



# W. I. S. E. 2003

## Wonders of the Imagination Science Exhibition

First annual community science fair offered by Bedford Public Schools Community Education Program

### Scoring Booklet

Project No. (to be assigned at the science fair): \_\_\_\_\_

Type of Project: Collection \_\_\_ Model \_\_\_ Experiment \_\_\_

Branch of Science: Biology \_\_\_ Chemistry \_\_\_ Earth Science \_\_\_ Math and Computer Science \_\_\_ Physics \_\_\_ Social Science \_\_\_

Working Title of Project: \_\_\_\_\_

#### Instructions to Coach and Judge(s):

- Record the student's score in the "Student Score" column.
- For a collection, score each criterion marked "C", for a model, "M", and for an experiment, "E."
- Use each criterion's "Rating Factor" to determine the scoring for the item. Score zero if the item is poorly done.  
Fair = rating factor, Good = two times the rating factor, Superior = three times the rating factor  
Outstanding = four times the rating factor, but this should rarely be given.  
For example, if the rating factor = 2, then fair = 2, good = 4, superior = 6, and outstanding = 8.

#### Instructions to Coach:

- Complete sections A, B, and C.
- Unless indicated otherwise, score zero when the item is not done, such as no report (section B) or no interview (section D).
- Record the "Coach's Score" for sections A, B, and C.
- Write any constructive comments in the "Comments of Coach" section.
- Date and sign the scoring booklet.

#### Instructions to Judge(s):

- If the project is disqualified for one or more of the following reasons, check the box(es) and do not continue.

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | a. The project does not have a freestanding display board.                             |
| <input type="checkbox"/> | b. The display or the items in front of the display do not fit in the designated area. |
| <input type="checkbox"/> | c. Any part of the project shows the student's name or photograph.                     |
| <input type="checkbox"/> | d. The display includes a live animal.   |
| <input type="checkbox"/> | e. The display uses an open flame.   |
| <input type="checkbox"/> | f. The display uses flammable chemicals or explosive, toxic, or caustic substances.    |
| <input type="checkbox"/> | g. The display does not use normal safety precautions for other chemicals.             |

- Make any scoring adjustments to the "Coach's Score" in sections A, B, and C.
- Record the "Final Score" for sections A, B, and C.
- Interview the student and complete section D.
- Record the "Final Score" for section D and the "Grand Total Score."
- Write any constructive comments in the "Comments of Judge(s)" section.
- Date and initial the scoring booklet.

C	M	E	Rating Factor	Student Score	Section	Item No.	Scoring Criteria
					<b>A. WORKBOOK</b>		
		E	1	<input type="text"/>		a. Question or Problem	
		E	1	<input type="text"/>		1. The question or problem is stated clearly and concisely.	
		E	1	<input type="text"/>		2. The question or problem is sufficiently narrow in scope; it addresses a single, clear issue.	
						3. The question or problem is original or creative.	
		E	1	<input type="text"/>		b. Hypothesis	
		E	1	<input type="text"/>		1. The hypothesis is clearly stated.	
		E	1	<input type="text"/>		2. The hypothesis is simple.	
		E	1	<input type="text"/>		3. The hypothesis is logical.	
		E	2	<input type="text"/>		4. The hypothesis is testable.	
		E	2	<input type="text"/>		c. Experimental Design	
		E	1	<input type="text"/>		1. The experimental design is comprehensive.	
		E	1	<input type="text"/>		2. The experimental design is creative.	
		E	1	<input type="text"/>		3. The experimental design is flexible enough to allow for handling unanticipated problems.	

