

Application Labor

Brief Article Addressing a Physics Question

Purpose

To develop your skills in gathering information about and explaining a topic in physics.

Method

Select a question from *The Flying Circus of Physics*, look up further information about it, and write a brief article about it.

Overview

Jearl Walker's *The Flying Circus of Physics* contains a multitude of questions regarding the physics behind both everyday and unusual phenomena. Better still, it also contains brief answers to the questions, and an accompanying web site cites references to where they are discussed in greater detail. Your job is to write an engaging article answering a *Flying Circus* question of your choice.

Graded Components

Question and answer: The question from the book (written out, not merely referenced) and a brief summary of the answer. The book has answers, but the answer you write here should actually make sense to you instead of just being a copy of the book's answer.

Instructor conference: Occurs after the question and answer are submitted. This is our chance to make sure that you have a good understanding of the physics.

Rough draft: Presented to the instructor and to your group members prior to final submission. Your group members will review it and give you constructive comments.

Feedback: Your contributions to your group members' reports. You will help your group mates craft articles that are accurate, clear, and engaging.

Annotated bibliography: A list of the sources consulted for your answer. For each source,

- summarize the information it contains that is relevant to the physics question,
- evaluate how reliable the information is,
- state how useful the source is for composing your answer, and
- explain why the source is useful or not.

Final report: The article itself. It is an HTML file or set of files, with accompanying graphics files. It must be submitted by the deadline on physical media or as an e-mail attachment.

Oral presentation: Present the question and explain the answer to your classmates.

What to Do

Check out a copy of *The Flying Circus of Physics* from the Reserve collection in Coe library. (There are three copies on reserve.) Read through the book to find a question that interests you. Find some references by following the instructions at the web site www.flyingcircusofphysics.com. Look up the references, if they are available in the library. Try to obtain them by ILL if they are not.

Also try to find additional references, either printed or on the web. You will need to decide how reliable each of your sources is—they may not all agree, and even if they do, they may not be trustworthy.

Once you have selected your question, send me a brief summary of it and its answer. We may wish to discuss it to make sure your understanding is good. Submit a rough draft to your group and obtain drafts from your group mates. Evaluate your group mates' drafts. Discuss your draft with your group before the final report is due. You may choose to meet with me either before or after you discuss your draft with your group.

The final report will be submitted as an HTML file for posting on the class web site.

Finally, you will briefly present your question and answer orally to the class.

Submission of the article denotes your permission for me to publish it on the web and for others to reproduce it on other media in accordance with a Creative Commons license of your choosing. (see <http://creativecommons.org/license/?format=text>.) You will be credited as the copyright holder on all copies.

Dates and Deadlines

Sep 28	Labor introduced
Oct 9	Submit question and answer
Oct 12–16	Instructor conference
Oct 19	Rough draft submitted to group members
Oct 21	Group review of draft
Oct 23	Feedback reports due
Oct 26	Written report and annotated bibliography due
Oct 30	Oral presentation

Scoring

Question and Answer 5%

This is NOT the rough draft! It does not need to be catchy or exciting. It only needs to communicate to me your understanding of the scenario.

2% for having the question written out completely,
3% for having the answer written out in your words.

Instructor Conference 5%

Show up on time, get the credit.

Rough Draft 5%

Although this is a draft, it should be more complete than the question and answer submitted earlier. Now you are trying to write something that an ordinary person would actually want to read.

Submit a hard copy of your rough draft to me and each of your group mates on time, get the credit.

Feedback 10%

The focus of your feedback to your group mates' rough drafts should be content, organization, and presentation, NOT mechanics. Help your group mates write articles with punch! Does the explanation make sense? Would you want to read it if it weren't required? After beginning the article, did you care what the answer would be?

Write in paragraph form the comments and suggestions you made for each of your group mates' drafts. Discuss each draft in turn, not concurrently.

0–5	Focuses on mechanics rather than content.
7	Evaluates the logic, accuracy, and plausibility of the explanation.
8	As previous, plus addresses interest level of the draft.
9	As previous, plus offers constructive suggestions.
10	As previous, plus writing is organized and engaging.

Since each student comments on several drafts, the score received is the average of the scores for the separate drafts.

Annotated Bibliography 20%

Not every source you find will be equally valuable for your purposes. Some will be written at the wrong level, some won't answer the questions you have, some might be written to promote a fringe philosophy or sell products rather than to promote understanding of science. You need to figure out what's good and what's not!

The annotated bibliography is a record of all the sources you consulted in researching your question. It contains:

- the standard look-up information, complete enough for someone else to be able to find the source. References located from EBSCO host must contain the primary citation information;
- a brief summary of the contents and creator (“Max Planck’s original derivation of the black-body radiation formula written in German,” “A popular Ukrainian song about rainbows,” etc.);
- how useful the source was to you and why (“this was an awesome article that explained exactly what the question was about using examples that I could

- understand,” “this article was more about how to paint a rainbow than about how rainbows form,” etc.); and
- how credible you found the source and why (“I trust this article because *Scientific American* has a good reputation,” “I read this web site skeptically because it was written by a lobbying organization,” “It just didn’t seem right to me,” etc.).

The bibliography must list at least three references, at least one of which must be a non-internet source other than *The Flying Circus* itself. Journal articles also accessible on the internet qualify as non-internet sources.

0–10	Fewer than three sources, sources all from the Internet, or incomplete citations.
13	Contains at least three sources including one non-Internet source, the contents of all of which are adequately summarized.
15	As previous, plus all sources are evaluated for reliability and utility.
17	As previous, plus assessments of reliability and utility are explained.
20	As previous, plus all summaries, evaluations, and explanations use specific examples and illustrations to justify your assessments.

HTML-Format Article 45%

This is the actual product that will be put on the class web page. It should be an engaging, accurate, and interesting discussion of a physical phenomenon. It should be long enough to explain the science without oversimplification but brief enough to maintain a reader’s interest. Because “a picture says a thousand words,” attractive, informative graphics are encouraged. Include your choice of Creative Commons license at the end.

It should be written at a level suitable for a newspaper reader or Internet surfer. If you choose instead to write an article geared toward elementary school students, make sure that the scientific explanation is still accurate and complete (not oversimplified or “dumbed down”).

If your report contains graphics (as it should), include them also as separate files. (Submitting graphics ahead of time is a very good idea.) Reports not in the form of functional HTML files will not be accepted. (That means zero credit.)

0–25	Article is unclear, incorrect, or incomplete, or HTML file is not functional.
30	Explanation is correct and complete. HTML errors are minor and rare.
35	The explanation is easy to follow at the appropriate reading level. No HTML problems.
40	As previous, plus article is concise and interesting. File concludes with an adequate Creative Commons license statement.
45	As previous, plus article is especially engaging: graphics are informative and arresting, phrasing is clever and lively; makes the reader want to share it with a friend.

The score for the written article is adjusted by its ESWE multiplier.

Oral Presentation 10%

You will orally share your question and answer with the class. Your explanation of the science should be correct, complete, and clear. Speak audibly and with animation, and maintain eye contact with your audience.

0–5	Inaudible, unintelligible, or incomprehensible.
6	Speaks clearly and understandably.
7	As previous, plus scientific explanation is correct.
8	As previous, plus presentation is clear, organized and concise.
9	As previous, plus maintains eye contact with class.
10	As previous, plus conveys enthusiasm.