Countability: A set is countable if a set is either finite or has the same cardinality as the set of positive integers.

Given $\mathrm{T} = \{\langle i, j, k\rangle | \mathrm{i, j, k} \in \mathrm{N}\}$

- The goal is to prove that T is a countable set.
- First, let's define a set P = $\{\langle i, j, k\rangle \in T \,|\, \mathrm{i+j+k = s}\}$ for each triple $\langle \mathrm{i, j, k}\rangle$ where $\mathrm{i, j, k} \in \mathrm{N}$, let $\mathrm{i+j+k}$ be the sum s of the triplet.
- Now, for each number $\mathrm{s} \in \mathrm{N}$,
- There are finitely many triples that has sum equal to s.
- Enumerating the triples with sum zero, then triples with sum equal to 1, then sum equal to 2 and so on.
- The previous step will follow all the triples in T.
- Hence, set P is finite for every $\mathrm{s} \in \mathrm{N}$.

Now, since P is finite and according to the given definition, it is countable too, therefore the set $P' = \{\langle i', j', k'\rangle \in T \,|\, \mathrm{i'+j'+k' = s'}\}$ is also countable.

Therefore, any set P_i where $i \in N$, the union $T = \bigcup_{i \in N} P_i$ is also countable since, a countable union of a number of finite sets is countable.

Hence, it is proved that T is countable.