Logically Equivalent and Not Logically Equivalent

Statement

- Either true of false, but not both

Conditional Statement

- A statement that is given in "if, then" form

Hypothesis

- Part of the conditional statement that follows the if

Conclusion

- Part of the conditional statement that follows the then

Converse

- Switching the hypothesis and conclusion of a conditional statement

Negation

- To add not

- To make the oppisite

Inverse

- A statement whose hypothesis and conclusion have both been negated

Contrapositive

- A statement whose hypothesis and conclusion have both been negated and flipped

Truth values

- By definition, a statement is true or false; whether a statement is true or false is called the **truth value** of the statement.

Compound

- A **compound statement**, or **compound proposition**, is a new statement formed by putting two or more statements together.

Logically Equivalent

- If two propositional forms result in statements with the same truth value for all possible cases of substituting statements for the propositional variables, the forms are

- **Logically equivalent**.

Not Logically equivalent

- Two propositional forms are ***not logically equivalent*** if there exists some group of

- statements that can be substituted into the propositional forms so that the two statements

- corresponding to the two forms have different truth values.

- ***Inductive reasoning*** is the process of looking for a pattern and using that pattern to make a

- generalization.

- ***Deductive reasoning*** is the process of coming to a logical conclusion based on an accepted
- hypothesis.

- A ***counterexample*** is an example that shows a conjecture to be false. You need only one

- counterexample to prove that a conjecture is not true.

- An *indirect proof* is based on eliminating all possible conclusions except for one, resulting
- in the understanding that the one that is left must be true. It is a proof based on
- contradiction.