Your name: ____________________________________________

We can arrange the binomial coefficients \( \binom{n}{k} \) into a triangle by letting \( n \) be the row number and \( k \) be the column number. The result is called “Pascal’s Triangle”.

\[
\begin{array}{cccc}
0 & 1 & 2 & 3 \\
0 & 1 & 2 & 3 \\
0 & 1 & 2 & 3 \\
0 & 1 & 2 & 3 \\
0 & 1 & 2 & 3 \\
\end{array}
\]

(1) Rewrite Pascal’s triangle using the numbers instead of the symbols by replacing each entry with its numerical value.

(2) Using the previous row, how are the numbers found for the next row? (Find the next row using the last row given.)

(3) Find the triangular numbers in Pascal’s triangle. What is the explicit formula that this gives for the \( n^{th} \) triangular number? Why doesn’t this contradict the explicit formula we found in class?

(4) Do you notice any symmetry in the triangle? (Explain.)

(5) What is the sum of the entries in the \( n^{th} \) row? (Explain.)