1.

   What four elements are found in any deductive structure?

2.

   Which of the following kinds of statements are always reversible?

   a. Definitions

   b. Theorems

   c. Postulates

3.

   Answer each question Yes or No.

   a. Do we prove theorems?

   b. Do we prove definitions?

4.

   Tell whether each of the following statements is a theorem or a definition.

   a. If two angles are right angles, then they are congruent.

   b. If a ray bisects an angle, it divides the angle into two congruent angles.

5.

   a. Write the converse of each of the following statements:

      i. If A, then B

      ii. Rain ⇒ Wet

      iii. If an angle is a 45° angle, then it is acute.

      iv. If a point is the midpoint of a segment, it divides the segment into two congruent segments.

   b. Is each converse true, false, or potentially both true and false? Hint: if it can be false in one situation, it is considered a false statement.

8.

   State whether or not the conclusion is deducible. If it is not, comment on the error in the reasoning:

      If a student at Niles High has room 303 as his or her homeroom, the student is a freshman. Joe Jacobs is a student at Niles High and has room 303 as his homeroom. Therefore, Joe Jacobs is a freshman.

9.

State whether or not the conclusion is deducible. If it is not, comment on the error in the reasoning:

If the three angles of a triangle are acute, then the triangle is acute. In △ABC, ∠A and ∠B are acute. Therefore, △ABC is acute.

10.

State whether or not the conclusion is deducible. If it is not, comment on the error in the reasoning:

All school buses stop at railroad crossings. A vehicle stopped at the Santa Fe railroad crossing. Therefore, that vehicle is a school bus.

11.

State whether or not the conclusion is deducible. If it is not, comment on the error in the reasoning:

All cloudy days are depressing. Therefore, since I was depressed on Thursday, Thursday was cloudy.

12.

State whether or not the conclusion is deducible. If it is not, comment on the error in the reasoning:

If two angles of a triangle are congruent, then the sides opposite them are congruent.
In △ABC, ∠A ≅ ∠B. Therefore in △ABC, $\overline{BC}$ ≅ $\overline{AC}$.

14.

The zoo has a green lizard, a red crocodile, and a purple monkey. All we know about them is the following. Match their names to the type of animal.

    1. Wendy cannot get along with the lizard.

    2. Katie playfully took a bite out of the monkey's ear one month ago.

    3. Wendy never casts a red reflection in the mirror.

    4. Jody has the personality of a crocodile, but she isn't one.