Conditional Statements Practice

First, write the conditional statement in if-then form. Then, determine the hypothesis and conclusion of each conditional statement.

1. If it is Saturday, there is no school.
   If-then form:
   
   Hypothesis:

   Conclusion:

2. Pass in your test if you are finished.
   If-then form:

   Hypothesis:

   Conclusion:

3. No one in this class likes backgammon.
   If-then form:

   Hypothesis:

   Conclusion:

4. Every square is a rectangle.
   If-then form:

   Hypothesis:

   Conclusion:
Related Conditional Statements: Every conditional statement involves two scenarios (hypothesis and conclusion). Switching and/or negating these scenarios creates three related conditional statements (converse, inverse, and contrapositive).

Ex.

Original Statement: If a being is a monkey, then it loves bananas.
Converse: If a being loves bananas, then it is a monkey.

*Inverse: If a being is not a monkey, then it does not love bananas.

Original Statement: If a being is a monkey, then it loves bananas.
*Contrapositive: If a being does not love bananas, then it is not a monkey.

Practice: Write the converse, inverse, and contrapositive of each conditional statement. Then determine (using your own knowledge of the world) whether each statement is true or false.

5. If a person lives in Salem, NH, then they live in the USA.

   Converse:

   *Inverse:

   *Contrapositive:

6. If an angle is right, then its measure is $90^\circ$.

   Converse:

   *Inverse:

   *Contrapositive:

7. If a polygon is regular, then its sides are congruent.

   Converse:

   *Inverse:

   *Contrapositive:

Biconditional Statements: A statement in which ALL of its related conditional statements are true.

We write biconditional statements in if and only if form (aka iff form).

Ex. Original Statement: A triangle is right iff one of its angles has a measure of $90^\circ$.

   True Statements:

   If a triangle is right, then one of its angles has a measure of $90^\circ$.
   If a triangle is not right, then one of its angles does not have a measure of $90^\circ$.
   If one of the angles in a triangle has a measure of $90^\circ$, then the triangle is right.
   If one of the angles in a triangle does not have a measure of $90^\circ$, then the triangle is not right.

8. Are any of the above statements biconditional statements? If so, rewrite them in iff form.