Lesson 17

CONDITIONAL STATEMENTS

If p then q p=hypothesis, q=conclusion

NEGATION----- This is the opposite of a statement. Therefore

If p becomes If not p. the symbol ~ is used for negation.

Example—

If a figure has eight sides then it is an octagon.

Negation of both the hypothesis and conclusion:

If a figure does not have eight sides then it is not an octagon.

INVERSE—the inverse if formed when both the hypothesis and

 Conclusion are negated.

Example—

If a number is not divisible by 2, then the number is odd.

Negation—If a number is divisible by 2, then the number is not odd.

The converse of a conditional statement and the inverse of the same statement always have the same truth value: either both are false or both are true. When two related conditional statements have the same truth value, they are called logically equivalent statements.

CONTRAPOSTIVE—formed by both exchanging and negating its hypothesis and conclusion.

If p then q becomes If ~q, then ~p

A conditional statement and its contrapositive are logically equivalent statements: either both are true or both are false

