolved. Once the question has been resolved, the match will continue from that point. Should the moderator decide that some time was lost due to the interruption, the moderator has the right to put the appropriate amount of time back on the clock.

When Time Runs Out

25. If the question has been completely read, but neither team has buzzed in, the game or half is over.
26. If the question has been completely read, a student has buzzed in and is recognized before answering, and gives a correct answer the team gets to answer the bonus question. The half or game is then over.
27. If the question has been completely read, a student has buzzed in and is recognized before answering, but gives the wrong answer or answers before being verbally recognized, the game or half is over.
28. If the question has been completely read, a student has buzzed in and time is called before the student has been recognized, the moderator *or scientific judge* will verbally recognize the student. If the student gives a correct answer the team gets to answer the bonus question. If an incorrect answer is given or the student answers before being verbally recognized, the game or half is over.

If the question has NOT been read completely before time runs out --

29. If the question has not been completely read by the moderator and neither team has buzzed in (interrupted), the game or half is over.
30. If a team member buzzes in before time is called, interrupting the reading of the question, is verbally recognized and answers the question correctly, the team gets to answer the bonus question. The half or game is then over.
31. If a team member buzzes in before time is called, interrupting the reading of the question and is verbally recognized, but answers the question incorrectly, penalty points are awarded, the question is reread for the other team which is then given the chance to answer both the toss-up question and, if correct, the bonus question before the contest or half is over.
32. If a team member buzzes in before time is called, is not verbally recognized, and blurts out the answer, the answer is not accepted but no penalty points are awarded. The question is read in its entirety for the other team which, if it answers correctly, also is given a chance to answer the bonus question before the contest or half ends.

Rules for the End of Round Robin

33. In the event that the required number of teams from each division are not clearly identifiable [resolution is necessary only between teams tied for last position(s) to advance to the single/double elimination], a tie-break procedure in the following order will be used:
 - i. Head to head won/loss record
 - ii. Fewest losses
 - iii. If two (2) teams are still tied, there will be a five toss-up question run-off (interrupt penalty in effect). No bonus questions will be used during this segment of the competition. If still tied, another five toss-up question run-off will be used, etc. until the advancing team is determined.
 - iv. If more than two teams are tied, each team, in separate rooms, will be given a series of ten toss-up questions (no bonus questions will be used during this segment of the competition). The usual ten (10) seconds will be allowed for a competitor to buzz in after the question is completely read. There are no interrupt penalties but also no reason to interrupt since all ten questions will be read. Scoring will be based on the number of questions right minus the number wrong. If two or more teams are still tied, procedure (iii) or (iv), as appropriate, will be used until the advancing teams are determined.

Rules for the End of a Single/Double Elimination Match

34. If the score is tied in a single/double elimination match at the end of the regulation time period, a series of five toss-up questions will be used to break the tie. Interrupt penalties are in effect. Round robin matches may end in a tie as explained in rules for Competition Structure 15 above.

Miscellaneous Science Bowl Rules

35. No one in the audience may communicate with participants during the match; communication will result in ejection from the competition room.
36. If someone in the audience shouts out an answer, the question will be thrown out (as will the person) and the moderator will proceed to the next question.
37. Prior to each match, the two team coaches will introduce themselves to each other and will sit together in the back row of the competition room.
38. No notes may be brought to the competition. Nothing may be written before the clock starts. Scratch paper will be provided at the beginning of each match and collected at half-time and at the conclusion of the match.
39. Calculators are not permitted.
40. Members of the audience, *including the coaches*, will not write down the questions/answers the moderator reads or use any electronic recording or transmitting device, including digital cameras during the match. At the Nationals, coaches will be provided with a team score sheet to track the number of questions answered by each individual student on their team. No one else in the competition room is permitted to make notes of any kind during the active competition. If this occurs, the individual(s) will be asked to leave the competition room.

MODERATOR

The Moderator is **THE** person responsible for controlling each match. It is important that you are familiar with how the game is played and all of the contest rules. It is, therefore, extremely important that you review the rules well in advance of the actual event. The academic portion of the Middle School Science Bowl is an oral competition in which two different student teams attempt to answer toss-up and bonus questions. Each regional competition round is divided into two eight-minute halves with a two-minute break.

1. The first half begins as soon as the Moderator begins the first toss-up question. The Moderator identifies: 1) whether it is a toss-up or bonus question, 2) the subject area and 3) whether it is a multiple choice or short answer, before reading the question. If a contestant elects to answer the toss-up question, he/she activates the lock-out system (an electronic device which “locks out” all other contestants and identifies the student who wishes to answer the toss-up question). You or the scientific judge will then **verbally** recognize the student. Should the student answer the toss-up question correctly, the student’s team receives 4 points and is awarded a bonus question. A correct answer to the bonus question results in the team receiving an additional 10 points. Play then continues by reading the next toss-up question to the two teams.
2. As a toss-up question is read, a student may interrupt the reading of the question. If you **verbally** recognize the student and he/she answers correctly, that team is awarded 4 points, and the team wins the right to answer a bonus question. If the student interrupts the question, is **verbally** recognized, but answers the toss-up question incorrectly, 4 points are awarded to the opposing team and the question is read in its entirety to the opposing team. That team may answer the toss-up question for a chance at the bonus.
3. A student **MUST** wait to be **verbally** recognized by the Moderator before beginning to answer the toss-up questions. If a student answers a toss-up before being verbally recognized, the response is ignored (i.e., you should not reveal whether the answer was correct or incorrect) and the toss-up question is offered to the opposing team. This rule is necessary to avoid situations where two team members think they have activated the lock-out system and blurt out simultaneous answers.
4. The game is over when the second half ends or 25 toss-up questions (22 toss-up questions in regional competition) have been read. The winning team is the one with the greater point total.

You will be provided with the questions well in advance of the actual event. It is important that you read all the questions before the competition to ensure that you read the questions smoothly and to allow you to verify all the pronunciations of scientific terms.



MODERATOR

What DO I Do ?

1. Introductions

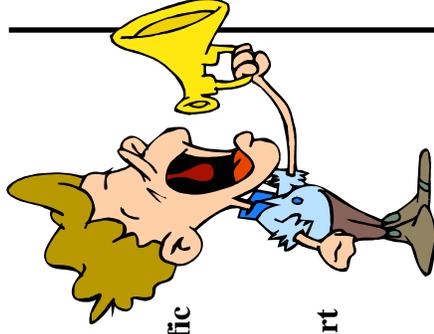
- Introduce officials.
- Ask students to introduce themselves.
- Ask coaches to come to front of room, shake hands, and introduce themselves.
- Tell teams whether moderator or scientific judge will be recognizing students.

2. Rules

- Read "Important Rules" sheet at the start of each game (located in your packet).

3. Reading the Questions

- Announce whether it's a toss up or bonus question.
- Announce question category.
- Announce whether multiple choice or short answer.
- Read the question

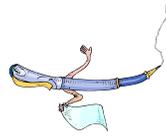


Team A,
Competitor 2



4. Getting the Answer

- Moderator/Judge: verbally recognize the individual before she/he responds.
- Identify student by....
 - 1) announcing Team A or Team B and
 - 2) announcing participant ID (captain, 1, 2, 3)



5. Who Won?

- Fill out official score sheet and get signatures.

Keep in Mind



Toss-Up ?

No consultation among team members.
(Shhhhhhhh)

Bonus ?

Consultation is allowed, but the captain must answer.

Radium, -- No wait, I mean Radon!

Sorry, Charlie.
The **FIRST** answer counts

(The **FIRST** answer always counts.)

Note: At the end of each match, the official score sheet and the flipchart tally should be put in the corresponding round-numbered envelope. The packet should immediately be taken to Science Bowl Central by the Runner or official who will be going to SBC first.

“IMPORTANT RULES”

Before we get started, I would like the coaches of both teams to come forward. Please introduce yourselves, shake hands, and sit together in the back row. Now I will introduce the officials. Students please introduce yourself and test your buzzer.

REMINDER: Tell the teams who will be verbally recognizing them -- the Moderator OR Scientific Judge.

Please let me remind you of several important rules we will be carefully observing during this match.

1. On toss-up questions, you **MUST** be **verbally** recognized by either the Moderator *or Scientific Judge* before replying. If you respond before being **verbally** recognized, your team is automatically disqualified from answering the question. The question will then be offered as a toss-up question to the opposing team.

In this match, I will identify you by saying either Team “A One,” “A Captain,” or “B One,” “B Three,” etc.

2. On toss-up questions, there can be no conferring among team members **ON EITHER TEAM** at **ANY** time. If conferring occurs on the team that was initially recognized to answer the question, that team is disqualified from answering the question and the question is offered to the opposing team. If conferring occurs or has occurred, on the opposing team, it too is disqualified from answering the question.
3. On bonus questions, you have 30 seconds **AFTER** the Moderator finishes reading the question to begin your answer to the question. If you fail to begin your answer before the Timekeeper says, “TIME,” you have missed your bonus question. You will hear the Timekeeper say, “5 SECONDS,” when you have only 5 seconds left to begin your answer.
4. On the bonus question, only the team captain’s answer will be accepted.
5. At the conclusion of each match, the two captains will initial both score sheets.

**ROUND ROBIN
Science Bowl
OFFICIAL SCORE SHEET**

Moderator: _____

1. Record the names of the schools that are participating in this match at the bottom of this sheet. Complete the other information as well.
2. Introduce yourself and other officials.

SCIENTIFIC JUDGE _____

RULES JUDGE _____

TIMEKEEPER _____

SCOREKEEPER _____

3. Check the lock-out systems by having each student introduce him/herself.
4. READ THE "IMPORTANT RULES" SHEET ALOUD.
5. Record final scores in the space provided below.
6. See that the RULES JUDGE PICKS UP ALL PAPER! The students are NOT to take their scratch work out of the competition room.
7. Please have the SCOREKEEPER take the Official Score Sheet, set of questions and actual score sheet (easel chart) to Science Bowl Command Central in the envelope provided (unless you have runners to pick them up after every round).

DIVISION NAME _____

SCHOOL NAME _____ # _____ TOTAL PTS. _____ CIRCLE

SCHOOL NAME _____ # _____ TOTAL PTS. _____ CIRCLE

COMPETITION TIME _____ ROOM _____ ROUND _____

WINNING SCHOOL NAME _____ # _____

<i>WIN TIE LOSS</i>		
2	1	0
2	1	0

**DOUBLE ELIMINATION
Science Bowl
OFFICIAL SCORE SHEET**

Moderator_____

1. Record the names of the schools that are participating in this match at the bottom of this sheet. Complete the other information as well.
2. Introduce yourself and other officials.

SCIENTIFIC JUDGE_____

RULES JUDGE_____

TIMEKEEPER_____

SCOREKEEPER_____

3. Check the lock-out systems by having each student introduce him/herself.
4. READ THE "IMPORTANT RULES" SHEET ALOUD.
5. Record final scores in the space provided below.
6. See that the RULES JUDGE PICKS UP ALL PAPER! The students are NOT to take their scratch work out of the competition room.
7. Please have the SCOREKEEPER take the Official Score Sheet, set of questions and actual score sheet (easel chart) to Science Bowl Command Central in the envelope provided (unless you have runners to pick them up after every round).

SCHOOL_____#_____ FINAL SCORE_____

SCHOOL_____#_____ FINAL SCORE_____

COMPETITION TIME_____ ROOM_____

WINNING SCHOOL_____#_____

SCIENTIFIC JUDGE

The questions in each subject area have been reviewed by at least two individuals with subject expertise to eliminate erroneous or ambiguous questions. In addition, we have selected a multiple-choice format for many of our questions. This eliminates more than one correct answer (**it's either one of our answers or the response is wrong**).

