Name: _____ **Unit 2:** Logic & Proof

Date: _____ **Per:** _____ **Homework 3:** Conditional Statements

**** This is a 2-page document! ****

Directions: Identify the hypothesis and conclusion of the following conditional statements.

1. If the product of two numbers is 0, then at least one of the numbers must be 0.

Hypothesis: _____

Conclusion: _____

2. If it is daylight saving time, then I must reset my clocks.

Hypothesis: _____

Conclusion: _____

Directions: Write the following statements in if-then form.

3. A rhombus is a quadrilateral with four congruent sides. _____

_____

4. Those that finish the marathon will get a medal. _____

_____

5. All freshman are required to attend orientation. _____

_____

Directions: Write the inverse, converse, contrapositive, and biconditional of the conditional statements below. Determine their truth value. If false, explain or give a counterexample.

6. If you live in Dallas, then you live in Texas.

- **Inverse:** _____

  _____ **Truth Value:** _____

- **Converse:** _____

  _____ **Truth Value:** _____

- **Contrapositive:** _____

  _____ **Truth Value:** _____

- **Biconditional:** _____

  _____ **Truth Value:** _____

7. If a number is a natural number, then it is also a whole number.

- **Inverse:** _____

  _____ **Truth Value:** _____

- **Converse:** _____

  _____ **Truth Value:** _____

- **Contrapositive:** _____

  _____ **Truth Value:** _____

- **Biconditional:** _____

  _____ **Truth Value:** _____

Directions: Write the appropriate statement to match the symbolic notation using the statements to the right. Then, classify it as the conditional, inverse, converse, or contrapositive.	***p*:** you have a library card ***q*:** you can check out books

8. $p \rightarrow q$: _____

_____ **Classify:** _____

9. $\sim q \rightarrow \sim p$: _____

_____ **Classify:** _____

10. $q \rightarrow p$: _____

_____ **Classify:** _____

11. $\sim p \rightarrow \sim q$: _____

_____ **Classify:** _____

12. $p \leftrightarrow q$: _____

_____ **Classify:** _____