Name _____ Date Sept 26 Period _____

Geometry Section 2-2 Notes

Conditional Statements

A **conditional statement** is a statement that can be written as an if-then statement, "if *p*, then *q*."

The **hypothesis** comes after the word *if*.

The **conclusion** comes after the word *then*.

$p \rightarrow q$

If p, then q

If you buy this cell phone, then you will receive 10 free ringtone downloads.

p q

Sometimes it is necessary to rewrite a conditional statement so that it is in if-then form.

Conditional: A person who practices putting will improve her golf game.

If-Then Form: If a person practices putting, then she will improve her golf game.

A conditional statement has a false **truth value** *only* if the hypothesis (H) is true and the conclusion (C) is false.

For each conditional, underline the hypothesis and double-underline the conclusion.

1. If *x* is an even number, then *x* is divisible by 2.
2. The circumference of a circle is 5π inches if the diameter of the circle is 5 inches.
3. If a line containing the points *J*, *K*, and *L* lies in plane P, then *J*, *K*, and *L* are coplanar.

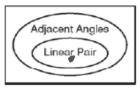
For Exercises 4–6, write a conditional statement from each given statement.

4. Congruent segments have equal measures.

   If segments are congruent, then they have equal measures.

5. On Tuesday, play practice is at 6:00.

   If it is Tuesday, then play practice is at 6:00

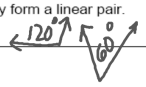
6. 

   Venn diagram

   If angles are a linear pair, then they are adjacent.

Determine whether the following conditional is true. If false, give a counterexample.

7. If two angles are supplementary, then they form a linear pair.

   False 

Geometry 2-2 Notes continued

The **negation** of a statement, "not *p*," has the opposite truth value of the original statement.

If *p* is true, then *not p* is false.
If *p* is false, then *not p* is true.

Statement	Example	Truth Value
Conditional	If a figure is a square (H), then it has four right angles (C).	True
Converse: Switch H and C.	If a figure has four right angles (C), then it is a square (H).	False
Inverse: Negate H and C.	If a figure is not a square (not H), then it does not have four right angles (not C).	False
Contrapositive: Switch and negate H and C.	If a figure does not have four right angles (not C), then it is not a square (not H).	True

Write the converse, inverse, and contrapositive of each conditional statement. Find the truth value of each.

8. If an animal is an armadillo, then it is nocturnal. T

conv If an animal is nocturnal, then it is an armadillo. F

inv If an animal not an armadillo, then it is not nocturnal. F

contrap If an animal is not nocturnal, then it is not an armadillo. T

9. If $y = 1$, then $y^2 = 1$.

10. If an angle has a measure less than 90°, then it is acute. T

conv If an angle is acute, then it has a measure less than 90° T

inv If an angle does not measure less than 90°, then it is not acute. T

contrap If an angle is not acute, then it does not have a measure less than 90°. T