

# Study Guide

## ***If-Then Statements and Postulates***

If-then statements are commonly used in everyday life. For example, an advertisement might say, “If you buy our product, then you will be happy.” Notice that an if-then statement has two parts, a *hypothesis* (the part following “if”) and a *conclusion* (the part following “then”).

New statements can be formed from the original statement.

<b>Statement</b>	$p \rightarrow q$
<b>Converse</b>	$q \rightarrow p$
<b>Inverse</b>	$\sim p \rightarrow \sim q$
<b>Contrapositive</b>	$\sim q \rightarrow \sim p$

**Example:** Rewrite the following statement in if-then form. Then write the converse, inverse, and contrapositive.

All elephants are mammals.

<b>If-then form:</b>	If an animal is an elephant, then it is a mammal.
<b>Converse:</b>	If an animal is a mammal, then it is an elephant.
<b>Inverse:</b>	If an animal is not an elephant, then it is not a mammal.
<b>Contrapositive:</b>	If an animal is not a mammal, then it is not an elephant.

***Identify the hypothesis and conclusion of each conditional statement.***

- If today is Monday, then tomorrow is Tuesday.
- If a truck weighs 2 tons, then it weighs 4000 pounds.

***Write each conditional statement in if-then form.***

- All chimpanzees love bananas.
- Collinear points lie on the same line.

***Write the converse, inverse, and contrapositive of each conditional.***

- If an animal is a fish, then it can swim.
- All right angles are congruent.