What is a statement?  
What is a predicate?  
What is an atomic statement?

Statement that cannot be broken into smaller statements.

Can combine statements to get complex statements (using logical connectors)

Let P, Q be statements:

- \( P \land Q \): "P and Q", conjunction
  - True when both P and Q are true

- \( P \lor Q \): "P or Q", disjunction
  - True when P, Q, or both are true

- \( P \rightarrow Q \): "If P, then Q", implication
  - True when P is false or both P and Q true

- \( P \leftrightarrow Q \): "P if and only if Q", biconditional
  - True when both false or both true

Also \( \neg P \): "Not P", negation
  - True if P is false
Q: Let $P = \text{"Dogs have wings"}, \ Q = \text{"1+1 = 2"}$

Which are true?

1) $P \land Q$  
2) $P \lor Q$  
3) $P \rightarrow Q$  
4) $P \leftrightarrow Q$
5) $\neg P$

A) 2, 4, 5  
B) 1, 2, 5  
C) 2, 3, 5  
D) 3, 5

Let $P(n)$ be the predicate "$n$ is prime."

Q: Is the following true? (Discuss)

For all $n$ $P(n) \rightarrow \neg P(n+7)$

A) Yes
B) It is only true for some values of $n$
C) Undefined, since $P(n)$ is not a statement
D) No

If pick a specific $n$, get a statement

* It is true for any $n