

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:

• $P \wedge Q$: "P and Q", conjunction

* True when both P and Q are true

• $P \vee Q$: "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 $P = \text{"Dogs have wings"}$, $Q = \text{"}1+1=2\text{"}$

Which are true?

1) $P \wedge Q$ 2) $P \vee Q$ 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