

## **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](mailto: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 10 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.