

Inverse, Converse, and Contra Positives

Inverse

Definition 1: The inverse of a conditional statement is formed by negating the hypothesis and negating the conclusion of the original statement.
In other words, to create an Inverse the word "not" is inserted to both portions of the sentence.

Example:

Conditional: If it rains, then I use an umbrella.

Inverse: If it does not rain, then I do not use an umbrella.

The inverse is not always true, because if it does not rain, it might be a very sunny day and I may use my umbrella

Remark 1: Is the inverse of a conditional statement always true when the conditional statement is true?

Not always!

Rule 1: To create the *inverse*, the two parts of a conditional are negated.

Converse

Definition 2: The converse of a conditional statement is formed by interchanging the hypothesis and conclusion of the original statement. In other words, the parts of the sentence change places. The words "if" and "then" do not move.

Remark 2: Is the converse of a conditional statement always true when the conditional statement is true?

Not always! The negation of a sentence is made by placing the word not in the sentence appropriately.

Contra Positives

Definition 3: The contra positive of a conditional statement is formed by negating both the hypothesis and the conclusion, and then interchanging the resulting negations. In other words, the contra positive negates and switches the parts of the sentence. It does BOTH the jobs of the INVERSE and the CONVERSE.

Remark 3: Is the contra positive of a conditional statement always true when the conditional statement is true?

Yes, it is true. If the original statement is TRUE, the contra positive is TRUE. If the original statement is FALSE, the contra positive is FALSE.

Note 1: An interesting fact: The inverse has the same truth value as the converse of the original statement. The INVERSE and the CONVERSE of the original statement are logically equivalent.