1. Your primary duty as a Science Bowl SCIENTIFIC JUDGE is to **ensure that the Moderator has read each question correctly**. You will be given a packet of questions identical to those of the Moderator. As the Moderator reads a question, please follow along to make sure the question is read correctly and that all words are pronounced correctly.
2. The Scientific Judge may control the buzzer lock-out system.
3. The Scientific Judge may also verbally recognize the student in place of the Moderator. This duty should be determined by the Moderator and Scientific Judge before the match and should be consistent for the whole match.
4. The Scientific Judge helps to resolve rules, scoring, or protocol **challenges**.

Should a rule, score, or protocol be challenged, there are a number of steps that should be followed:

- First, see that the competition clock is stopped.
- Confer with your science bowl judging team to resolve the challenge.

Should you feel that time was lost as a result of the interruption (5, 10, or 15 seconds, for example), check with the Moderator who may add that time back onto the clock before resuming the competition. Be certain to announce that you are “correcting” the time because time was lost due to the interruption so that all participants understand what is happening.



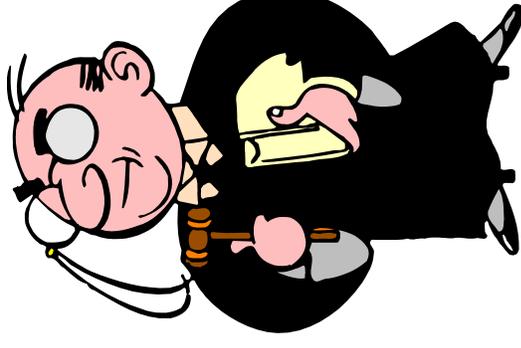
SCIENTIFIC JUDGE

What DO ? I Do ?

1. Follow questions read by moderator (ensure correct pronunciation).

2. Control buzzer system.

- Turn the flashing light off after the student has been recognized.
- Verbally recognize the individual before he/she responds. (Moderator and Scientific Judge will tell students who will recognize.)
- If recognizing, identify student by....
 - 1) announcing Team A or Team B and
 - 2) announcing participant ID (captain, 1, 2, 3)



Notes:

Please review all questions before the competition.



SCOREKEEPER

Your duty as a Science Bowl SCOREKEEPER is to:

1. **Accurately award points and record the competition score.** Scores will be recorded on a blackboard or easel that should be visible to all contestants and Science Bowl officials. The point awards are: 4 for each correctly answered toss-up question and 10 points for a correctly answered bonus question.

The only variation to the above is when a contestant INTERRUPTS a toss-up question while it is still being read, is recognized, and gives the wrong answer. **Four points** [4] are awarded to the opposing team. The opposing team then has the opportunity to answer the interrupted question after it is read in its entirety; and, if it answers the toss-up correctly, receives another 4 points for the toss-up question and is then asked the bonus question.

As you keep track of the score on the scoresheet or blackboard, two columns should be recorded for each team. In the first column, **record the points a team receives on each individual question** with toss-up, interruption, and bonus points being recorded separately. The second column should contain a **running total** of the team's points. If recorded in this fashion, the point total can be checked at the end of the round.

2. **Post-game.** Announce the scores and have team captain's sign the sheet. Collect the envelope, the official score sheet from the Moderator, and the score sheet. Hold the envelope until it is collected or you are able to return it to the Science Bowl Central.



SCOREKEEPER

What DO I Do ?

1. Set up
 - Set up score sheet on flipchart
2. Understand where to place points
 - Use a cumulative tally
3. Toss up questions = 4 points
4. Bonus questions = 10 points
5. If a competitor interrupts the Moderator while a question is being read, and if the competitor answers incorrectly, the opposing team:
 - Is awarded 4 points
 - Has a chance to answer the toss up question (for an additional 4 points)
 - Has a chance to answer the bonus question (for an additional 10 points)
6. At halftime
 - Draw a double line with a total.
 - Announce scores for teams A and B.
7. At end of game
 - Announce the final scores and hand to runner to take to Science Bowl Central.
 - Have the team captain sign the score sheet and give to moderator.

Team A		Team B	
4		4	
10	14	4	8
4	18		

Regional Science Bowl

Date _____

Round #	TEAM A				TEAM B			
	School				School			
Question #	TOSS UP 4	INTERRUPT 4	BONUS 10	CUMULATIVE	TOSS UP 4	INTERRUPT 4	BONUS 10	CUMULATIVE
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
TOTAL								

TIMEKEEPER

Your duties as a Science Bowl TIMEKEEPER include:

1. **Operating the official competition time clock.** You will be provided with a clock that shows both minutes and seconds. At the beginning of each of the competition's halves, set the clock at 8 minutes. (For the national event, the halves will be 10 minutes long with a two minute break in the middle.) The clock should be started as soon as the Moderator begins to read the first question. The clock should be allowed to run uninterrupted until time expires UNLESS there is a question or a rules challenge. At half-time, call "HALF" and at the end of the game call "GAME."

If there is an interruption, stop the clock until the issue is resolved. Restart the timer when the Moderator begins reading the next question. Add time back onto the clock if the Moderator feels that an interruption has unduly used competition time. Again, be certain to explain to the participants that a time correction is being made.

2. **Keeping track of the time for bonus questions.** Each time a team correctly answers a toss-up question, the team will be awarded a bonus question. The students have 30 seconds to begin to answer the bonus question AFTER the Moderator has finished reading the bonus question. After 25 seconds in the bonus period has elapsed, please say "5 seconds." This is to alert the students that only 5 seconds remain in their bonus period. At the end of the 30 second time period you will simply say "TIME." Please say this loudly enough for all participants to hear. Generally, it will be sufficient for you to time the 30 second interval by reading the clock provided for the match. However, a stopwatch may also be used for this purpose.
3. **On toss-up questions,** one of the teams must answer within 10 seconds of the Moderator's completing the question. Keep track of the 10 seconds allowed, calling "time" so that the Moderator will know to proceed to the next toss-up question.

At the conclusion of each half, reset the clock.



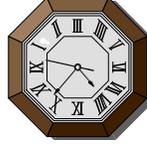
TIMEKEEPER

What DO
I Do ?

1. The basics ...
 - It's very important to keep focused on the time -- NOT the game.
 - One match is composed of two 8 minute halves at the Regionals.
2. To begin ...
 - Timer begins the clock when the moderator starts reading the first question.
3. Students have **10 SECONDS** to answer a toss up question.
 - After 10 SECONDS, announce "TIME!"
4. Students have **30 SECONDS** to answer a bonus question.
 - After 25 seconds, announce "5 SECONDS!"
 - After the total 30 seconds are complete, announce "TIME!"
5. Adding time
 - The clock cannot move backwards.
Therefore, track additional time on your watch, then start the game clock after that time has lapsed.

Toss-up Question
10 Seconds = "TIME"

Bonus Question
25 seconds - "5 SECONDS"
30 seconds - "TIME"



6. Break and final time
 - After the first half has lapsed, announce "HALF!"
 - Time the 2 minute break between halves.
 - After the second half has lapsed, announce "GAME!"
7. Know the rules.

RULES JUDGE

Your duties as a Science Bowl RULES JUDGE include:

1. **Ensuring all competition rules are followed.** To serve in this capacity, it is imperative that you fully understand all competition rules. Please review the competition rules before coming to the Science Bowl training session.

During the competition, if you should have to discuss a rule with the Moderator during a round, please be certain that the clock has been stopped. If you feel that time has been lost, check with the Moderator, who is allowed to make a time correction.

2. **Watching for Scorekeeper errors.** If, for example, Team A is supposed to get four points, the Rules Judge needs to make sure the Scorekeeper doesn't inadvertently credit the wrong team with those points.
3. **Ensure that quiet is maintained.** During competition play, the Rules Judge is responsible for ensuring that quiet is maintained in the room and that no signals are given to the team members from the audience.

At the beginning of each half, check that all students have **blank scratch pads** and pencils. Collect any used scratch paper at the end of the half and discard.



RULES JUDGE

What DO ? I Do !

1. Stand in front of the room facing the audience.

2. Your role concerning rules:

- You are responsible for ensuring that the rules are followed.
 - This includes ensuring that no one signals/communicates with the competitors during a match. If communication does occur, you have the authority to ask the person to leave the room (without causing undue duress -- please).
 - Ensure quiet.

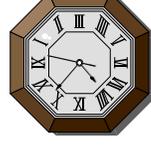
3. Warnings

- If a rule is broken you may, at your discretion, give one warning.

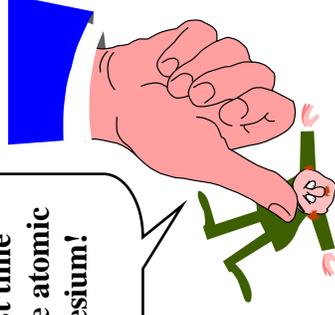
4. Collect all used scratch papers from teams at the beginning of the match, at the half, and at the conclusion.

5. Time

- Ensure that the clock is stopped during discussions between officials, and between officials and students.



That's the last time you'll signal the atomic number of Cesium!



SCIENCE BOWL CENTRAL

Science Bowl Central is designed to provide a central location for information prior to and between rounds of competition. Officials/volunteers check in here to receive their final briefing and room assignments. Team registration can also occur here.

Science Bowl Central should be staffed by at least two individuals throughout the course of the day. Their responsibilities include answering any and all questions pertaining to the competitions, scores, advancement of teams, etc. In addition, two to four individuals who “roam” the competition should be used to ensure that everything is running smoothly. They should have name tags, ribbons, armbands, etc. to designate them as officials capable of answering questions and solving disputes.

Primary Responsibilities:

- Update Academic *competition scoreboard* (overhead projector/screen or an 8' x 8' wall-mounted chart can be utilized).
- Record scores on scoreboards as academic competition progresses.
- Collect questions, packets, and *official score sheets* when they are turned in at the end of each round.
- You will remember from the Competition Structure of the rules, that each team is given points for the round robin competition, i.e. two for win, one for tie, zero for a loss. After the round robin is complete, all the scores for each team are added and the top eight teams advance to the single elimination. There may be a tie between two or more teams. In this case, tie breaker questions need to be available prior to the single elimination.

Items that should be available at the Science Bowl Central:

Paper
Pencils
Magic Markers
Extra Buzzer Systems and Official Clocks, if possible
Extra light bulbs for Lockout Systems
Extra batteries for Official Clocks

At the beginning of the academic competition, a few extra volunteers should remain at the Science Bowl Central to serve as “emergency” officials in the event that one of the scheduled officials does not arrive.

