

- But back to  $\mathbb{N} = S \cup T$ ,
- $4, 9, 16, 25 \in S$ , but

$$9 + 16 = 25 \in S, \quad 4 + 25 = 29 \notin S,$$

so we have

$$9 \sim 4 \wedge 16 \sim 25 \text{ but } 9 + 16 \not\sim 4 + 25.$$

- So addition is not well-defined with respect to this partition.