3.3 The Conditional and Biconditional

M. Goodroe - Quantitative Skills and Reasoning

Key Terms:
   Hypothesis
   Conclusion

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Assume that p represents a true statement, q represents a true statement, and r represents a false statement. Determine the truth value of the following.

   1) ~(p ∧ q) → ~q

   2) r → (~p ∨ q)

Construct a truth table for the statement.

   3) q → ~r

   4) ~s → (~s ∧ q)

   5) ~(p → q) → (p ∧ ~q)

Write, as indicated, the converse, inverse, or contrapositive for the statement.

   6) If the sun shines, they will bask. (inverse)

   7) If the alarm beeps every thirty seconds, then you have to replace the battery. (converse)

Rephrase the statement in the requested symbolic form.

   8) converse of a → b

   9) contrapositive of a → b

   10) inverse of a → ~(b ∨ c)

Determine whether the statements are equivalent.

   11) If we visit the museum after May 30, then we w see the precious gems exhibit.
   If we do not see the precious gems exhibit, then we do not visit the museum after May 30.

   12) If Mark does not study for the quiz, then he will not miss the game.
   If Mark studies for the quiz, then he will miss th game.

Rewrite the statement in the form "if p, then q".

   13) I will lose weight if I diet.

   14) Practice is necessary for making the team.