SAMPLE
ROUND ROBIN SCHEDULE

EINSTEIN DIVISION — EIGHT (8) TEAMS

ROUND	TEAMS	ROOM	TEAMS	ROOM	TEAMS	ROOM	TEAMS	ROOM
1 8:30 A.M.	1 VS 2	AH151	3 VS 4	AH152	5 VS 6	AH134	7 VS 8	AH141
2 9:00 A.M.	1 VS 3	AH141	2 VS 4	AH151	5 VS 7	AH152	6 VS 8	AH134
3 9:30 A.M.	1 VS 4	AH134	2 VS 3	AH141	6 VS 7	AH151	5 VS 8	AH152
10:00 A.M.	BREAK							
4 10:30 A.M.	1 VS 5	AH352	2 VS 6	AH340	3 VS 7	AH330	4 VS 8	AH162
5 11:00 A.M.	1 VS 6	AH162	2 VS 5	AH352	4 VS 7	AH340	3 VS 8	AH330
6 11:30 A.M.	1 VS 7	AH330	3 VS 5	AH162	4 VS 6	AH352	2 VS 8	AH340
7 12:00 NOON	2 VS 7	AH340	3 VS 6	AH330	4 VS 5	AH162	1 VS 8	AH352

12:30 P.M.	ASSEMBLE IN THE ALDERSON HALL FOYER AREA TO DETERMINE IF TIEBREAKS ARE NECESSARY
1:15 P.M.	ASSEMBLE IN THE STUDENT CENTER DINING ROOM TO DRAW FOR POSITION IN SINGLE ELIMINATION TOURNAMENT
2:00 P.M.	EIGHT (8) TEAM SINGLE ELIMINATION BEGINS

SAMPLE
ROUND ROBIN SCORE SHEET
EINSTEIN DIVISION — EIGHT (8) TEAMS

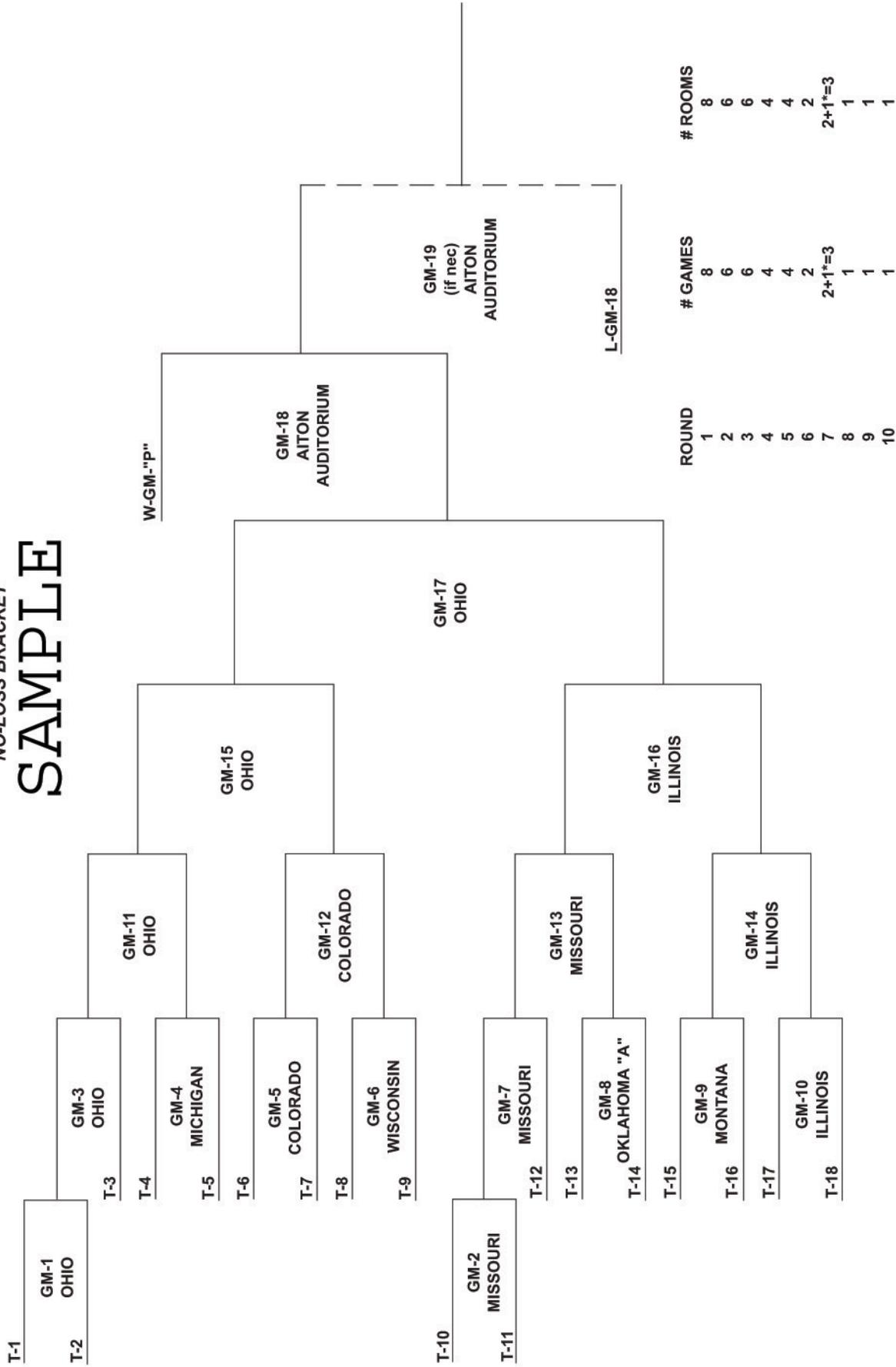
TEAM	1	2	3	4	5	6	7	8	TOTAL POINTS
1									
2									
3									
4									
5									
6									
7									
8									



EIGHTEEN (18) TEAM DOUBLE ELIMINATION

NO-LOSS BRACKET

SAMPLE



ROUND	# GAMES	# ROOMS
1	8	8
2	6	6
3	6	6
4	4	4
5	4	4
6	2	2
7	2+1*=3	2+1*=3
8	1	1
9	1	1
10	1	1

*Game for Fifth Place

ROUND 1 ROUND 2 ROUND 3 ROUND 4 ROUND 5 ROUND 6 ROUND 7 ROUND 8 ROUND 9 ROUND 10

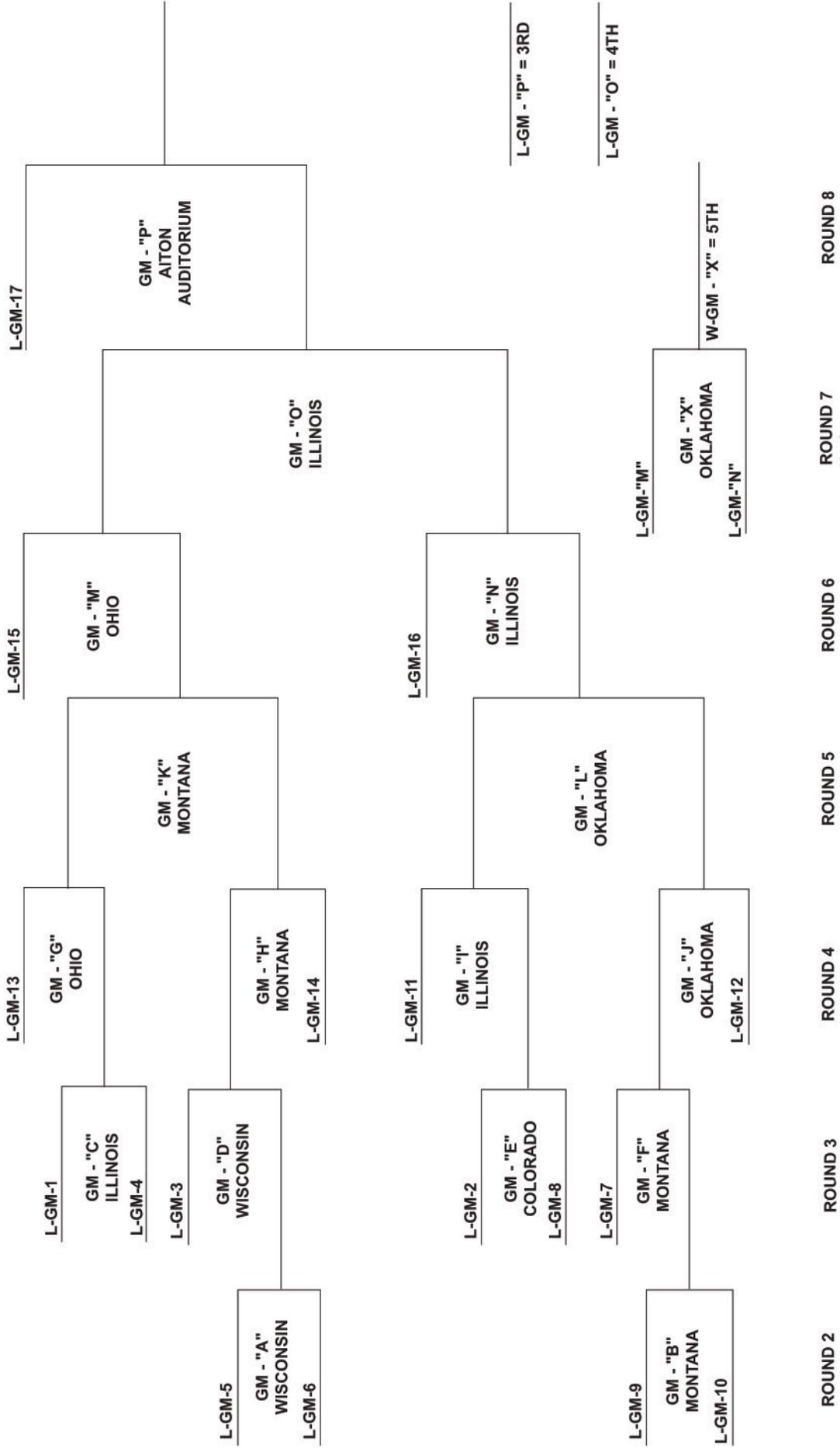
GAMES 4, 5, 6, 8, 9, 10
 ROUND 2
 GAMES 11, 13

GAMES 12, 14
 ROUND 3

SAMPLE

EIGHTEEN (18) TEAM DOUBLE ELIMINATION

CHALLENGERS BRACKET



Model Hydrogen Fuel Cell Car Race Competition Rules

Purpose

The Department of Energy (DOE) and General Motors (GM) are very interested in ensuring that all students understand the hydrogen economy and how a fuel cell works. General Motors depends on an educated work force to succeed in an increasingly dynamic, technologically complex and competitive environment. The hydrogen fuel cell competition engages sixth, seventh and eighth grade students to design, build and race model hydrogen-powered cars steered by guide wires. Each team is provided a fuel cell car kit. Students are encouraged to use math and science principles, together with their creativity, in a fun, hands-on educational program that stimulates enthusiasm for science at a crucial stage in their education.

Hands-on design has a different feel from textbook problem solving or even traditional science labs. There is no single correct answer, any number of solutions developed by students can work. DOE and GM have found that students are excited about generating ideas in a group and then building and modifying models based on these ideas. Students can see for themselves how changes in design are reflected in car performance. Teachers/coaches will have the opportunity to guide their students through a process similar to those used by professional design engineers.

The goals of the program are as follows:

- Present science concepts in a fun and exciting way.
- Give students a chance to interact with engineers and scientists.
- Stimulate creative thinking through a hands-on design project.
- Help students to experience the satisfaction of creating a working machine and the excitement of entering it in a competition.

The objective of the hydrogen fuel cell car competition is to design and build a vehicle that will complete a race in the shortest possible time. The fuel cell enables you to produce hydrogen from the solar cell. During the race the hydrogen will be used to produce electricity to power the car.

Teams use a fuel cell kit to design and build a hydrogen powered vehicle that will race on a 20-meter course. The winner of the competition will be the team whose vehicle is the top finisher in a series of head-to-head, double-elimination rounds. Awards will be given to the top three fastest cars.

NOTE: All cars must be built by the students with limited assistance from the coach or other adults. **This is a student competition!**

Race Components

There are two components to the race.

