Let $A$ be the set of integers $n \geq 3$ such that it is possible to construct a regular $n$-gon with straightedge and compass. The set $A$ is infinite, and its first ten elements are 3, 4, 5, 6, 8, 10, 12, 15, 16, 17.

**Question.** What is the natural density of the set $A$?

The **natural density** of a subset $S \subseteq \{1, 2, 3, \ldots\}$ is defined as follows. For each positive integer $k$, let $s(k) = |S \cap \{1, 2, \ldots, k\}|$ be the number of elements in the interval $[1, k]$ that lie in $S$. Let $\Delta(k) = s(k)/k$ be the proportion of numbers in the interval $[1, k]$ that lie in $S$. The natural density of $S$ is lim$_{k \to \infty} \Delta(k)$, if this number exists.