

- ? Ask students to name the largest number they know. Hopefully some students will say a googol or a googolplex.
- ? Ask students to name an example when we would we ever use numbers this large. Large numbers are used in *determining distances in space, numbering all insects in the world, estimating all the sand on all the beaches, etc...*

The name googol and googolplex were thought up by the 9 year-old nephew of a college math professor. A googol is the number 1 followed by 100 zeros. A googolplex is a 1 followed by 10 to the power of 100 zeros (10^{100}).

Give each student a **strip of register paper** and have them race to see who can write the number googol the fastest. While the students are writing 1 with 100 zeros after it on the register tape, the teacher should write a 10^{100} on his/hers. This is the exponential form of writing googol.

- ? Ask students to compare the two ways to write a googol.

When bankers are trying to figure out Bill Gates' worth, they write 27×10^9 . In their journals have the students write 27,000,000,000 in both long and exponential form.

When the US Federal Reserve discusses the US deficit as of March 2006, its total is $\$8 \times 10^{12}$ (eight trillion dollars). In their journals, have students write 8,000,000,000,000 in both long and exponential form.

The average US salary is roughly \$ 50,000, or $\$5 \times 10^4$. In their journals have the students write 50,000 in both long and exponential form.

Read the story **HOW MUCH IS A MILLION** by David M. Schwartz

MATERIALS:

- Register Paper
- *How Much is a Million* by David Schwartz