1. Speed race: Heats will be run in a series of head to head double elimination rounds until the top three cars have been identified. Students will be given time to refine their car and experiment with different types of wheels and altering the plastic chassis.
Regional Hydrogen Fuel Cell Car Competition: It is suggested that the only modification allowed for the regional competitions are the wheels.
National Hydrogen Fuel Cell Car Competition: There will be an **Open Class** where the students will be provided different chassis, gears, wheels, axles, electrical connection wires, and motors. In the open class the students must use the fuel cell, solar panel and gas tank provided in the kit. There will also be a **Stock Class**, where the students will build the kit and only modify the wheels. Teams will decide in which event/class they want to compete.
2. Hydrogen knowledge: Students must be able to answer a series of inquiry-based questions that test their knowledge of fuel cell and hydrogen technologies.

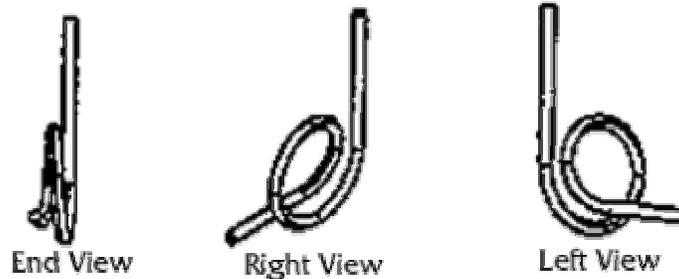
Materials

3. Fuel cell car kits and a supplemental enhancement activity guide will be provided to the 20 winning regional teams following their regional event. The regional winning teams can develop a plan and design to bring to the national event in Golden, Colorado, June 17-20, 2004. No completed cars may be brought to the national event, only the plans and designs.
4. The vehicle must be the team's design and can be altered using materials provided to the teams at the National Middle School Science Bowl. Students will not be allowed to bring previously built vehicles; new vehicles must be constructed on-site as part of the Science Bowl competition.
5. All original car parts included in the fuel cell car kit will be used for the hydrogen fuel cell competition. Only the wheels and chassis may be modified for the competition.

Vehicle Specifications

6. The vehicle must be safe to contestants and spectators, e.g., no sharp edges, projectiles, etc.
7. The vehicle must fit the following dimensions: 30 cm. by 60 cm. by 30 cm.
8. Decals of the sponsor organizations (provided by national competition) must be visible from the side on the body of the car. A 3 cm. by 3 cm. space must be left for the assigned car number.
9. Energy Source: The electricity needed for the electrolysis procedure must be provided by the solar cell which will be charged using incandescent lamps. The solar cell is separated from the vehicle after the charging is complete. The electrolysis will be completed in a designated charging area prior to the start of the race. The only energy source permitted on the vehicle is the fuel cell with the hydrogen that was produced from the electrolysis procedure.
10. Steering: An eyelet must be attached to the bottom front of the car. An example of a

possible design is illustrated below. A guide wire, 1 cm. (+/- .05 cm) from the surface of the track, will go through the attached eyelets on the car, serving as the steering mechanism, and keeping the car in its lane. The vehicle must be easily removed from the guide wire, without disconnecting the guide wire. This is the only allowable method of steering the car. No radio control is permitted in the Hydrogen cars. Lane changing or crossing will result in disqualification.



Glue the eyelet to the bottom of your car near the front (or use two eyelets--one near the front and one near the rear). The guide wire will pass through the eyelet to keep your car in its lane.

Track Specifications

11. The length of the race course is 20 meters over flat terrain.
12. Race lanes are at least 60 cm. wide.
13. The guide wire will be located in the center of the track and will not be more than 1.5 cm. above the track surface.
14. The track is a hard, flat, smooth surface such as a tennis court or running track. A large sheet of rolled material, i.e., plastic, heavy paper, roofing paper (half-lap), or hardwood taped or bolted together may be used to cover an uneven surface.

Race Conduct

15. **Charging Station:** The solar cell in the kit must provide the electricity needed for the electrolysis procedure. The solar cell is separated from the vehicle after recharging. Incandescent lamps will be used with the solar cells to produce hydrogen to fuel the cars.
16. **Race Day Electrolysis Procedure:** Before the scheduled race start, all teams must report to the designated charging station with their fuel cell and solar cell. Distilled water will be provided at the charging station for the electrolysis process. All gas tanks for the fuel cells must be completely filled with water prior to the electrolysis procedure, and at no time after electrolysis may any of the water be discarded. **Removal of any of the water from the gas tank container will result in disqualification.** There is no time limit on the electrolysis procedure—a team may report to the charging station as early or late as practical; however, teams must be ready to start their race at the specified time. The solar cell is to be used for electrolysis only; it may not be used to charge up any auxiliary power systems, or stored on the vehicle in any way. The only energy source permitted on the vehicle is the fuel cell with the hydrogen that it produced from the electrolysis procedure.

17. At race time, the vehicle will be placed behind the starting line with all its wheels in contact with the ground. No more than two team members will be allowed in the start area.
18. An early start or push start may result in disqualification or a re-run of the heat. The determination will be left to the race judges.
19. All vehicles will be started when the official signal is given. The winner of the heat will be the first vehicle to cross the finish line or the car farthest down the track when the race is called.
20. During the initial heats, the judges may declare multiple wins or losses.
21. One team member must wait at the finish line to catch the vehicle.
22. Team members may not accompany or touch the vehicle on the track. Vehicles stalled on the track may be retrieved after the end of the race has been declared by the Lead Judge.
23. The vehicle and team member must remain at the finish line until the order of the race has been established.
24. Lane changing or crossing will result in disqualification.
25. Challenges must be made before the race judges begin the next heat. All challenges must come from the team members who are actively competing and directed to the lead judge. The decisions of the race judges are final.
26. Judges **will** inspect cars prior to the final heat or at anytime during/after heats.

RACE PROCEDURES AND OFFICIAL ROLES

The heart of the Car Competition is the race and it must run smoothly. It is important that the judges thoroughly know the procedure. The Race Judges need to understand the steps of the race and their roles in enforcing the track rules. The steps of the race are listed below followed by more specifics and dispute information.

Schedule For Judges - Regional coordinators – change the information for your regional event.

- Check in at registration by 11:00 a.m. in Colorado School of Mines, Student Center Ballroom A. Pick up your Registration Packet, T-shirt, Official Race Hat, Name Badge with Lunch Ticket and Program. You will need to park your car in the far lot of the Student Center Parking Lot.
- Lunch will be served from 12:00-1:00 in the Student Center. There will be a Race Judge meeting at 1:15 p.m. at the track in the parking lot of the Student Center.
- The first race is scheduled to start at 2:00. However, to allow for clouds or other delays the schedule may extend beyond the posted race times.

Inspection Judges

- Beginning one hour prior to the race, Inspection Judges will inspect each car and make sure that it passes all of the Car Checklist requirements.
- If the car does not pass inspection, time will be allocated for the team to make adjustments prior to the start of the race.
- When the car passes inspection, the Inspection Judge will place a green dot sticker on the car to indicate to the Starting Judges that the car passed inspection.

Conduct Of The Race

- Twenty teams will be competing in the race.
- The cars have been divided up into “heats”. Four cars will run one race at a time.
- There are two tracks that contain two lanes on each track. The tracks are 20 meters long.
- There should be four Start Judges and four to seven Finish Judges during the race. One Finish Judge will be assigned to work the video camera to record photo finishes of the races.
- Cars must pass inspection prior to racing their first heat. There will be a **green** dot sticker on the cars that have passed inspection.
- The Lead Judge will be provided all of the Heat Cards for every race. The Lead Judge and Start Judge will ensure that the correct cars are lined up ready to race.
- Competition is by process of double elimination. The first and second place winners will continue in the winner’s bracket and the two remaining teams will continue in the one loss bracket.
- A car is eliminated when it has two losses. It is possible that a few cars won’t have two losses before the final heat, but the final heat will determine the placement of the winning cars.
- A loss can occur by losing a heat or by not racing the designated heat. **NOTE:** If a scheduled car is not on the start line when the Lead Judge signals the heat to start, it is a loss. It is the responsibility of the students to be aware of when they are scheduled to race and to be on time.

Consideration will be given by the Lead Judge and Inspection Judge if the car is being repaired and misses its designated heat.

STAGE

- The Master of Ceremonies will call for a heat to “STAGE.” **Charging Station:** The solar cell in the kit must provide the electricity needed for the electrolysis procedure. The solar cell is separate from the vehicle. Incandescent lamps or the sun will be used with the solar cells to produce hydrogen to fuel the cars.
- **Race Day Electrolysis Procedure:** Before the scheduled race start, all teams must report to the designated charging station with their fuel cell and solar cell. Distilled water will be provided at the charging station for the electrolysis process. All fuel cells must be completely filled with water prior to the electrolysis procedure, and at no time after electrolysis may any of the water in the top of the cylinders be discarded. **Removal of any of the water from the cell will result in disqualification.** There is no time limit on the electrolysis procedure—a team may report to the charging station as early or late as practical; however, teams must be ready to start their race at the specified time. The solar cell is to be used as the energy source for the electrolysis only; it may not be used to charge up any auxiliary power systems, or stored on the vehicle in any way. The only energy source permitted on the vehicle is the fuel cell with the hydrogen that it produces from the electrolysis procedure.
- The students will bring their cars to the start
 - **one student at the start (no more than two students at the start)**
 - **one student at the track finish line to catch the car**
- The Lead Judge and the Start Judge will check the heat cards to make sure that the right team is on the right lane
- The Start Judge will check each car at the start line for:
 - **green inspection sticker**
 - **car number**
- The Lead Judge will indicate any “no shows” on the Heat Card.
- The Lead Judge will hand out the Heat Cards to the Finish Line Judges.

START

- All spectators will be moved back and the announcement is made that the heat is about to start.
- There are two judges assigned to each lane, a Start Judge and a Finish Judge.
- All students will set their cars behind the start line.
- The Lead Judge will signal the start by blasting the bullhorn. If the car cannot get going on its own, it is permissible to let the student **GENTLY** push the car to start the momentum.
- If a car starts down the track before the bullhorn sounded, the Start Judge indicates a false start and the race will be rerun.

RACE

- Students that are racing cars are not to leave their position at the start or end of the track during the race. Even if their car has become hung up on the guide wire or has stopped during the race. Start Judges may direct a student to retrieve his/her car along the track and disengage the car from the guide wire.
- No Judges should be distracted. They are required to watch every race thoroughly. ANYONE interfering with a Judge or the Judge's eye contact with the race should be told by the Judge to leave or stand back during the race.

FINISH

- At the end of each race the Finish Judges will agree on the first and second place finishers. The winners and losers are indicated on the Heat Cards and are turned over to the Runners.
- The Lead Judge will announce the first and second place winners, to avoid disputes later.
- The Finish Judges will give the Heat Cards to the designated "Runners" to take to the Scorekeeper.
- The Start Judges will begin staging for the next heat.

DISPUTES AND CHALLENGES

- Be as fair as possible. Do not be afraid to call a false start and restage the heat if needed.
- Discourage any interruptions to your duties, because distractions will cause a delay in the event. Don't become a bottleneck trying to answer questions and help people. Refer people to the Competition Program Manager.
- Any challenge to the results of the race or a car's legitimacy should be registered as a protest to the Rules Committee by the protesting school participants. Do not try to defend your call or judgment to parents or students. Refer them immediately to the Rules Committee.
- The Rules Committee is comprised of the Lead Judge, Inspection Judge and Competition Program Manager. You may be consulted on your call by this committee.
- Rules Committee has the final call.

TRACK JUDGES

- You are the track and race guards.
- Keep all people off the track and outside designated areas. The guide wire is fishing line and is very difficult to see.
- Only students competing in a heat should be at the track's start and finish.
- One student releases the car to start and one student catches the car at the finish. There are bags of bubble wrap at the finish so if the cars get past the student at the finish line, it will NOT crash into the cinder block.
- Do not let the students take the cars from the finish line until the Lead Judge indicates that the winners have been noted on the Heat Cards.
- Make sure that you have a clear visual perspective of the entire race to ensure fairness.
- No one should be between the tracks at any time. The only exception to this will be the Judges or an official event Photographer or Videographer who will not interfere with the race and the judge's view of all lanes.

