Exercise 1. Find the value of the sum $\frac{4!}{0!(4-0)!}+\frac{4!}{1!(4-1)!}+\frac{4!}{2!(4-2)!}+\frac{4!}{3!(4-3)!}+\frac{4!}{4!(4-4)!}$. Show your work by calculating the factorials in question.

Exercise 2. Suppose we wish to form a committee (president, secretary, treasurer, attorney and communicator) out of five people, U,V,X,Y and Z. In how many ways can this be done? (You may leave your answer in terms of factorials.)

With this in hand, explain what does the factorial mean? (*It's the number of ways such that...*)

Exercise 3. Compute the limit $\lim_{n\to\infty}\frac{e^{\frac{\log(n)}{2}}}{n}$.

Exercise 4. Compute the limit $\lim_{n\to\infty}\cos\left(\frac{n!}{n^n}\right)$.