Lesson 8: Estimating Quantities

Classwork

Exercise 1
The Federal Reserve states that the average household in January of 2013 had $7,122 in credit card debt. About how many times greater is the U.S. national debt, which is $16,755,133,009,522? Rewrite each number to the nearest power of 10 that exceeds it, and then compare.

Exercise 2
There are about 3,000,000 students attending school, kindergarten through Grade 12, in New York. Express the number of students as a single-digit integer times a power of 10.

The average number of students attending a middle school in New York is $8 \times 10^2$. How many times greater is the overall number of K–12 students compared to the average number of middle school students?
Exercise 3

A conservative estimate of the number of stars in the universe is $6 \times 10^{22}$. The average human can see about 3,000 stars at night with his naked eye. About how many times more stars are there in the universe compared to the stars a human can actually see?

Exercise 4

The estimated world population in 2011 was $7 \times 10^9$. Of the total population, 682 million of those people were left-handed. Approximately what percentage of the world population is left-handed according to the 2011 estimation?

Exercise 5

The average person takes about 30,000 breaths per day. Express this number as a single-digit integer times a power of 10.

If the average American lives about 80 years (or about 30,000 days), how many total breaths will a person take in her lifetime?