The numbers from 1 to 17 are arranged around a circle. One such arrangement is shown.

Explain why every possible arrangement of these numbers around a circle must have at least one group of three adjacent numbers whose sum is at least 27.

**NOTE:**
In solving the above problem, it may be helpful to use the fact that the sum of the first $n$ positive integers is equal to $\frac{n(n+1)}{2}$. That is,

$$1 + 2 + 3 + \ldots + n = \frac{n(n+1)}{2}$$