DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 4 pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Look only at your test. Don't give me the impression that you are cheating.
- ❖ Be sure to write neatly. If I cannot read what was written, do not expect the problem to be graded. A pencil must be used on all tests. Otherwise, the test will not be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	8	
2	10	
3	10	
4	5	
5	20	
6	15	
7	10	
8	5	
9	15	
10	2	
Total	100	

Name _____

Circle Final Answers

1) (4 points each) Determine if the following are statements. If not, explain why not.
a) I think I liked that movie.   b) A survey showed that 40% of viewers liked that movie.

2) (5 points each) Rewrite the following compound statements using $p, q, r \wedge, \vee, \sim,$ and $\rightarrow$ as needed. Be sure to declare what the letters $p, q,$ and r represent:
a) He is from England and he does not watch soccer.

b) If she read the book or plays the tuba, then we can be best friends.

3) (5 points each) Let $p =$ "I am on time." and $q =$ "The race has begun." Translate the following into words:
a) $\sim p$ b) $p \wedge \sim q$

4) (5 points) Let p and q be a true statements and let r be a false statement. Show the work to determine the truth value of the compound statement: $(p \wedge \sim q) \rightarrow r$.

5) (5 points each) Negate the following statements:

a) I'll be back.

b) I am serious and don't call me Shirley.

c) If you build it, he will come.

d) Nobody puts Baby in a corner.

6) (5 points each) For the statement "If you don't know where you want to go, then it doesn't matter which path you take." find the converse, inverse, and contrapositive:

Converse:

Fun Fact: The Cheshire Cat gives really good advice.

Inverse:

Contrapositive:

7) (5 points each) Use an Euler diagram to determine whether the argument is valid or invalid:

a) All dogs are animals.
    All Siberian Huskies are dogs.
    All Siberian Huskies are animals.

b) Some apples are red.
    A pink lady is an apple.
    A pink lady is red.

8) (5 points) Rewrite the argument using p, q, r $\wedge, \vee, \sim$, and $\rightarrow$ as needed. Be sure to declare what the letters p, q, and r represent. **Do not create a truth table for it.**

All dogs are animals.
All Siberian Huskies are dogs.
All Siberian Huskies are animals.

9) (15 points) Fill in the truth table chart for the statement: $(p \vee q) \vee (p \wedge \sim r)$. Be sure to label the column headings.

p	q	r				
T	T	T				
T	T	F				
T	F	T				
T	F	F				
F	T	T				
F	T	F				
F	F	T				
F	F	F				

10) (2 points) Is the statement $(p \vee q) \vee (p \wedge \sim r)$ in number 9 a tautology? Why or why not?