- If a car gets hung up on the guide wire, the Start Judge may grant permission for the student to unhook the car from the guide wire.

LEAD OFFICIAL

The Lead Official is THE person responsible for controlling the race competition. It is important that you are familiar with the hydrogen fuel cell model car race and all of the competition rules. It is, therefore, extremely important that you review the rules well in advance of the actual event.

The Hydrogen Fuel Cell Model Car Competition is a hands-on science competition in which student teams design, build and race model fuel cell model cars. The winning teams are the ones who have built the fastest cars. The hydrogen fuel cell model car competition has two different competitions: single elimination hill climb and a double elimination speed race competition where the team must lose twice before being eliminated.

1. The Master of Ceremonies will announce each heat by reading the team names and assigned lanes. The Lead Official collects the team Heat Cards at the start of each race and verifies with the Start Officials that each team is present and in the assigned lanes.
2. If a team is not ready to start the race, the Lead Official will announce the team name one more time. Consideration will be given by the Lead Official and Inspection Official if the car is being repaired and misses the designated heat.
3. The Lead Official will hand the Heat Cards to the Finish Officials for completion.
4. The Lead Official and Race Officials will make sure that the spectators are not blocking the lanes.
5. The Lead Official will announce the start of the race and will verify with the Start Officials that the students have their cars hooked to the guide wire and the fuel cell leads attached to the motor.
6. The Lead Official will start the race by blasting the bullhorn.
7. Students will lower the drive wheels to the track to begin racing their cars. The Lead Official will acknowledge the first and second place winners. If a car is hooked to the guide wire or the car has stopped during the race, the Starting Official will give permission to the student to go and unhook their car from the guide wire after the Lead Official has announced the winners.
8. Disputes and challenges to the competition can only be directed to the Rules Committee by participating students. The Rules Committee is comprised of the Lead Official, Inspection Official and Competition Program Manager. Other Race Officials may be consulted by this committee.
9. Rules Committee has the final call.

START OFFICIAL

Your duties as a Start Official include:

1. Ensuring all competition rules are followed. To serve in this capacity, it is imperative that you fully understand all competition rules. Please review the competition rules before coming to the hydrogen fuel cell model car competition training session.
2. The Start Official reviews the Heat Card to make sure that the right car is in the right lane.
3. The Start Official makes sure that the car number and inspection sticker are on the car.

4. The Start Official assists the student in hooking the car to the guide wire.
5. The Start Official makes sure that the student has the fuel cell disconnected from the electric motor prior to the start of the race.
6. Move any spectators back from the racing lanes.
7. Make sure that your site of vision is not blocked.
8. Once the Lead Official calls for the start of the race, indicate to the Lead Official that your lane is ready to start the race.
9. The Start Official gives the "Ready Car" signal and the students connect the fuel cell to the electric motor.
10. If a student places the car on the track and releases it prior to the start signal, yell out FALSE START so the heat can be rerun.
11. Once the Lead Official has announced the winner of the heat, if the student's car got hung up on the guide wire or has stopped in the middle of the track, you can give the student permission to go and unhook the car from the guide wire.
12. If there are disputes to a race, you might be consulted by the Rules Committee to make a final decision.

FINISH OFFICIAL

Your duties as a Finish Official include:

1. Ensuring all competition rules are followed. To serve in this capacity, it is imperative that you fully understand all competition rules. Please review the competition rules before coming to the hydrogen fuel cell model car competition training session.
2. Prior to the start of the race, the Finish Official takes the Heat Card from the Lead Official for their appropriate lane.
3. Move any spectators back from the racing lanes.
4. Make sure that your site of vision is not blocked.
5. The Finish Official ensures that there is a student ready to catch the car after it passes the finish line.
6. Once the Lead Official calls for the start of the race, indicate to the Lead Official that your lane is ready to start the race.
7. Watch the race carefully and indicate to the other Finish Officials if the car in your lane is in first place.
8. Note the placement (win or lose) on the Heat Card.
9. Inform the Lead Official so he/she can announce the winner of the heat.
10. If there is a dispute among the Finish Officials about the placement of the cars, review the video camera footage of the race to determine the winner.
11. The Finish Officials will hand the completed Heat Cards to the Runners who will take the Heat Cards to the Scorekeeper.
12. If there are disputes to a race, you might be consulted by the Rules Committee to make a final decision.

SCOREKEEPER

Your duty as a Scorekeeper is to:

1. Have the teams randomly select numbers to assign them in the initial heats.
2. Complete the Heat Cards with the first heat number and lane assignments.

3. Fill in the scoreboard with the initial heat information.
4. Give the completed Heat Cards to the Master of Ceremonies to distribute to the teams.
5. Make copies of the Heat Assignments for the Master of Ceremonies to announce the next heats.
6. Once the heats are run, the Runners will hand the completed Heat Cards to you for recording.
7. Assign the next heat assignments and hand the newly updated Heat Cards to the Master of Ceremonies to distribute to the teams.
8. Accurately record the competition results. Scores will be recorded on a scoreboard, which should be visible to all competitors and Hydrogen Fuel Cell Model Car officials.
9. After teams have been double eliminated, keep the Heat Card.
10. After the races are complete, provide the Master of Ceremonies a list of the teams and team members for the first, second and third place teams.

Hydrogen Fuel Cell Model Car Inspection Checklist

For Use By Inspection Official

Car Number _____ School _____

<p>Inspection Checklist</p> <p>_____ Car length not greater than 60 cm.</p> <p>_____ Car width not greater than 30 cm.</p> <p>_____ Car height not greater than 30 cm.</p> <p>_____ Original hydrogen fuel cell (not modified)</p> <p>_____ Original solar cell (not modified)</p> <p>_____ Original gas tank (not modified)</p> <p>_____ Three dimensional body shell</p> <p>_____ Number mounted on each side of car</p> <p style="text-align: center;"><u>Inspection Results</u></p> <p>_____ Pass</p> <p>_____ Fail</p>	<p>_____ Sponsor decals mounted on side of car</p> <p>_____ Eyelet on bottom of car near front end</p> <p>_____ Original motor (not modified, except in open class)</p> <p>_____ At least one wheel driven by motor</p> <p>_____ No radio control device</p> <p>_____ No batteries or storage device with the exception of the provided hydrogen fuel cell</p> <p>Car weight = _____</p> <p>Signature of Inspector</p> <p>_____</p>
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SCIENCE BOWL CENTRAL

The Hydrogen Fuel Cell Model Car Science Bowl Central is designed to provide a central location for information prior to and between races. Officials/volunteers and teams check here to receive information and heat assignments.

The Hydrogen Fuel Cell Model Car Science Bowl Central should be staffed by at least two individuals throughout the course of the event. Their responsibilities include answering questions pertaining to the races, race times, advancement of teams, etc.

Primary Responsibilities:

- Update Hydrogen Fuel Cell Model Car Competition scoreboard.
- Announce when race starting times and notify the teams that are “on deck” for the next heat.

Items that should be available at Hydrogen Fuel Cell Model Car Science Bowl Central:

- Paper
- Pencils
- Magic Markers
- Extra Stopwatches, if possible
- Track Materials: Fishing Line, Hand Tools, Eyelets, Roofing Ply, etc.
- Duct Tape
- Incandescent lamps with extra bulbs

At the beginning of the competition, a few extra volunteers should remain at Hydrogen Fuel Cell Model Car Science Bowl Central to serve as “emergency” officials in the event that one of the scheduled officials does not arrive.



Thames & Kosmos[®]

Fuel Cell Quick Start Instructions

Your Fuel Cell Car & Experiment Kit comes packaged with a 100-page Laboratory Manual which thoroughly explains the science behind the Fuel Cell car in 30 experiments. These Quick Start Instructions are provided as a shortcut for assembling and running the car.

1. Assemble the Car

Assemble the car as shown in figure 1. If you have questions about part names, see page 4 of the lab manual for names and pictures of all the parts. Refer to page 14 in the manual for assembly instructions.

Note: When you are inserting the wheels and tires onto the axles be very careful that your finger is not over the outside hole of the wheel. The axle can slip on the wheel and will puncture your finger.

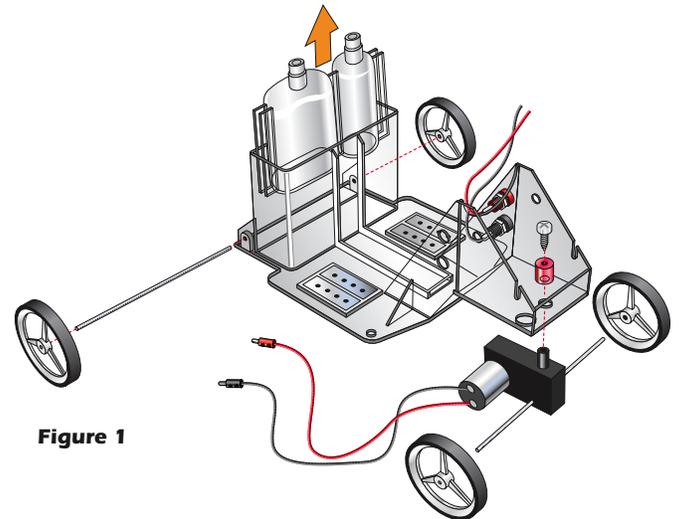


Figure 1

Attach the solar panel as shown in figure 2.

Attach the tubes to the Fuel Cell as shown in figure 3. Refer to page 57 in the manual for the instructions of cutting the tubing. You need to cut two 5 cm long pieces and two 17 cm long pieces. The remaining piece of tubing will be used with the syringe in the kit to purge the air from the fuel cell which will be covered in a step 3.

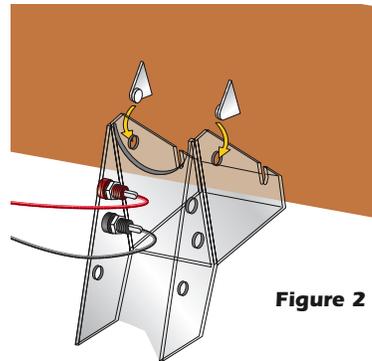


Figure 2

The fuel cell has two distinct sides, the blue is the oxygen side and the red is the hydrogen side. The red side is placed on the car on the right side facing forward towards the motor. The shorter 5 cm tubes are inserted on the top stubs of the fuel cell and are capped with the red plugs. The longer 17 cm tubes are inserted on the bottom stubs of the fuel cell and are capped with the clear transparent nozzles.

