

NOTES 2.1: CONDITIONAL STATEMENTS

Objective:

CONDITIONAL STATEMENT: A statement written in an "if-then" format.

HYPOTHESIS: The phrase following, but not including, the word "if".

CONCLUSION: The phrase following, but not including, the word "then".

EXAMPLE 1: State the hypothesis and conclusion of the conditional statement below.

If you have no more than two absences and a B-average, then you can be exempt from your final.

Hypothesis: you have no more than two absences and a B-average

Conclusion: you can be exempt from your final

EXAMPLE 2: Rewrite the statement below as a conditional statement, then state the hypothesis and conclusion.

A car with poor brakes is a menace on the highway.

Conditional:

Hypothesis:

Conclusion:

EXAMPLE 3: Rewrite the statement below as a conditional statement, then state the hypothesis and conclusion.

Mrs. Ellison gives her students homework on days that end in 'y'.

Conditional:

Hypothesis:

Conclusion:

CONVERSE STATEMENTS: Formed by switching the hypothesis and the conclusion of a conditional statement.

EXAMPLE 4: State the converse of the conditional statement in EXAMPLE 1.

Converse: If you can be exempt from your final, then you have no more than two absences and a B-average.

EXAMPLE 5: Write the converse of the conditional statement below, then tell whether its TRUE or FALSE.

If an angle has a measure of 120° , then it is an obtuse angle.

Converse:

TRUE or FALSE

COUNTEREXAMPLE: An example that follows the hypothesis but not the conclusion.

EXAMPLE 6: Give a counterexample for the converse statement in EXAMPLE 5.

Counterexample:

NEGATION: The denial of a statement.

INVERSE: Formed by adding "not" to the hypothesis and the conclusion.

EXAMPLE 7: Write the inverse of the conditional statement below.

If you pass the STAAR test, then you will graduate.

Inverse: *If you do not pass the STAAR test, then you will not graduate.*

EXAMPLE 8: Write the inverse of the following statement. Determine if the inverse is true or false. If false, give a counterexample.

If school is in session, then it is a weekday.

Inverse:

TRUE or FALSE

Counterexample (if necessary):

CONTRAPOSITIVE: Formed by changing the statement to its converse and then adding "not" to the hypothesis and the conclusion.

EXAMPLE 9: Write both the converse and the contrapositive of the conditional statement below.

If you run a red light, then you are breaking a traffic law.

Converse: *If you are breaking a traffic law, then you run a red light.*

Contrapositive: *If you are not breaking a traffic law, then you are not running a red light.*

EXAMPLE 10: Write the contrapositive of the conditional statement below, then determine if it is true or false. If false, give a counterexample.

If you ask to leave the classroom, then you must present your ID.

Contrapositive:

TRUE or FALSE?

Counterexample(if necessary):

EXAMPLE 11: Write a conditional statement for the statement below, then write its converse, inverse, and contrapositive.

Seniors must pass English IV in order to graduate.

Conditional:

Converse:

Inverse:

Contrapositive: