Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
STATEMENT	• A statement is a sentence that is either _____ or _____. • This is called the _____ _____. • Represented using letters such as _____ or _____	
	EXAMPLE: ***p*:** Supplementary angles have a sum of 180°.	**Truth Value:**
NEGATION	• A negation of a statement has the _____ truth value. • Shown by the symbol _____. ← Read as "not p"	
	EXAMPLE: **~*p*:** Supplementary angles do not have a sum of 180°.	**Truth Value:**
COMPOUND *Statements*		
CONJUNCTION	• Statements joined by the word _____. • Written as p _____ q. • True when _____ statements are _____.	
DISJUNCTION	• Statements joined by the word _____. • Written as p _____ q. • True when _____ _____ _____ statement is _____.	

Directions: Write compound statements using the statements below and determine each truth value.

***p*:** There are seven days in a week. ***q*:** March has exactly 30 days. ***r*:** Halloween is on October 31st.

1. $p \wedge q$: _____

_____ Truth Value: _____

2. $q \wedge r$: _____

_____ Truth Value: _____

3. $p \wedge r$: _____

_____ Truth Value: _____

4. $\sim p \wedge q$: _____

_____ Truth Value: _____

5. $p \vee r$: _____

_____ Truth Value: _____

6. $\sim q \vee r$: _____

_____ Truth Value: _____

7. $\sim p \vee \sim r$: _____

_____ Truth Value: _____

8. $\sim p \vee \sim q$: _____

_____ Truth Value: _____

Write your own!

p: _____

q: _____

r: _____

9. $p \vee r$: _____

_____ Truth Value: _____

10. $\sim p \vee q$: _____

_____ Truth Value: _____

11. $\sim q \wedge r$: _____

_____ Truth Value: _____

12. $p \wedge \sim r$: _____

_____ Truth Value: _____

13. $\sim p \vee \sim q$: _____

_____ Truth Value: _____

14. $\sim r \wedge q$: _____

_____ Truth Value: _____

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TRUTH TABLES

Truth tables are a convenient way of organizing truth values of statements.

Complete the following negation, conjunction, and disjunction truth tables:

Negation	
p	$\sim p$
T	
F	

Conjunction		
p	q	$p \wedge q$
T	T	
T	F	
F	T	
F	F	

Disjunction		
p	q	$p \vee q$
T	T	
T	F	
F	T	
F	F	

Tips for Constructing Truth Tables:

- ✓ Include columns for each statement involved. (p, q, r, etc.)
- ✓ Include columns for any negations required. ($\sim p$, $\sim q$, $\sim r$, etc.).
- ✓ Lastly, include columns for the compound statement(s).

EXAMPLES

Construct truth tables for the following compound statements.

❶ $p \vee \sim r$

❷ $\sim p \wedge q$

❸ $\sim q \vee r$

❹ $\sim p \wedge \sim r$

5 $\sim p \vee \sim q$

6 $p \vee (q \wedge r)$

7 $\sim q \wedge (p \wedge r)$

8 $(\sim p \vee q) \wedge \sim r$