Insert the longer tubes from the Fuel Cell into the gas collector tanks as shown in figure 4. To do this, you will need to first insert the tube through the hole in the top of the gas tank, and then attach the small clear nozzle tip onto the

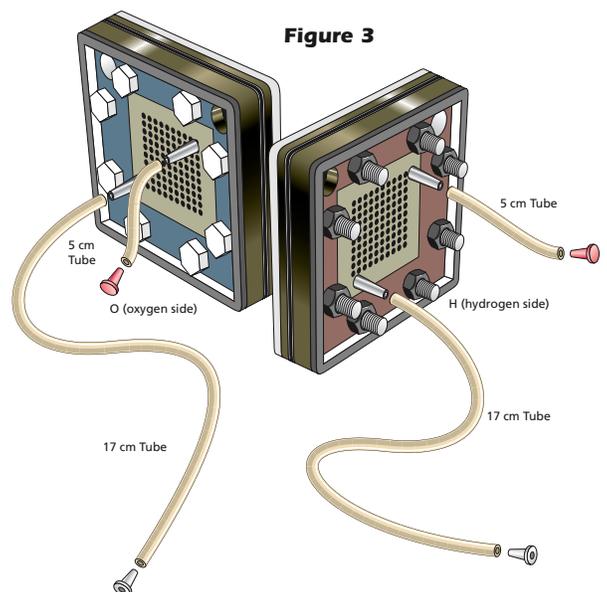


Figure 3

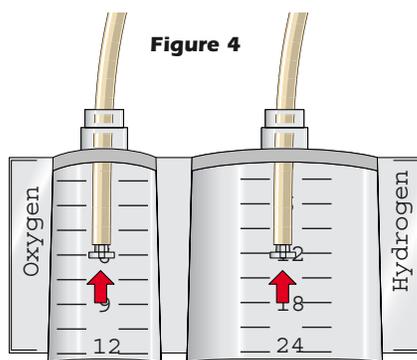


Figure 4

tube. The nozzle tip will not fit through the hole in the tank. Firmly pull the hose with the nozzle tip attached so as to wedge the nozzle into the hole in the tank to create a tight fit.

Insert the gas tank into the tank holder on the back of the Fuel Cell, with the smaller Oxygen tank on the left and the larger Hydrogen tank on the right, as shown in figure 5.

Do not worry yet about how the wires are connected. You will connect the wires in step 4. Press the Fuel Cell into its holder on the plastic car chassis.

Note: Do not pick up the car by the Fuel Cell as it may fall out.

2. Fill the Tank with Distilled Water

Add **distilled** water almost to the top (3/4 full is good) of the tank chamber at the back of the car, as shown in figure 6.

You must use distilled water; do not use regular tap water.

The amount of water added is not critical as long as you have enough to keep the chamber from running dry when the gas in the tanks is removed in the next step. Adding too much water means the water will just spill out when you handle the car or “gas” it up.

3. Fill the Fuel Cell with Water

Next, suck the air out of each side of the Fuel Cell with the syringe. In doing so, you will suck water into the Fuel Cell from the tank. Take the syringe from your kit and insert the extra piece of tubing onto the end of the syringe. Insert the small white piece of hard tubing from your kit onto the end of the flexible tubing. You are now ready to fill the fuel cell with water. Remove the red plug from the short piece of tube and connect the white needle of the syringe to it. To do this, remove the red stopper plug from the clear hose coming off of the Cell, insert the syringe tip into the hose, pull the syringe handle and suck out the air (figure 7). You can stop when you see a steady flow of water coming through the tube into the syringe. Then, while pinching the tube, remove the hard plastic syringe tip from the tube and reinsert the red stopper plug into the tube without letting air back into the Cell. Put the excess water in the syringe back in the gas tank area. Repeat for the tube on the other side of the Cell.

4. Connect the Wires for Solar-powered Electrolysis

Next, connect the red and black wires on both sides of the Cell for the gas-generation phase of the process, as shown in figure 8: the red wire from the solar panel should be plugged into the same metal strip as the red wire from the Fuel Cell, and the black wire from the solar panel should be plugged into the same metal strip as the black wire from the Fuel Cell. No other wires (such as the wire to the motor) should be plugged into this strip at this time. Thus, there is a direct connection from the solar panel to the Fuel Cell.

Note: The wires are fragile and can break. Be very careful when disconnecting the solar cell and motor connections. If you break off the wire ends, you will need to strip off the red or black plastic end of the wire with wire strippers. Use a small screwdriver to reattach the connection wire end.

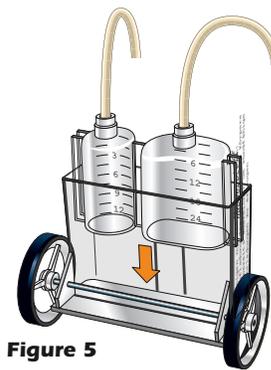


Figure 5

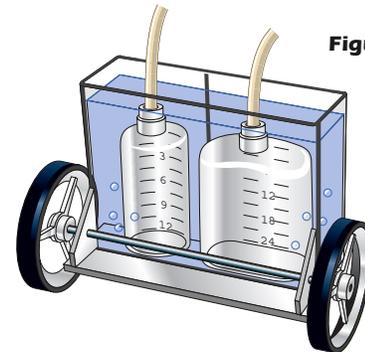


Figure 6

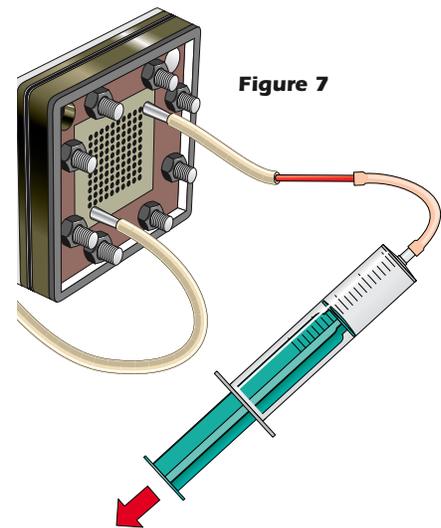


Figure 7

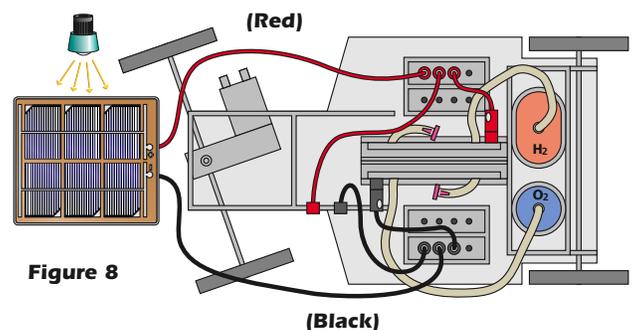


Figure 8

5. Generate Hydrogen and Oxygen with Electrolysis

Turn on a 75-watt desk lamp and shine it directly on the solar panel (or use sunlight), and the Fuel Cell should start producing Oxygen and Hydrogen. The gas is produced at such a rate that you can actually see it start to displace the water in the Cell and the tubes at the beginning.

NOTE: Hydrogen is generated more quickly using actual solar energy than it is using artificial light from the bulb. If sunlight is not available, you can use a higher wattage bulb, but you MUST watch the solar panel closely: with a higher wattage bulb, it is easy to overheat and damage your solar cell.

The internal tanks will start to fill with the gases (figure 9). The outer chamber water level should start to rise as the bubbles of gas increase in size inside the gas tanks. This is when the water will spill out if you put too much water into the chamber at the beginning. You can use the syringe to remove some of the excess water before it spills onto the electrical contacts of the car or the floor. It should take about 10 to 15 minutes to fill the gas tanks under a 75-watt lamp.

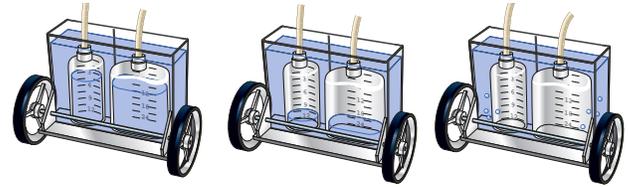


Figure 9 (Note: Outer water level will change as water is displaced by gas. This is not illustrated here)

6. Connect the Motor and Start the Car!

Once the tanks have some gas in them, you may start the car! Disconnect the red and black wire connections from the solar cell. To power the motor, you must connect the motor to the Fuel Cell, as shown in figure 10. To do this, plug the red wire from the motor into the same metal strip as the red wire from the Fuel Cell, and plug the black wire from the motor into the same metal strip as the black wire from the Fuel Cell. Make sure that there are no other wires connected to these strips (such as the solar panel wire). You can remove the solar panel from the car entirely to demonstrate that the solar panel is not powering the motor. Make sure you hold the front wheels off the ground when inserting the last power lead, as the motor will start turning when the wire makes contact.

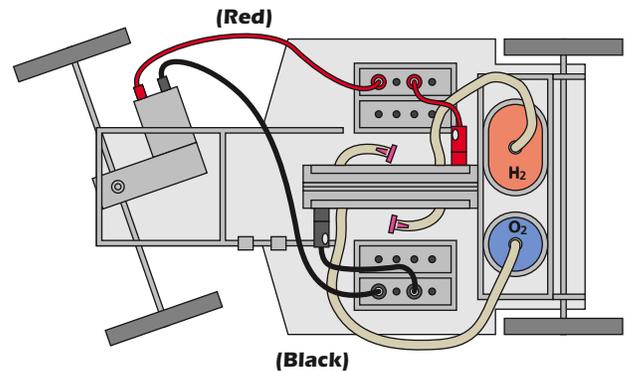
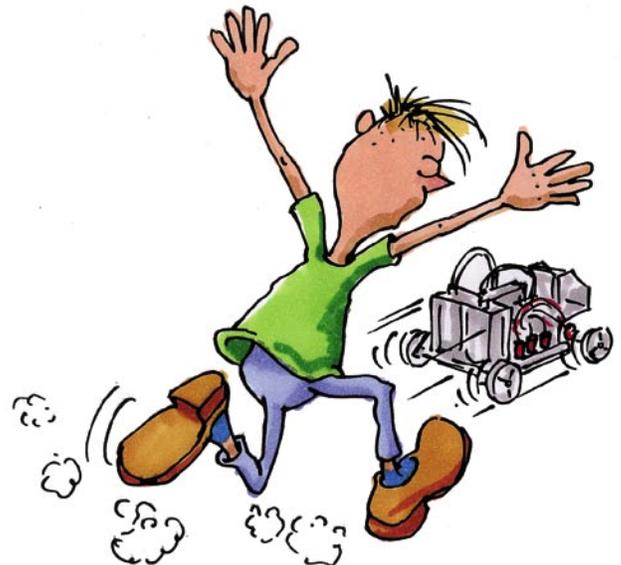


Figure 10

Turn the front wheel assembly to make the car circle, or keep it straight if you want to chase it. Place it on a big table or on the floor and watch it go. A full tank of "gas" will run the motor for 15 to 20 minutes. When you want to stop the car either let it run out of "gas" or just pick up the front end of the car and then remove one wire from the metal strip to break the connection.

If you need further assistance, please call us at 1-800-587-2872 and ask for Tech Support, or email Tech Support at techsupport@thamesandkosmos.com.





