1. Use Netscape to look up the mathematicians of the day from the history of mathematics archive site. Choose one of the mathematicians listed and summarize what you learned about him or her in a paragraph. Be sure to tell me what day you did this exercise.

2. Briefly explain the contributions of the Greeks of the classical period to the development of mathematics. Explain how their approach to mathematics differed from that of the Egyptians and Babylonians who came before them and the Romans who came after them.

3. Notice that

\[
\begin{align*}
1 + 2 &= \frac{2(2+1)}{2} \\
1 + 2 + 3 &= \frac{3(3+1)}{2} \\
1 + 2 + 3 + 4 &= \frac{4(4+1)}{2} \\
1 + 2 + 3 + 4 + 5 &= \frac{5(5+1)}{2}
\end{align*}
\]

a. Does this pattern continue to hold true for \(1 + 2 + 3 + 4 + 5 + 6\) and \(1 + 2 + 3 + 4 + 5 + 6 + 7\)?

b. If we concluded from this evidence that \(1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}\) for any whole number \(n\), what type of reasoning would we be using? In particular, would we be using deduction?

c. Carl Friedrich Gauss (1777-1855), at the age of 10, used the following idea to show that \(1 + 2 + 3 + \cdots + 100 = \frac{100(100+1)}{2}\). First, list the numbers 1, 2, 3, ..., 100 twice as follows:

\[
\begin{array}{cccccccc}
1 & 2 & 3 & 4 & 5 & 6 & 7 & 100 \\
100 & 99 & 98 & 97 & 96 & 95 & 94 & 1
\end{array}
\]

Second, add each of the columns and then, third, add together the results of adding the columns. Carry out these steps and explain what you have shown.

d. (Extra credit) Use this idea to verify the general formula \(1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}\).

4. Show that \(\sqrt{3}\) is an irrational number. You will need to use the fact that if the square of a number is a multiple of 3, then the number itself must be a multiple of 3. That is, if \(a^2 = 3b\), then \(a = 3c\) for some number \(c\).