C	M	E	Rating Factor	Student Score	Section	Item No.	Scoring Criteria
		E	1	<input type="text"/>		4.	The experimental design logically tests the hypothesis.
		E	1	<input type="text"/>		5.	The method of data collection is appropriate.
		E	1	<input type="text"/>		6.	The correct kind of data is collected.
		E	1	<input type="text"/>		7.	Appropriate controls (the factors that remain the same during an experiment) are established.
		E	1	<input type="text"/>		8.	Variables (the factors that change during an experiment) are clearly defined.
		E	1	<input type="text"/>		9.	The variables are such that they can be accurately measured.
						<b>d.</b>	<b>Materials and Equipment</b>
		E	1	<input type="text"/>		1.	The listing of materials and equipment is accurate.
		E	1	<input type="text"/>		2.	The student uses appropriate materials and equipment for the experiment.
		E	2	<input type="text"/>		3.	The student designed special experimental equipment.
						<b>e.</b>	<b>The Experiment</b>
		E	2	<input type="text"/>		1.	The experimental data is organized and neatly presented.
		E	5	<input type="text"/>		2.	The experimental design was rigorously followed (allowing for problems encountered), including the planned use and budgeting of materials and equipment and the systematic plan of work.
		E	2	<input type="text"/>		3.	Sample sizes and population sources were appropriate.
		E	2	<input type="text"/>		4.	The quality and quantity of data collected from each experiment were appropriate.
		E	2	<input type="text"/>		5.	The data measurements and calculations were done accurately.
		E	2	<input type="text"/>		6.	The variables were well controlled during the experiments.
		E	2	<input type="text"/>		7.	The student repeated each experiment to assure accuracy and consistency of results.
		E	2	<input type="text"/>		8.	The number of repeated trials was appropriate.
		E	2	<input type="text"/>		9.	The data were thoroughly and systematically analyzed in interpreting the results.
		E	2	<input type="text"/>		10.	Appropriate statistical methods were used to analyze and interpret the results.
		E	2	<input type="text"/>		11.	The experiment could be replicated by another student.
						<b>f.</b>	<b>Conclusions</b>
		E	2	<input type="text"/>		1.	The student clearly states if the experimental results do or do not support the hypothesis.
		E	2	<input type="text"/>		2.	The experimental results do support the conclusions.
		E	2	<input type="text"/>		3.	The conclusions are supported by the student's other scientific inquiry (consultation with mentors and reference to scientific literature).
		E	2	<input type="text"/>		4.	A person with an average knowledge of science is able to understand the conclusions.
						<b>g.</b>	<b>The Model</b>
	M		2	<input type="text"/>		1.	The data is organized and neatly presented.
	M		8	<input type="text"/>		2.	The design notes show evidence of careful work.
						<b>h.</b>	<b>The Collection</b>
	C		2	<input type="text"/>		1.	The data is organized and neatly presented.
	C		8	<input type="text"/>		2.	The student recorded when, where, and how the specimens were collected.
						<b>ii.</b>	<b>Budget</b>
	C	M	E	2	<input type="text"/>	1.	A comprehensive financial budget for materials and equipment was prepared.
						<b>j.</b>	<b>Schedule</b>
	C	M	E	2	<input type="text"/>	1.	A comprehensive schedule or systematic plan of work was prepared.
						<b>k.</b>	<b>Mentoring</b>
	C	M	E	2	<input type="text"/>	1.	Parts of the project that represent other people's work are clearly documented.
	C	M	E	2	<input type="text"/>	2.	The kind and amount of help received are appropriate for the age of the student.
						<b>l.</b>	<b>Scientific Inquiry</b>
	C	M	E	1	<input type="text"/>	1.	The project is appropriately challenging for a student of this age.
	C	M	E	3	<input type="text"/>	2.	The student interviewed mentors who had information or knowledge about the topic.
	C	M	E	3	<input type="text"/>	3.	The student researched the scientific literature.

C	M	E	Rating Factor	Student Score	Section	Item No.	Scoring Criteria
C	M	E	2	<input type="text"/>		4.	A bibliography is included, with citations given in standard format.
C	M	E	2	<input type="text"/>		5.	The project contributes to scientific knowledge.
C	M	E	2	<input type="text"/>		6.	Additional areas of investigation are identified for further study.
C	M	E	4	<input type="text"/>		m.	Social Benefit
C	M	E	4	<input type="text"/>		1.	The project fully promotes the wise use of science.
				<input type="text"/>	COACH'S SCORE FOR SECTION A		
				<input type="text"/>	JUDGE'S SCORING ADJUSTMENT (plus or minus)		
				<input type="text"/>	FINAL SCORE FOR SECTION A (All Good = 70 points for collections and models, 160 points for experiments)		

<b>B. REPORT</b>							
E			2	<input type="text"/>		1.	The workbook section on "Question or Problem" is summarized.
E			2	<input type="text"/>		2.	The workbook section on "Hypothesis" is summarized.
E			4	<input type="text"/>		3.	The workbook section on "Experimental Design" is summarized.
E			1	<input type="text"/>		4.	The workbook section on "Materials and Equipment" is summarized.
E			6	<input type="text"/>		5.	The workbook section on "The Experiment" is summarized.
E			4	<input type="text"/>		6.	The workbook section on "Conclusions" is summarized.
M			4	<input type="text"/>		7.	The workbook section on "The Model" is summarized.
C			4	<input type="text"/>		8.	The workbook section on "The Collection" is summarized.
C	M	E	1	<input type="text"/>		9.	The workbook section on "Budget" is summarized.
C	M	E	1	<input type="text"/>		10.	The workbook section on "Schedule" is summarized.
C	M	E	1	<input type="text"/>		11.	The workbook section on "Mentoring" is summarized.
C	M	E	3	<input type="text"/>		12.	The workbook section on "Scientific Inquiry" is summarized.
C	M	E	1	<input type="text"/>		13.	The workbook section on "Social Benefit" is summarized.
C	M	E	1	<input type="text"/>		14.	The report title is descriptive.
C	M	E	1	<input type="text"/>		15.	The report includes an abstract.
C	M	E	3	<input type="text"/>		16.	The report is well organized.
C	M	E	3	<input type="text"/>		17.	The report is clearly written.
C	M	E	3	<input type="text"/>		18.	Spelling and grammar are correct.
C	M	E	3	<input type="text"/>		19.	Visual aids (tables, charts, graphs, diagrams, and photographs) are used effectively.
				<input type="text"/>	COACH'S SCORE FOR SECTION B		
				<input type="text"/>	JUDGE'S SCORING ADJUSTMENT (plus or minus)		
				<input type="text"/>	FINAL SCORE FOR SECTION B (All Good = 50 points for collections and models, 80 points for experiments)		