SAMPLE

Car Race Scorecard

Round 1

2 winners from each heat advance to Round 3, others move to Round 2

Lane	Heat 1	Order of Placing
A		to 7A
B		to 8A
C		to 5A
D		to 6A

Lane	Heat 2	Order of Placing
A		to 7B
B		to 8B
C		to 5B
D		to 6B

Lane	Heat 3	Order of Placing
A		to 7C
B		to 8C
C		to 5C
D		to 6C

Lane	Heat 4	Order of Placing
A		to 7D
B		to 8D
C		to 5D
D		to 6D



SAMPLE

Round 2 - 1 loss

2 winners from each heat advance to Round 4

Lane	Heat 5	Order of Placing
A		to 10B
B		to 9B
C		
D		

Lane	Heat 6	Order of Placing
A		to 9C
B		to 10C
C		
D		

Round 3 - 0 losses

2 winners from each heat advance to Round 5, others move to Round 4

Lane	Heat 7	Order of Placing
A		to 11A
B		to 11C
C		to 9A
D		to 10A

Lane	Heat 8	Order of Placing
A		to 11B
B		to 11D
C		to 10D
D		to 9D



SAMPLE

Round 4 - 1 loss

2 winners from each heat advance to Round 6

Lane	Heat 9	Order of Placing
A		to 13A
B		to 12A
C		
D		

Lane	Heat 10	Order of Placing
A		to 12B
B		to 13B
C		
D		

Round 5 - 0 losses

2 winners advance to FINAL, others move to Round 6

Lane	Heat 11	Order of Placing
A		to 14B
B		to 14D
C		to 12C
D		to 13C



SAMPLE

Round 6 - 1 loss

1 winner from each heat advances to FINAL

Lane	Heat 12	Order of Placing
A		to 14C
B		
C		

Lane	Heat 13	Order of Placing
A		to 14A
B		
C		

FINAL

2nd place must have lost twice, so a second FINAL round between top two finishers may be necessary

Lane	Heat 14	Order of Placing
A		to 15A (if necessary)
B		to 15B (if necessary)
C		3rd Place
D		4th Place

FINAL Round 2

Lane	Heat 15	Order of Placing
A		1st Place
B		2nd Place



CAR RACE

TEAMS	ROUND 1 (0 losses)	ROUND 2 (1 loss)	ROUND 3 (0 losses)	ROUND 4 (1 loss)	ROUND 5 (0 losses)	ROUND 6 (1 loss)	FINAL
	Heat 1 7A 8A 5A 6A	Heat 5 10B 9B	Heat 7 11A 11C 9A 10A	Heat 9 13A 12A	Heat 11 14B 14D 12C 13C	Heat 12 14C	Heat 14 15A 15B 3rd Place 4th Place
	Heat 2 7B 8B 5B 6B	Heat 6 9C 10C	Heat 8 11B 11D 10D 9D	Heat 10 12B 13B		Heat 13 14A	FINAL Round 2 (if necessary) Heat 15 1st Place 2nd Place
	Heat 3 8C 7C 6C 5C						
	Heat 4 8D 7D 6D 5D						

School Name <i>Car Name</i> Car #			
HEAT	LANE	WIN	LOSS

School Name <i>Car Name</i> Car #			
HEAT	LANE	WIN	LOSS

THIS IS YOUR HEAT CARD

- 1. When your heat is called, give this card to the Lead Judge at the starting line.**
- 2. Shortly after the heat, you may pick up your Heat Card at the podium, when the Master of Ceremonies calls out your school name. The heat card will have your next heat and lane assignment recorded on it.**

THIS IS YOUR HEAT CARD

- 1. When your heat is called, give this card to the Lead Judge at the starting line.**
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FORMS

FORM CHECKLIST:

Forms Completed and Submitted On-Line

Following each of the regional events the following forms must be submitted **on-line** at <http://www.scied.science.doe.gov/nmsb/default.htm>

Coach:

- Team Registration with Contact and Demographic Information**
- Bios of Team Members
- Family Participation in National Event and request for meals (information by parents)

Coordinator:

- Committee Members, Sponsors and Regional Demographics
- Media Contact Information
- Coordinator Volunteer Form at the National Event

Forms Completed, Signed and FedEx to NREL

The following forms must be completed on-line at <http://www.scied.science.doe.gov/nmsb/default.htm>, downloaded, printed, signed and FedEx to Linda Lung at NREL, 1617 Cole Boulevard, MS-1713, Golden, CO 80401-3393, Phone: (303) 275-3044:

Coach:

- Medical, Emergency Notification, and Publicity Consent Form**
- Team Commitment and Code of Conduct (one form needed for each team member, signed by student, parent, coach and coordinator)
- Adult Code of Conduct (signed by coach and coordinator)

Coordinator:

- Medical, Emergency Notification, and Publicity Consent Form

Parents

- Student Medical and Parental Consent to Participate and Media Release Form**

Newspaper/media clips should be FedEx to DOE Headquarters:

Cindy Musick, U. S. Department of Energy, 1000 Independence Avenue, SW, SC-1, Washington, DC, 20585. Phone: 202 586-0987

- Team photo (with the students and coach clearly identified)

****These forms must be completed before travel arrangements can be made**

Ethnicity Information

Regional Coordinators: The National Middle School Science Bowl **Team Registration** form is located at: <http://www.scied.science.doe.gov/nmsb/default.htm>, the team registration form will have a pull down menu for you to select the appropriate ethnicity of each team member. For the regional science bowl, include the ethnic designations handout to your coaches to assist the students in completing your regional team registration form.

NOTE: Participant data is important in assessing the effectiveness of the Department of Energy's efforts to reach a diverse population. Your completion and submission of this form will assist us in this regard, however, it is optional and you are not required to submit it. We appreciate your cooperation.

SAMPLE TEAM REGISTRATION FORM
Official Form is completed on-line

Regional Site _____

School _____ Phone () _____ Fax () _____

Address _____ City _____ State _____ Zip _____

Principal _____ E-Mail _____

TEAM MEMBERS (Each of these students must have participated on your team in the regional event. These are the only students eligible to compete on your team at the national event):

1. Name _____ SSN _____

Sex: M _____ F _____

Address _____ City _____ State _____

Zip _____

Home Phone () _____ DOB _____ Grade _____ T-Shirt Size _____

Citizenship: U.S. _____ Other (Country) _____ E-Mail _____

Ethnicity _____

2. Name _____ SSN _____

Sex: M _____ F _____

Address _____ City _____ State _____

Zip _____

Home Phone () _____ DOB _____ Grade _____ T-Shirt Size _____

Citizenship: U.S. _____ Other (Country) _____ E-Mail _____

Ethnicity _____

3. Name _____ SSN _____

Sex: M _____ F _____

Address _____ City _____ State _____

Zip _____

Home Phone () _____ DOB _____ Grade _____ T-Shirt Size _____

Citizenship: U.S. _____ Other (Country) _____ E-Mail _____

Ethnicity _____

4. Name _____ SSN _____
Sex: M _____ F _____
Address _____ City _____ State _____
Zip _____
Home Phone (____) _____ DOB _____ Grade _____ T-Shirt Size ____
Citizenship: U.S. _____ Other (Country) _____ E-Mail _____
Ethnicity _____

ALTERNATE TEAM MEMBER (will only be allowed to participate in the national event if one of the above team members is unable to attend due to some unforeseen emergency. Any substitutions must be approved by DOE Headquarters.)

5. Name _____ SSN _____
Sex: M _____ F _____
Address _____ City _____ State _____
Zip _____
Home Phone (____) _____ DOB _____ Grade _____ T-Shirt Size ____
Citizenship: U.S. _____ Other (Country) _____ E-Mail _____
Ethnicity _____

COACH:

Name _____ SSN _____
Sex: M _____ F _____
Address _____ City _____ State _____
Zip _____
Home Phone (____) _____ DOB _____ Grade _____ T-Shirt Size ____
Citizenship: U.S. _____ Other (Country) _____ E-Mail _____
Ethnicity _____

2ND COACH (may attend the national event if team consists of both genders and requires both a female and male chaperone):

Name _____ SSN _____

Sex: M _____ F _____

Address _____ City _____ State _____

Zip _____

Home Phone (____) _____ DOB _____ Grade _____ T-Shirt Size _____

Citizenship: U.S. _____ Other (Country) _____ E-Mail _____

Ethnicity _____

Submit this form online at <http://www.scied.science.doe.gov/nmsb/default.htm>, by **May 8, 2004**.

2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL
Team Biography Form
Official Form is completed on-line

Regional Event: _____

Team/School Name: _____

Have students write a short biography/paragraph which will be included in the 2004 National Middle School Science Bowl program booklet. In addition, please prepare your own short biography.

The following is a list of interesting details that can be included in the biographies.

Students:

- Grade and School attended
- Interests and hobbies
- Activities and clubs
- Favorite subjects in school
- Future plans for college and career
- Interesting facts about yourself

Coach:

- Subjects and school where taught
- School clubs
- Hobbies and Interests
- Length of time as a Teacher
- Colleges attended and areas of study
- Interesting facts about yourself

Student 1

Student 2

Student 3

Student 4

Coach

Second Coach (if applicable)

Please submit this form online at <http://www.scied.science.doe.gov/nmsb/default.htm> by May 17, 2004.

**2004 National Middle School Science Bowl
Family Participation Form
Official Form is completed on-line**

Please indicate below, how many family/friends will be attending the National Middle School Science Bowl. Please check the appropriate box for the meal option you prefer.

You will be able to purchase meal cards at registration on June 17, 2004 from 1:00 p.m. to 5:00 p.m. at Weaver Towers. This information will assist us in planning the events, especially for the Awards Dinner, since space is limited. Thank you.

Team Name

Student Name

Check the appropriate box:

- We will not be attending the National Middle School Science Bowl.

- We will be attending the National Middle School Science Bowl

Indicate number of family members:

- _____ people will attend and will only eat the Awards Dinner on campus.*
(June 19, 2004 following the Awards Ceremony) The dinner will cost approximately \$15.00 and must be purchased on June 17, 2004 during the registration time from 1:00 p.m. to 5:00 p.m.). *Space is limited, so please give an accurate account for the Awards Dinner meal.*

- _____ people will attend and will purchase meal card(s) for all meals.
(includes all meals, from dinner on June 17, 2004, to breakfast on June 20, 2004 and will cost approximately \$70.00 and must be purchased on June 17, 2004 during the registration time from 1:00 p.m. to 5:00 p.m.)

Please submit form online at <http://www.scied.science.doe.gov/nmsb/default.htm> by May 17, 2004.

**2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL
(Committee Members, Sponsors and Demographic Form)
Official Form is completed on-line**

Coordinator: _____ **Regional Site:** _____

Science Bowl Committee Members:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Sponsors:

Sponsor Name	Donated Items
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Regional Competition Demographic Information

Official Form is completed on-line

For DOE national reporting purposes, it is important to compile the gender and racial/ethnic background of students participating in the Regional Science Bowl. It is suggested that you have the coaches of all of your participating teams provide this information on their team members. Please complete the following items:

Number of Teams that Participated in all Regional Competitions: _____

Number of Students that Participated in all Regional Competitions: _____

Number of Males: _____

Number of Females: _____

Numbers of Team Participants by Racial/Ethnic:

_____ African American (having origins in any of the black peoples of Africa)

_____ Asian

_____ Pacific Islander (Micronesian or Polynesian)

_____ Caucasian (having origins in any of the original peoples of Europe, North Africa or the Middle East)

_____ Hispanic American (of Mexican, Puerto Rican, Cuban, Central/South America or other Spanish culture of origin, regardless of race)

_____ Native American Indian (having origins in any of the original peoples of North America and maintaining cultural identification through tribal affiliation or community recognition)

Submit On-line by May 17, 2004 at <http://www.scied.science.doe.gov/nmsb/default.htm>.

2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL
Winning Regional Team Media Information
Official Form is completed on-line

Please provide the following information:

_____ won the _____
Name of School/Team Regional Site

School Address _____ City _____

State _____ Zip _____ Phone () _____ Fax () _____

MEDIA CONTACTS: (List only those in the hometown of the winning school)

Newspaper _____ Newsroom Phone () _____

Week-end Newsroom Phone () _____

Newsroom Fax () _____ Education Reporter/City Editor _____

E-Mail Address _____

Newspaper _____ Newsroom Phone () _____

Week-end Newsroom Phone () _____

Newsroom Fax () _____ Education Reporter/City Editor _____

E-Mail Address _____

PLEASE INCLUDE NEWSROOM TELEPHONE NUMBERS ONLY!! (After-hours, if possible)
PLEASE VERIFY ALL NUMBERS!!

