

Suppose that F is a family of finite subsets of \mathbb{N} and for any two sets $A, B \in F$ we have $A \cap B \neq \emptyset$.

- a) Is it true that there is a finite subset Y of \mathbb{N} such that for any $A, B \in F$ we have $A \cap B \cap Y \neq \emptyset$?

- b) Is the statement a) true if we suppose in addition that all of the members of F have the same size?

Justify your answers.