

# IEEE Berkshire Section

## Annual High School STEM Research Challenge – 2024

This section covers the "substance" of the 2024 contest.

### SELECTION OF TOPIC (Please refer to “[www.corestandards.com](http://www.corestandards.com)” noted below for details.)

- Establish and refine a topic or thesis that addresses the specific task and audience." **1,2,3**
- Select a current technical or scientific topic that is interesting to you; narrow it to a manageable size. Why is it interesting? Did you have prior opinions? Are you attempting to find out additional information? What did you learn from your research?
- Choose a current topic from the following areas: a scientific event; a discovery; an ongoing experiment; an invention.

### STRUCTURE

- Write with precision. Demonstrate a command of the subject. Use language that is clearly your own. **4,5**
- Include in your paper a descriptive title, a stated purpose, supporting scientific details, personal conclusions, and questions for future consideration.

### RESEARCH

- Gather the information needed to build an argument, provide an explanation, or address a research question. **6,7**
- Make use of varied but high-quality sources; e.g., library and school books, professional journals, professional web sites that end with ".org," and educational websites that end with ".edu."

### SOURCES

- Represent and cite accurately the data, conclusions, and opinions of others, effectively incorporating them into one's own work while avoiding plagiarism." **8**
- Gather information from the work of others, but be certain to credit the sources in a bibliography, including proper citing in your text, so the reader can locate and verify them. Also cite your sources for the drawings, photos and data presentations you have incorporated in your paper.
- Use your school's customary format or the APA or MLA as a guide for your citations.

### ANALYSIS

- "Create a logical progression of ideas or events, and convey the relationships among them.
- Support and illustrate arguments and explanations with relevant details, examples, and evidence." **9**
- Describe what the various authors or experiments are attempting to demonstrate. Do their ideas follow in a sequential or logical path? Are there areas of uncertainty and disagreement? How do your sources help you form a conclusion?
- Use scientific terminology that is technically correct, but develop your ideas and logic in your own language. Avoid using a series of extensive quotations from your sources.

### CONCLUSIONS

- State the conclusions you have reached, your opinions, areas you believe are unsettled. Include thoughtful questions for future consideration that are relevant to the topic.

**(Notes)1,2,3,4,5,6,7,8,9** - English Language Arts Standards, (RST.9-10.[1-10]) Section on Writing.  
*The Common Core State Standards Initiative*. Retrieved from

**[http://www.corestandards.org/assets/CCSSI\\_ELA%20Standards.pdf](http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf)**

\* A personally conceived/conducted experiment will be considered for 'bonus' credit and must examine the relationship of the logical structure of the arguments posed in the Hypothesis to the empirical data, keeping in mind that a majority of original hypotheses fail their first trials. (See "Evaluating Claims, or do we have to take the scientist's word for it?" Janet D. Stemweld, <https://blogs.scientificamerican.com/doing-good-science/evaluating-scientific-claims-or-do-we-have-to-take-the-scientists-word-for-it/>)

### **SCORING TEMPLATE**

- 1 10 points - SELECTION OF TOPIC + STRUCTURE
- 2 30 points - RESEARCH + SOURCES
- 3 60 points - ANALYSIS + CONCLUSIONS

(# 1&2 if well done, can help a paper be a winner, if poorly done or missing parts, can be a 'veto' on it.)