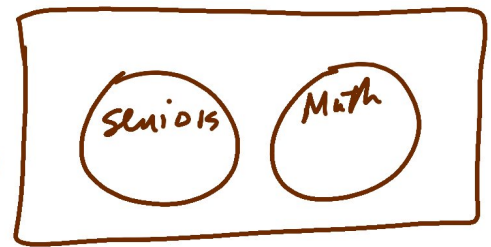
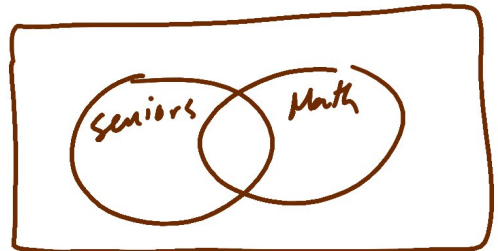


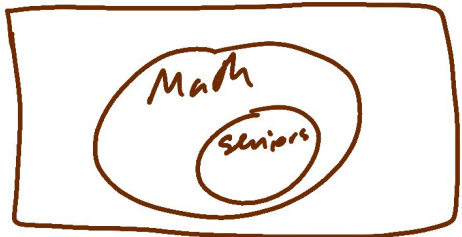
All seniors take math.



Some seniors take math.



No seniors take math



## Section 1.1 Deductive vs. Inductive Reasoning

deductive - application of a general statement to a specific instance

syllogism - 2 statements called premises  $\left\{ \begin{array}{l} \text{major} \\ \text{minor} \end{array} \right.$

followed by a conclusion

For any set of premises, if conclusion is guaranteed, then the syllogism is valid

If the conclusion is not guaranteed, it's invalid.

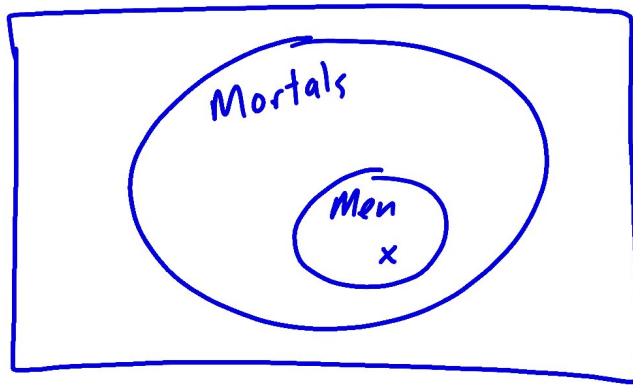
ex: 1. All men are mortal.

2. Socrates is a man.

$\therefore$ , Socrates is mortal.

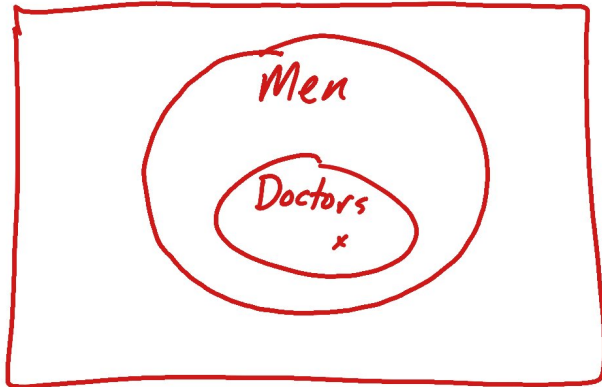
↑  
Therefore

VALID

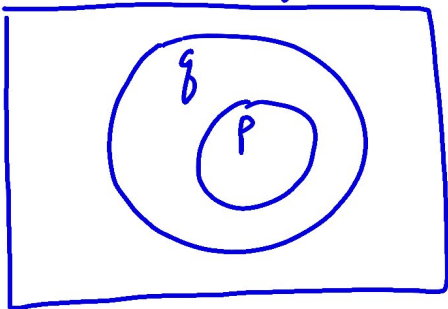


- ex:
1. All doctors are men.
  2. My mother is a doctor
- 
- ∴ My mother is a man

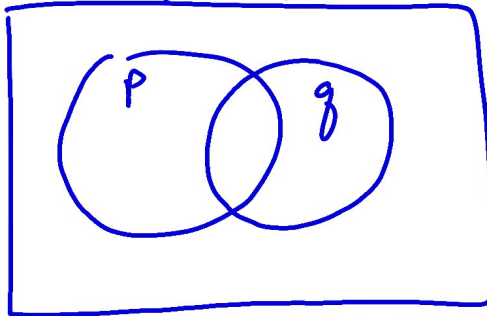
VALID.



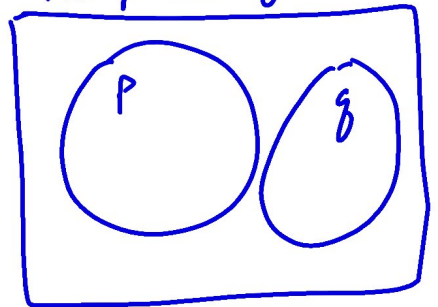
All p are q



Some p are q

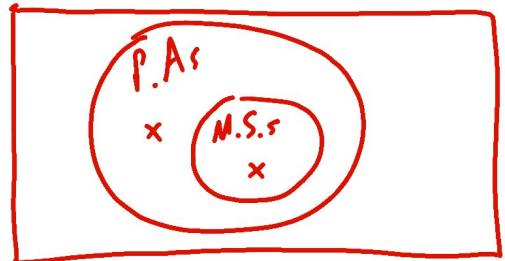


No p are q



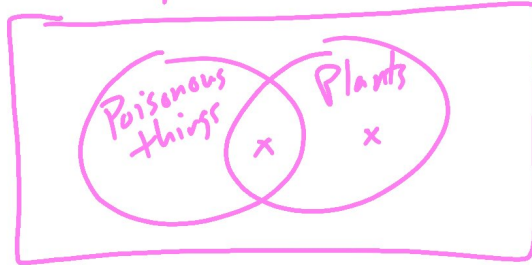
- ex:
1. All movie stars are political activists.
  2. Woody Harrelson is a political activist
- 
- ∴ Woody is a movie star.

INVALID

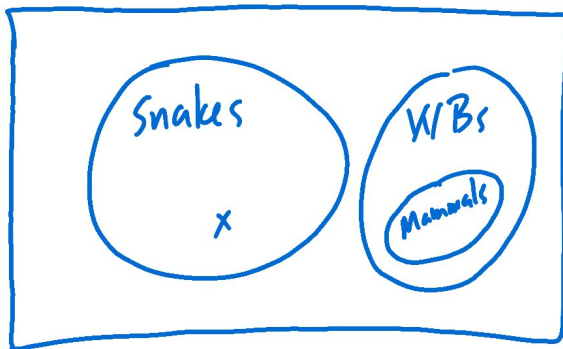


- ex:
1. Some plants are poisonous.
  2. Broccoli is a plant
- 
- $\therefore$  Broccoli is poisonous

INVALID



- ex:
1. No snake is warm-blooded.
  2. All mammals are warm-blooded.
- 
- $\therefore$  Snakes are not mammals.



VALID

## Inductive Reasoning

specific cases to a general statement

ex: 1, 8, 15, 22, 29, 36, 43  
add 7

ex: 1, 1, 2, 3, 5, 8, 13  
add prior 2 terms

"Fibonacci Sequence"

ex: M, V, E, M, J, S

$p^9 - 11$   
 $1 - 43 \text{ odd}$