NAME Key DATE _____ PERIOD ____

2-2 Practice

Logic

and

Use the following statements to write a compound statement for each conjunction and disjunction. Then find its truth value.

T *p*: 60 seconds = 1 minute

T *q*: Congruent supplementary angles each have a measure of 90.

F *r*: $-12 + 11 < -1$

1. $p \wedge q$ 60 seconds = 1 minute and Congruent supplementary angles (p and q) each have a measure of 90 True

2. $q \vee r$ Congruent Supplementary angles each have a measure of 90 or (T) (F) $-12 + 11 < -1$ True

3. $\sim p \vee q$ (F) (T) 60 seconds ≠ 1 minute or congruent supplementary angles each have a measure of 90 True

4. $\sim p \wedge \sim r$ (F) (T) 60 seconds ≠ 1 minute and $-12 + 11 \not< -1$ False

Copy and complete each truth table.

5.

p	*q*	$\sim p$	$\sim q$	$\sim p \vee \sim q$
T	T	F	F	F
T	F	F	T	T
F	T	T	F	T
F	F	T	T	T

6.

p	*q*	$\sim p$	$\sim p \vee q$	$p \wedge (\sim p \vee q)$
T	T	F	T	T
T	F	F	F	F
F	T	T	T	F
F	F	T	T	F

Construct a truth table for each compound statement.

7. $q \vee (p \wedge \sim q)$

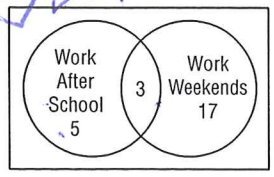
p	q	$\sim q$	$(p \wedge \sim q)$	$q \vee (p \wedge \sim q)$
T	T	F	F	T
T	F	T	T	T
F	T	F	F	T
F	F	T	F	F

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

p	q	$\sim p$	$\sim q$	$\sim p \vee q$	$\sim q \wedge (\sim p \vee q)$
T	T	F	F	T	F
T	F	F	T	F	F
F	T	T	F	T	F
F	F	T	T	T	T

SCHOOL For Exercises 9 and 10, use the following information.

The Venn diagram shows the number of students in the band who work after school or on the weekends.



9. How many students work after school and on weekends? 3

10. How many students work after school or on weekends? 25