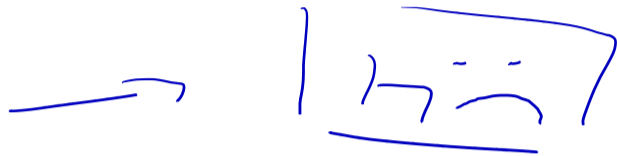
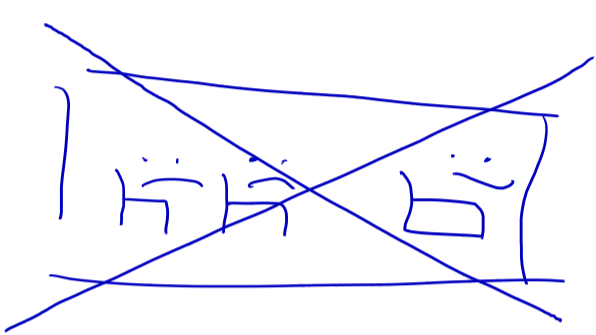
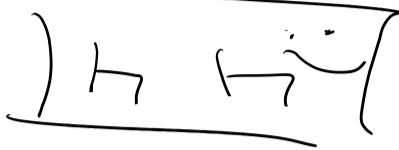


No class. has at least 1 chair  
that is not broken

At least 1 classroom has no broken chair.



$\forall$  class.  $\exists$  chair : chair  $\in$  broken

Negate:

$\exists$  class.  $\forall$  chair : chair  $\notin$  broken

~~$\exists$  class  $\forall$  chair  $\in$  broken~~

$\exists$  classroom  $\forall$  chair : chair  $\notin$  broken

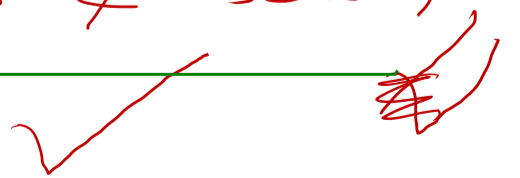
1st step

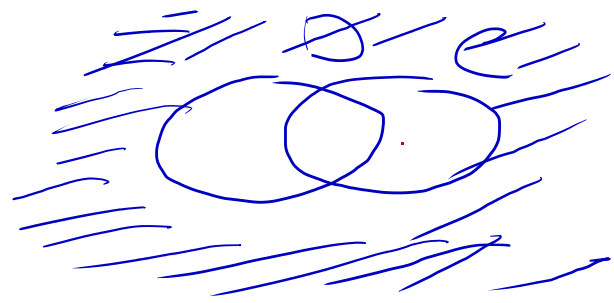
$\forall$  classroom  $\exists$  chair : chair  $\in$  broken

neg

there is a classroom that has only chairs not broken

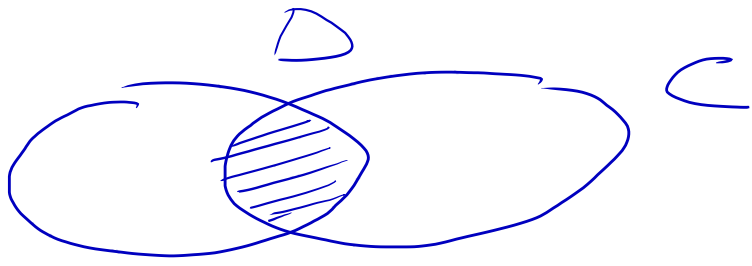
$\exists$  classroom  $\forall$  chairs  $\notin$  broken



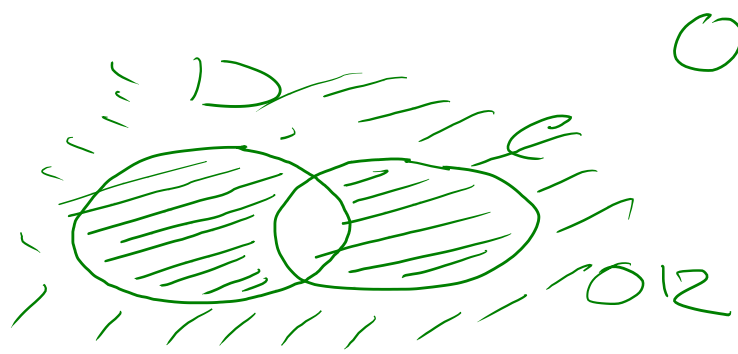


At least 1 student

loves neither dogs nor cats.



There is at least 1 student who only loves dogs.



OR at least 1 student who only loves cats  
OR 1 student loves neither

~~If a student does not love cats then she does not love dogs.~~

[At least 1 st. who loves cats does not love dogs.]

If A then B

$$A \Rightarrow B$$

$$A \wedge B'$$

$$A \& \neg B$$

$$C \Rightarrow D$$

$$C \wedge \neg D$$

At least 1 student loves cats and does not love dogs.