<b>C. DISPLAY</b>							
E			3	<input type="text"/>		1.	The workbook section on "Question or Problem" is summarized. (MINUS 9 points if not included)
E			3	<input type="text"/>		2.	The workbook section on "Hypothesis" is summarized. (MINUS 9 points if not included)
E			6	<input type="text"/>		3.	The workbook section on "Experimental Design" is summarized. (MINUS 18 points if not included)
E			1	<input type="text"/>		4.	The workbook section on "Materials and Equipment" is summarized. (MINUS 6 points if not included)
E			7	<input type="text"/>		5.	The workbook section on "The Experiment" is summarized. (MINUS 21 points if not included)
E			3	<input type="text"/>		6.	The display includes a model of the experimental process.
E			6	<input type="text"/>		7.	The workbook section on "Conclusions" is summarized. (MINUS 18 points if not included)
E			1	<input type="text"/>		8.	The "Conclusions" section clearly states if the experimental results do or do not support the hypothesis.
M			6	<input type="text"/>		9.	The workbook section on "The Model" is summarized. (MINUS 18 points if not included)
M			3	<input type="text"/>		10.	The model is skillfully constructed.
M			3	<input type="text"/>		11.	The model is scientifically accurate.
M			3	<input type="text"/>		12.	The model is dynamic. (The model actually works and is not just a static, non-working model.)
C			6	<input type="text"/>		13.	The workbook section on "The Collection" is summarized. (MINUS 18 points if not included)
C			3	<input type="text"/>		14.	The specimens are attractively displayed.
C			3	<input type="text"/>		15.	The labeling of the specimens is scientifically accurate.
C			3	<input type="text"/>		16.	The specimens are scientifically categorized.
C	M	E	1	<input type="text"/>		17.	The workbook section on "Budget" is summarized.

C	M	E	Rating Factor	Student Score	Section	Item No.	Scoring Criteria
C	M	E	1	<input type="text"/>		18.	The workbook section on "Schedule" is summarized.
C	M	E	1	<input type="text"/>		19.	The workbook section on "Mentoring" is summarized.
C	M	E	3	<input type="text"/>		20.	The workbook section on "Scientific Inquiry" is summarized.
C	M	E	3	<input type="text"/>		21.	The workbook section on "Social Benefit" is summarized.
C	M	E	1	<input type="text"/>		22.	The display is physically well-constructed.
C	M	E	1	<input type="text"/>		23.	The title (statement, phrase, or question) captures the viewer's attention. (MINUS 6 points if not included)
C	M	E	3	<input type="text"/>		24.	The overall display has visual appeal; it is neat, creative, and well-organized.
C	M	E	1	<input type="text"/>		25.	Each section of the display is clearly labeled.
C	M	E	3	<input type="text"/>		26.	The text is clearly written.
C	M	E	3	<input type="text"/>		27.	Spelling and grammar are correct.
C	M	E	3	<input type="text"/>		28.	Visual aids (tables, charts, graphs, diagrams, and photographs) are used effectively.
C	M	E	3	<input type="text"/>		29.	The display is easy to understand relative to the project's complexity.
C	M	E	3	<input type="text"/>		30.	The display provides for hands-on learning.
C	M	E	0	( )		31.	Bacteria or viruses are <u>not</u> in sealed containers. (MINUS 9 points)
C	M	E	0	( )		32.	Water or other fluids are <u>not</u> in watertight containers. (MINUS 9 points)
				<input type="text"/>	COACH'S SCORE FOR SECTION C		
				<input type="text"/>	JUDGE'S SCORING ADJUSTMENT (plus or minus)		
				<input type="text"/>	FINAL SCORE FOR SECTION C (All Good = 90 points for collections and models, 120 points for experiments)		
<b>D. INTERVIEW</b>							
	E		4	<input type="text"/>		1.	The student clearly explains the experiment, including how it tested the hypothesis.
	E		4	<input type="text"/>		2.	The student clearly understands if the experimental results do or do not support the hypothesis.
	M		8	<input type="text"/>		3.	The student clearly understands the scientific principles of the model.
	C		8	<input type="text"/>		4.	The student clearly explains how the collection is categorized.
	C	M	4	<input type="text"/>		5.	The student understands how this project could be improved or expanded.
	C	M	4	<input type="text"/>		6.	The student understands the research and where it can lead to in the future.
	C	M	3	<input type="text"/>		7.	The student understands if and how the project provides a social benefit.
	C	M	4	<input type="text"/>		8.	Judge's evaluation of the overall quality of the project
				<input type="text"/>	FINAL SCORE FOR SECTION D (All Good = 40 points for collections, models, and experiments) (MINUS 60 points if the student fails to appear for a scheduled interview)		
				<input type="text"/>	GRAND TOTAL SCORE = Final scores for sections A through D		
Comments of Coach							
Date				Signature of Coach			
Comments of Judge(s)							
Date				Initials of Judge(s)			
Award Level				Name of Award(s)			