Conjectures & Conditional Statements

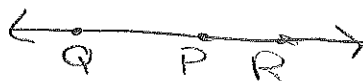Defn: **Conjecture** –

Conjectures can be ___True___ or ___False___. Sometimes you can tell easily whether a conjecture is true or false, and sometimes it is very difficult to tell.

Ex 1: Susan is a new Geometry student and she has made a conjecture based on her understanding of some of her new Geometry terms. Susan's conjecture is: If points P, Q, and R are collinear, then point Q must be between points P and R.

Is this conjecture true or false?

False

↑
Counter example

An example or picture that shows a conjecture to be false is called a ___Counter example___

Defn: **Conditional Statement** – A statement written in the form ___"if then"___.

The part of the statement following the ___if___ is called the ___hypothesis___;
The part of the statement following the ___then___ is called the ___Conclusion___.

For the following examples, write each statement in conditional (if-then) form and identify the hypothesis and conclusion of each conditional.

Ex. 2: Statement – Perpendicular lines form right angles.

   Conditional: if lines are perpendicular → then they form right angles

Ex. 3: Statement – A figure with three sides is a triangle.

   Conditional: if a figure has 3 sides → then it is a Triangle

Ex. 4: Statement – Parallel lines never intersect.

   Conditional: if lines are parallell → then they don't intersect

Converse Statements

Conditional statement – "if (hypothesis) then (conclusion)"

Converse – Switch the hypothesis with conclusion

Write each of the following statements in conditional (if-then) form, and write the converse of the conditional statement. Then identify each statement as True or False.

Ex. 5: Given statement: People who live in Siler City live in North Carolina.

Conditional: if someone lives in Siler city, then they leave in NC.

Converse: if someone lives in North Carolina then they live in Siler city

Ex. 6: Given statement: Squares have four sides.

Conditional: if a shape is a square then it has 4 sides

Converse: if a shape has 4 sides then it is a square

Ex. 7: Given statement: All dogs are mammals.

Conditional:

Converse:

Identify the hypothesis and conclusion of each statement. (Underline and label each)

1. If you have a driver's license, then you are at least 16 years old.

   hypothesis   conclusion

2. If the measure of an angle is between 0° and 90°, then the angle is acute.

   hyp   Conclusion

Write each statement in conditional (if-then) form. Then underline and label the hypothesis and conclusion.

3. Vertical angles are congruent.

   if an angle is vurtick then theyare congruent

4. Adjacent angles have a common side.

   if its adjacent then it has a common side.

5. Math teachers love to solve problems.

   if youre a Math teacher then you love to solve problems

6. All cows eat grass.

   if youre a cow then you eat grass

Dante is a new Geometry student and has made some conjectures based on his understanding of some of his new Geometry terms. Tell whether you think each of his conjectures is *true or false*. If false, draw a picture that shows a counterexample.

7. **Conjecture:** If angles J and K are adjacent, then they must be supplementary.

   If an angle is Supplementary

8. **Conjecture:** If Points R, S, and T are noncollinear, then segments RS, ST, and RT must form a triangle.

   If the Segments RS,ST and RT then points RS and T are noncollinear

Write each statement in conditional (if-then) form. Then write the converse of your conditional statement, and label each statement as either true or false.

9. Obtuse angles have measures greater than 90° and less than 180°.

- Conditional:

  If it's an obtuse angle then it Measures greater than 90° & less than 180°

- Converse:

  If an angle is greater than 90° & less than 180°

10. People who live in North Carolina live in the United States.

- Conditional:

  if You live in Nc then you live in usa

- Converse:

  if you live in USA then you live in Nc

11. All Germans are human.

- Conditional:

- Converse:

12. Everybody loves Raymond.

- Conditional:

- Converse: