9/23/19 - Warm Up Problem

Rewrite each statement so that it begins with the word "If" and contains the word "then."

Students taking Geometry are high school students.

People watching Star Wars are watching a good movie.

Sections 2.2-2.3 - Conditional and Biconditional Statements

goals: recognize and write conditional statements
write converses and biconditionals

If you are not completely satisfied, then your money will be refunded.

If you buy a pair of shoes, then you get another pair for 50% off.

Conditional Statement:
a statement written in if-then form

Parts of a Conditional Statement

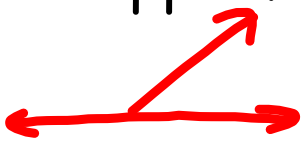
- every conditional statement has 2 parts

Hypothesis: the phrase following the word **if**

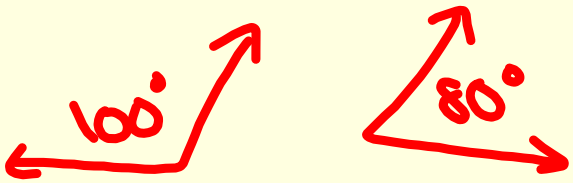
Conclusion: the phrase following the word **then**

example:

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



Counterexample: an example that proves a statement is false



Write Conditional Statements

An angle with a measure less than 90° is an acute angle.

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

A right angle has a measure of 90 degrees.

If an angle measures 90°, then it is a right angle.

The Converse of a Conditional Statement

If an angle has a measure of 90 degrees, then it is a right angle.
If it is a right angle, then an angle has a measure of 90 degrees.

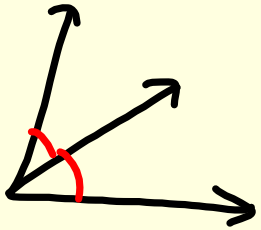
Converse: the statement formed by exchanging the hypothesis and conclusion of a conditional statement

If a polygon has five sides, then it is a pentagon.

If it is a pentagon, then a polygon has 5 sides.

If angles are vertical, then they are congruent.

If they are congruent, then angles are vertical.



False

Answer these questions in your notes.

If an angle measures 80 degrees, then it is acute.

a. Is the statement true? If not, find a counterexample.

Yes

b. Write the converse of the statement.

If it is acute, then an angle measures 80 degrees.

c. Is the converse true? If not, find a counterexample.

No - a 70° angle is also acute.

Biconditional Statements

Biconditional: a statement that is true no matter what order it is written in - contains the words ***"if and only if"***

- write a biconditional if a conditional statement and its converse are both true

Conditional:
If two angles add to 180 degrees, then they are supplementary.

Converse:
If they are supplementary, then two angles add to 180 degrees.

Biconditional:
Two angles add to 180 degrees if and only if they are supplementary.

↳ iff

In your notes...

Write the converse of the statement below. If it is true, write a biconditional statement.

Conditional:

If two angles have the same measure, then the angles are congruent.

Converse:

~~*If two angles are congruent, then they have the same measure.*~~ If two angles are congruent, then they have the same measure.

Biconditional:

~~*Two angles are congruent if and only if they have the same measure.*~~ Two angles have the same measure if and only if the angles are congruent.

Assignment:

Concept 5 Worksheet - due by Fri. 9/27
(front side)

Conditional and Biconditional Statements

Write each sentence as a true conditional statement. Underline the hypothesis once and the conclusion twice.

1. Two adjacent and complementary angles form a right angle.

If 2 angles are adjacent and complementary, then they form a right angle.

2. Parallel lines are lines that are coplanar and never intersect.

Answer each question about the statement below.

If two lines are perpendicular, then they intersect to form a right angle.

3. Write the converse of the statement.

If they intersect to form a right angle, then 2 lines are perpendicular.

4. Is the converse true or false? T

5. If the converse is true, write the statement as a biconditional. If it is false, write "*not possible*."

Two lines are perpendicular iff they intersect to form right angles.

Answer each question about the statement below.

If an angle is bisected, then it is cut into two congruent angles.

6. Write the converse of the statement.

7. Is the converse true or false?

8. If the converse is true, write the statement as a biconditional. If it is false, write "*not possible*."

Answer each question about the statement below.

If an angle is a right angle, then its measure is greater than that of an acute angle.

9. Write the converse of the statement.

10. Is the converse true or false?

11. If the converse is true, write the statement as a biconditional. If it is false, write "*not possible*."

Attachments

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