Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
CONDITIONAL *Statements*	• A statement that can be written in _____-_____ form. **Symbolic Form:** _____ ← Read as "if p, then q" or, "p _____ q". • The _____ is the phrase that immediately follows _____. • The _____ is the phrase that immediately follows _____.
EXAMPLES	**Identify the hypothesis and conclusion of the following conditional statements:** **1.** If you live in Nashville, then you live in Tennessee. **Hypothesis:** _____ **Conclusion:** _____ **2.** If the sum of the measures of two angles is 90°, then they are complementary angles. **Hypothesis:** _____ **Conclusion:** _____ **3.** If a quadrilateral is a square, then it has four right angles. **Hypothesis:** _____ **Conclusion:** _____

Writing Conditional Statements: Write each statement in if-then form.

4. An obtuse angle has a measure greater than 90°.

_____

5. All numbers divisible by 4 are also divisible by 2.

_____

6. States on the east coast border the Atlantic Ocean.

_____

7. Valentine's Day is in February.

_____

8. Prime numbers only have two factors, 1 and itself.

_____

RELATED CONDITIONAL	DEFINITION	SYMBOLIC FORM
INVERSE	Formed by _____ the hypothesis and conclusion.	
CONVERSE	Formed by _____ the hypothesis and conclusion.	
CONTRAPOSITIVE	Formed by _____ and _____ the hypothesis and conclusion.	

Directions: Write the inverse, converse, and contrapositive of the following conditional statements. Determine the truth value. If false, provide a counterexample.

9. If it is Saturday, then there is no school.

- **Inverse:** _____

  Truth Value: _____

- **Converse:** _____

  Truth Value: _____

- **Contrapositive:** _____

  Truth Value: _____

10. If the product of two numbers is odd, then both numbers must be odd.

- **Inverse:** _____

  _____ **Truth Value:** _____

- **Converse:** _____

  _____ **Truth Value:** _____

- **Contrapositive:** _____

  _____ **Truth Value:** _____

11. If the temperature is 25°F, then it is below freezing.

- **Inverse:** _____

  _____ **Truth Value:** _____

- **Converse:** _____

  _____ **Truth Value:** _____

- **Contrapositive:** _____

  _____ **Truth Value:** _____

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BICONDITIONAL Statements	• **Definition:** _____ _____ • **Symbolic Form:** $(p \rightarrow q) \wedge (q \rightarrow p)$: _____ • **Read as "**_____**"** • **Truth Value:** Biconditional statements are true when _____ _____ and _____ are _____!

Directions: Given the biconditional statement below, write both the conditional and converse. Determine the truth value of the biconditional. Explain why it is true or false.

1. Two angles are supplementary if and only if the sum of their measures is 180°.

Conditional: _____

_____

Converse: _____

_____

Truth Value? _____

2. I wear my snow boots if and only if it snows.

Conditional: _____

Converse: _____

Truth Value? _____

3. $x^2 = 25$ if and only if $x = 5$.

Conditional: _____

Converse: _____

Truth Value? _____

4. I will get 10% off if and only if I spend at least $75.

Conditional: _____

Converse: _____

Truth Value? _____

MIND YOUR P's & Q's!

(A graphic organizer for logic statements)

COMPOUND STATEMENTS

Directions: Use the statements below to write the compound statements.

***p*:** Vertical angles are congruent ***q*:** 15 is a prime number.

Conjunction	_____ _____**Truth value:** _____
Disjunction	_____ _____**Truth value:** _____

CONDITIONAL STATEMENTS

Directions: Use the statements below to write the conditional statements.

***p*:** It is St. Patrick's Day. ***q*:** It is March.

Conditional	_____ _____**Truth value:** _____
Inverse	_____ _____**Truth value:** _____
Converse	_____ _____**Truth value:** _____
Contrapositive	_____ _____**Truth value:** _____
Biconditional	_____ _____**Truth value:** _____