Television Stations (Include Network Affiliate, i.e. CBS, NBC, ABC, Fox)

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

News/Talk Radio Stations

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

_____ Newsroom Phone () _____ Fax () _____

NOTE: If uncertain of the team's local media outlets, contact the local Chamber of Commerce or reference the public telephone Directory.

Please submit this form online at <http://www.scied.science.doe.gov/nmsb/default.htm> by May 17, 2004.

**2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL
COORDINATOR VOLUNTEER FORM
Official Form is completed on-line**

_____ from _____
(Name of Coordinator) (Facility)

will attend the National Middle School Science Bowl as the designated Regional Science Bowl

Coordinator. I plan to arrive on _____
(date/time)

Telephone Number E-Mail Fax #

Check all boxes that apply

I am willing to:

- Assist with set up and registration at the Colorado School of Mines on June 17, 2004, 11:00-5:00 p.m. (specify time available) _____
- Coordinate with coaches to ensure that students attend all activities and events, including meals.**
- Crowd control and assist with Hydrogen Car Race, June 18, 2004
- Race judge for Hydrogen Car Competition
- Assist in getting all 20 teams onto the stage at the Awards Ceremony on June 19, 2004
- Bus Monitor for activity at NREL, Thursday evening, June 17, 2004, departing from Colorado School of Mines
- Bus Monitor for departing buses to airport on Sunday morning, June 20, 2004

At the academic competition, I am willing to be a:

- Moderator Scientific Judge Rules Judge Scorekeeper
- Timer Runner
- Shirt Size: Medium Large X-Large 2XL 3XL

Submit on line at <http://www.scied.science.doe.gov/nmsb/default.htm> by May 17, 2004:

**U.S. DEPARTMENT OF ENERGY
2004 National Middle School Science Bowl**

Coach Confidential Medical Information and Emergency Notification Form

Name _____ Birth Date _____ Sex: M _____ F _____

Street Address _____

City _____ State _____ Zip _____

Home Telephone () _____ SSN _____

Date of Last Tetanus Shot _____ Drug Allergies (✓ none or list): _____

Physician/HMO _____ Phone Number () _____

Medical Conditions or Previous Surgery (✓ none or list): _____

Regular Medications (✓ none or list): _____

Special Dietary Requirements (include food allergies) (✓ none or list): _____

Vegetarian: (✓) YES or NO

Special Physical and /or Transportation Needs (✓ none or list): _____

EMERGENCY NOTIFICATION INFORMATION

Emergency Contact (Required) _____ Phone () _____

Relationship to Coach _____

Medical/Hospital Insurance Carrier _____ Policy # _____

MEDICAL CARE and PUBLICITY CONSENT

I hereby authorize and consent to the administration of all medical and/or surgical treatment(s) by a licensed physician or hospital in the event I am not available to consult with the attending physician(s) and the attending physician(s) deem it advisable to proceed with such treatment(s). **I give permission to be photographed and videotaped at the National Middle School Science Bowl and for photographs and videos to be used for standard publicity purposes.**

Coach Signature _____ Date _____

FedEx original by May 17, 2004 to Linda Lung, NREL 1617 Cole Boulevard, Golden, CO 80401-3393, 303 275-3044

**2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL
TEAM COMMITMENT FORM/CODE OF CONDUCT
(one form per student team member)**

_____ from _____
Middle School _____ City _____ State _____ Zip _____
won the _____ 2004 Regional Science Bowl/Car Race Competition.
_____ Regional Site

As a member of the winning team, I will attend the National finals June 17-20, 2004, at the Colorado School of Mines, Golden, Colorado. I will arrive and depart, with my team, on the designated dates and be in attendance at all events and activities during the entire Science Bowl event.

The Department of Energy – Office of Science expects team members to conduct themselves professionally and in a manner that will bring honor to them, their school and coach, the competition, and the Department as a whole. We are providing each team member with this Code of Conduct to ensure that all participants understand the expectations upon arrival at the National Middle School Science Bowl in Golden, CO.

- **No team will be registered until all team members and coaches are present.**
- Guests will respect personal and public property. Repair costs for damages incurred to property will be billed to the middle school whose team is responsible.
- Possession or use of alcoholic beverages or illegal drugs is prohibited.
- Smoking or using other tobacco products is prohibited.
- Shirts and shoes are required inside all buildings at all times.
- Mattresses and other furniture will not be moved from one room to another or relocated within each room.
- Curfew will be at 10:30 each night, and all outside doors will be locked. Curfew means that all students will be expected to be in their rooms, and quiet, for the duration of the night.
- There will be no loud voices used in the hallways or rooms. Please be aware of the level of noise that you are making at all times, and respect those that may be trying to sleep in near-by rooms.
- **The use of profanity is strictly forbidden.** Always remember that you are a reflection of not only your school, but your parents and community as well.
- Sportsman-like conduct will be expected at all times. Please be respectful of the feelings of others whether you win or lose. All teams that are given the opportunity to travel to Golden, CO are winning teams and should, therefore, behave in a manner befitting gracious and appreciative winners.
- **Students must be accompanied by their coach at all times.**

If complaints are received from volunteers, other team members, coordinators, the Colorado School of Mines, etc., regarding a team's unacceptable behavior, the team will be disqualified from competing in the competition, and **may be sent home at their parents expense**, over-and-above the cost of the original ticket.

Print Student Name _____

Student Signature _____ **Date** _____

Parent Signature _____

Coaches Signature _____

Regional Coordinators Signature _____

NOTE: This form must be completed and signed in order to attend the National Finals.

FedEx Original Copy by May 17, 2004 to Linda Lung: NREL, 1617 Cole Boulevard, MS1713, Golden, CO 80401,
Phone: 303 275-3044

**National Middle School Science Bowl
CODE OF CONDUCT**

For adults traveling with team including coach and regional coordinator

The Department of Energy’s Office of Science expects all adults to conduct themselves professionally and in a manner that will honor their school, their community, the competition, and the Department. We are providing this Code of Conduct to each adult traveling with a team to ensure that all participants understand the expectations upon arrival at the National Middle School Science Bowl in Golden, Colorado.

Every adult who works with children understands the need for today’s youth to have positive adult role models. With this in mind, please remember that the National Middle School Science Bowl should not be viewed as a competition, but rather as an educational event meant to ignite students’ interest in math and science. In order to maintain a positive climate, we ask that any negative comments regarding the science bowl **not** be made within earshot of students. Any comments that do not add to a positive environment are not desirable and should be kept private.

We feel certain that at all times you will try to support all the participating students in a positive fashion. It has been our experience in the past 20 years of running similar events, that the excitement of competition can at times override the self control of the individual. Please keep this in mind since the last thing we want is for adults to be viewed in an adverse manner by students. Please remind students to consider the feelings of others and behave graciously both in winning and defeat.

Curfew will be at 10:30 each night, and all outside doors will be locked. Curfew means that all students will be expected to be quiet in their rooms, for the duration of the night. We would ask that you do a room check each night at 10:30 to ensure that your students are present and accounted for, and that they understand that they should remain in their rooms.

It is imperative that coaches remain with their teams at all times while at the Middle School Science Bowl. Team members should not be walking on campus without adult supervision. Coaches are expected to travel both to and from Golden, CO, with their team members.

Coach Signature _____ **Date:** _____

Regional Coordinators Signature _____

NOTE: This form must be completed and signed in order to attend the National Finals. Fax copy to Linda Lung 303-275-3076. FedEx Original Copy by May 17, 2004 to Linda Lung: NREL, 1617 Cole Boulevard, MS1713, Golden, CO 80401, Phone: 303 275-3044.

**U.S. DEPARTMENT OF ENERGY
2004 National Middle School Science Bowl**

Coordinator Confidential Medical Information and Emergency Notification Form

Name _____ Birth Date _____

Sex: M _____ F _____

Street Address _____

City _____ State _____ Zip _____

Home Telephone () _____ SSN _____

Date of Last Tetanus Shot _____ Drug Allergies (✓ none or list): _____

Physician/HMO _____ Phone Number () _____

Medical Conditions or Previous Surgery (✓ none or list): _____

Regular Medications (✓ none or list): _____

Special Dietary Requirements (include food allergies) (✓ none or list): _____

Vegetarian: (✓) YES or NO

Special Physical and /or Transportation Needs (✓ none or list): _____

EMERGENCY NOTIFICATION INFORMATION

Emergency Contact (Required) _____ Phone () _____

Relationship to Coordinator _____

Medical/Hospital Insurance Carrier _____ Policy # _____

MEDICAL CARE and PUBLICITY CONSENT

I hereby authorize and consent to the administration of all medical and/or surgical treatment(s) by a licensed physician or hospital in the event I am not available to consult with the attending physician(s) and the attending physician(s) deem it advisable to proceed with such treatment(s). **I give permission to be photographed and videotaped at the National Middle School Science Bowl and for photographs and videos to be used for standard publicity purposes.**

Coordinator Signature _____ **Date** _____

FedEx Original by May 17, 2004 to Linda Lung, NREL 1617 Cole Boulevard, MS 1713, Golden, CO 80401-3393, 303 275-3044

2004 NATIONAL MIDDLE SCHOOL SCIENCE BOWL

Student Confidential Medical Information, Emergency Notification, Parental Consent for Student Participation and Media Release Form

Name _____ Birth Date _____

Sex: M _____ F _____

Street Address _____

City _____ State _____ Zip Code _____

Home Telephone () _____ SSN _____

Physician/HMO Name _____ Phone () _____

Date of Last Tetanus Shot _____ Drug Allergies (none or list): _____

Medical Conditions or Previous Surgery _____

Regular Medications (none or list): _____

Special Dietary Requirements (include food allergies) (none or list): _____

Vegetarian: () YES or NO

Special Physical and/or Transportation Needs (none or list): _____

FAMILY INFORMATION

Father's Name _____ Work Phone () _____

Mother's Name _____ Work Phone () _____

Legal Guardian (if applicable) _____ Work Phone () _____

Emergency Contact (Required) _____ Phone () _____

Relationship to Student _____

Medical/Hospital Insurance Carrier _____ Policy # _____

CONSENT TO MEDICAL CARE AND TREATMENT

Parental consent is required before a hospital’s emergency department can give medical treatment to a minor. Every effort will be made to contact parents, but a completed consent form will expedite treatment.

I hereby authorize and consent to the administration of all medical and/or surgical treatment(s) to my child by a licensed physician or hospital in the event I am not available to consult with the attending physician(s), attempts to contact me have been unsuccessful, and the attending physician(s) deem it advisable to proceed with such treatment(s).

Signature of Parent or Legal Guardian

Date

PARENTAL CONSENT FOR STUDENT PARTICIPATION

I, (Mr., Mrs., Ms.) _____, the parent or legal guardian, as appropriate, of _____, give my consent for him/her to participate in **all** activities associated with the Department of Energy 2004 Regional and/or National Middle School Science Bowl competitions.

I understand that this will include participation in special events and activities related to the Department of Energy 2004 Regional and/or National Middle School Science Bowl competitions, and will include travel under the supervision of the team coach.

I hereby release and discharge the Department of Energy and the United States Government, their officers, agents, servants, and employees, and persons, firms, or corporations contracting with, or acting on behalf of, the Department of Energy or the United States Government with respect to all activities associated with the Department of Energy 2004 Regional and/or National Middle School Science Bowl competitions, as well as their heirs, executors, administrators, successors, or assigns, from any cause of action of any nature whatsoever arising from my child’s participation in any and all activities associated with the Department of Energy 2004 Regional and/or National Middle School Science Bowl competitions.

I give permission for my child to be photographed and videotaped at the National Middle School Science Bowl and for photographs and videos to be used for standard publicity purposes.

Signature of Parent or Legal Guardian

Date

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