Lab 4 Worksheet: Toilet Paper and The Moon (10 points)

Name (first and last)	NetID

Assume that the thickness of toilet paper is ~0.005 inch. Pretty thin, isn't it.

- Figure out how far the Moon is from Earth (google might come in handy).

- When we fold a single sheet of toilet paper once, its thickness is going to be 0.01in. If we fold that folded sheet again, the thickness is going to be 0.02in (this is four times the single sheet).
  GUESS: Which do you think is larger: the distance from the Moon to Earth or the thickness of the stack of toilet paper folded 50 times?

- Try to figure out a formula to calculate the thickness of the folded toilet paper after `n` folds (it might be useful to try to figure out the pattern by continuing the calculations for `n=1` and `n=2` from the previous question).

- How many times would you have to fold it (note that this may not be possible in practice) to get 1-foot thick stack of toilet paper? Try to calculate it; do not guess. Use the function from the previous step to do this and a calculator to do your calculations (you can write the math expressions in a google search bar).

  HINT: You do not need to use logarithms. Just try a few different values for the number of folds until you get approximately a foot.

- Calculate the approximate number of miles in the stack of toilet paper after 50 folds (again, google can do the conversion from inches to miles for you, just try "1000 inches to miles"). Was your guess from the previous page correct?