

Negating Logic statements

Conjunction Statements:

I do my homework and I pass my math class.

$$p \quad \wedge \quad q$$

To negate this statement apply De Morgan's Law first form:

$$\sim(p \wedge q) \equiv \sim p \vee \sim q$$

Which reads: I do not do my homework or I do not pass my math class.

$$\sim p \quad \vee \quad \sim q$$

Disjunction Statements

I do my homework or I do not pass my math class.

$$p \quad \vee \quad q$$

To negate this statement apply De Morgan's Law second form:

$$\sim(p \vee q) \equiv \sim p \wedge \sim q$$

Which reads: I do not do my homework and I do pass my math class.

$$\sim p \quad \wedge \quad \sim q$$

Conditional Statements:

If I do my homework then I pass my math class.

$$p \quad \rightarrow \quad q$$

To negate this statement use this rule:

$$\sim(p \rightarrow q) \equiv p \wedge \sim q$$

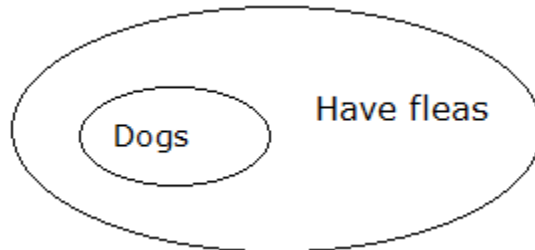
You do your homework and you still do not pass your math class.

$$p \quad \wedge \quad \sim q$$

Qualifying Statements:

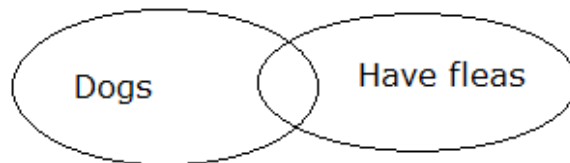
Statements with All:

All dogs have fleas



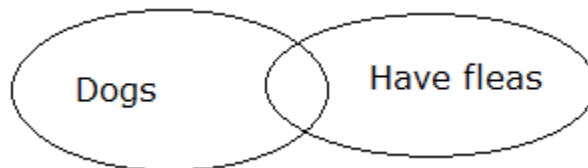
Negating this statement means: not all dogs have fleas which means

Some dogs do not have fleas



Statements with some:

Some dogs have fleas



Negating this statement means: None have fleas, which means

All dogs do not have fleas

