

**A. Answer the following.**

1. What is inductive reasoning?
2. What is deductive reasoning?

**B. Identify the hypothesis and conclusion for each statement.**

3. Lynn will go to the homecoming dance if Jack asks her.
4. If it is March 14<sup>th</sup>, then the math classes celebrate Pi Day.

**C. Rewrite the conditional statement in if-then form. Then write the converse.**

4. An apple a day keeps the doctor away.
5. We are dismissed early if there is a teacher's meeting.

**D. Determine whether the statement can be combined with its converse to form a true biconditional statement. If so, then write the biconditional statement. If not, then provide a counterexample.**

6. If a rectangle has four congruent sides, then it is a square.
7. If the sun is shining, then it is not raining.

**E. Write the conditional and converse statements that are in the biconditional.**

8. Lucas answers the phone if and only if the phone rings.

Conditional:

Converse:

**F. Decide whether inductive or deductive reasoning is used to reach the conclusion.**

9. Andrea knows that Robin is a sophomore and Todd is a junior. All other juniors that Andrea knows of are older than Robin. Therefore, Todd is older than Robin.
10. Chris knows that his family has spaghetti for dinner every Wednesday night. Today is Wednesday, therefore his family will have spaghetti for dinner tonight.

**G. Determine if the Law of Detachment or the Law of Syllogism is used to draw the conclusion. If the conclusion is invalid, write NO CONCLUSION.**

11. If an angle measures more than  $90^\circ$ , then it is not acute.  
The measure of  $\angle ABC = 120^\circ$   
 $\angle ABC$  is not acute
12. If you order the apple pie, then it will be served with ice cream.  
Matthew was served ice cream.  
Matthew ordered the apple pie.
13. If you wear the school colors, then you have school spirit.  
If you have school spirit, then the team feels great.  
If you wear the school colors, then the team feels great.

14. Solve the equation:  $4+6(x+7) = 2x - 8$