

The Power of Ten

Scenario:

The California Department of Education has issued a Request for Proposals to develop materials to help students learn the concept of the powers of 10 and its many applications in the world around us, from the very small to the very large. The committee chairperson has emphasized that they want interesting, engaging materials that use up-to-date technology appealing to fifth grade students. Your team is a group of university mathematicians who have formed a consulting firm and would like to win this contract. The chairperson reminds you that they are looking for new, original materials and that most such materials on the Internet are copyrighted. You may bring a real object as a starting point for the scale of smaller and larger.

Possible topics to cover (these are only suggestions and are not a requirement for a superior presentation):

1. What technology could be used to make the materials?
2. What images would be appealing to students and demonstrate the applications clearly?
3. What practical use could these materials address?
4. Give some examples of how your materials would make your current math book easier to understand.
5. Where could these materials find application outside of a fifth grade mathematics lesson?
For example, scale:
 - a. sub-atomic particles to the universe
 - b. a fifth grader's allowance to the national budget
6. What jobs might use the powers of 10?

Possible Sources

Newspapers, scientists, mathematicians, library books, videos, encyclopedias, science textbooks
ERS Portal sources: Facts on File, United Streaming, California Streaming, World Book Online, Associate Press Extensive Photo Archive and Thinkfinity: <http://www.erslibrary.org>

Internet websites:

Florida State University: Science, Optics and You

<http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10/>

Eames Office <http://www.powersof10.com/index.php?mod=education>

Wikipedia: http://en.wikipedia.org/wiki/Large_numbers

Wikipedia: http://en.wikipedia.org/wiki/Small_number

Wikipedia: http://en.wikipedia.org/wiki/Order_of_magnitude

Bibliography

Be sure to have a printed bibliography to hand to the judges before you begin your presentation. You are encouraged to cite all of your sources including graphics. A simple web tool to organize your bibliography can be found at <http://citationmachine.net/>.