



## HOW MUCH IS A MILLION? by David Schwartz

# 1,000,000,000

I always have found it difficult to picture how large a million of anything must be. This spring I attended a lecture at Sacred Heart University and learned these simple facts: one million seconds = 11 and 1/2 days; one billion seconds = 32 years; one trillion seconds = 32,000 years.

These facts may help your students but they also need something they can see or touch. Let us use a roll of toilet paper as a model.

**MATERIALS:** roll of toilet paper, LARGE area

**ACTIVITY:** Find an area where you can completely unroll your roll of toilet paper. Once you have your task, ask a second student to unroll another roll at a right angle to one end of yours. Now you can see 2000 sheets. If you add a third and fourth roll, you have a square, 1000 X 1000 sheets = 1,000,000 sheets if you could fill in the square.

**TEACHER NOTES:** This is a great activity to do outside in the spring or at the end of the year. You will need a very large area and you will need to do some research ahead of time to make sure you can unroll two rolls of toilet paper for the length and width of the square. The visual affect of this activity will leave a lasting impression on anyone who observes it - young or old.

**STANDARDS:**

**BSL:** 1.1, 1.3, 1.9, 2.1, 3.3, 9.1, 11.2

**NCTM:** 1a, 1b, 1c, 1d, 1e

**SCS:** A1, E2, H1, H2

**WEB LINK:** [www.astrosociety.org/education/activities/handson.html](http://www.astrosociety.org/education/activities/handson.html)

This Astronomical Society of the Pacific website provides a sampling of hands-on activities from Project ASTRO™, The Universe at Your Fingertips, Universe in the Classroom, and Family ASTRO. Under Family ASTRO try the Toilet Paper Solar System activity. The materials are inexpensive (cheap toilet paper), but you do need space. The author has three versions: 1000 sheets, 200 sheets, and 100 sheets.

Swartz, David. How Much Is A Million? Scholastic Inc., 1985. ISBN#0-590-33966-4.