

Big Numbers

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According to a *Burlington Free Press* article dated 10/24/93, this large number was mentioned with others as amounts of money that are spent by the federal government.

"The granddaddy of all the unfilled schemes was President Ronald Reagan's Strategic Defense Initiative, dubbed 'Star Wars.' In 10 years, taxpayers poured \$30 billion into that program with very little to show for it."

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Grade Levels 6 - 8

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Context

At the beginning of the year we study large numbers. Naming and writing numbers to the billions. I wanted students to get a better understanding of how large the numbers we were studying were. Putting the number in context allowed them to think of the number as a real quantity rather than just an abstract set of digits. The class brainstormed some areas that students could link the number to such as science and social studies. Most students were quite surprised by their findings.

What This Task Accomplishes

This task allows students to investigate and become more familiar with large numbers that they may hear on the radio, see on television or read in the newspapers. Since the number was too big for most calculators, the students had to find alternative ways of working with the large numbers.

What the Student Will Do

Most students brainstormed among themselves until they came up with an idea they liked. Many had to go to other sources for information.

Time Required for Task

50 minutes

Time can easily be extended to cover several days if you want to make this a larger project.

Interdisciplinary Links

Big Numbers

Exemplars

Because they are comparing 30 billion to other things, there are many possibilities for interdisciplinary links such as science (molecules, the size of the universe) and social studies (circumference of earth, number of soldiers killed in all wars or any particular war or set of wars).

Teaching Tips

Many good ideas were a spin off of those presented in the short brainstorming session the class had. If you want to extend this project, you can encourage students or teams of students to do library research to develop their ideas.

Suggested Materials

Availability of reference materials (This makes a great library project.)

Possible Solutions

Solutions will vary, but the solution should give the reader an idea of how large 30 billion is.

Benchmark Descriptors

Novice

The solution does not really address the task in a meaningful way. Just talking about the number of zeros after the number does not give the reader a feeling for how large 30 billion is.

Apprentice

The student has the idea that they are to link 30 billion to some context, but the information is too vague. How many people are in Vermont? New England? There is an incomplete explanation of the student's reasoning.

Practitioner

The solution shows a deep understanding of the task. The student shows how many times \$30 billion will stretch end-to-end around the equator. The student's strategy is clearly explained and s/he uses mathematical notation effectively.

Expert

The student showed a deep understanding of the problem. Not only did s/he explain two ways to describe 30 billion, but s/he also showed some important relationships between place values and the use of exponents.