

**Test – Chapter 1**  
**Math 115**

Name \_\_\_\_\_

1. List the 3 applications of a truth table.

- a.
- b.
- c.

Use a Venn Diagram to establish whether or not the following syllogism is valid.

2. *All poodles are dogs.*  
*If an animal is not a mammal, it is not a dog.*  
*∴ All poodles are mammals.*



3. *All reasonable people love math.*  
*You are not reasonable.*  
*∴ You do not love math.*



4. Give a conclusion that would logically follow from the given premises.

*If you paint my house then I won't tell the insurance company about the accident.*  
*If you don't paint my house, then I'm going to Hawaii.*

Give a sentence that represents the negation of the following sentences.

5. George's car is black and it smells bad.

6. All triangles have 3 sides.

7. Using the representations

$C$  – The radio is playing a country song.

$S$  – My son makes a gagging noise.

Complete the truth table below.

$C$	$S$	$S \rightarrow C$	$\sim S$	$(S \rightarrow C) \wedge \sim S$	$\sim C$	$[(S \rightarrow C) \wedge \sim S] \rightarrow \sim C$

What is the syllogism being evaluated by the table?

Is the syllogism valid? Why or why not?

8. Circle the letter of the statement that has the same meaning as the given statement.

*Patricia goes to the movies only if it rains.*

A. *If it rains, then Patricia goes to the movies.*

B. *If Patricia goes to the movies, then it is raining.*

9. Find sentences that represent the converse, inverse and contrapositive of the given conditional.

*All worms are slimy.*

Converse:

Inverse:

Contrapositive:

10. Use a truth table to determine whether the following statements are equivalent. Make sure that you state whether or not the statements are equivalent and explain how the result is demonstrated by the truth table.

*If he's late, then you're fired.  
You are fired or he is not late.*


11. Give an example of inductive reasoning.

12. Give a conclusion that would logically follow from the given premises.

*If you paint my house then I won't tell the insurance company about the accident.  
If you don't paint my house, then I'm going to Hawaii. (hint: It should be valid.)*

### ***Extra Credit***

Give a sentence that represents the negation of the following.

*If a triangle is isosceles, then the base angles are equal in measure.*