



**APPLY**

33. **Model With Mathematics** In general, a person is 1% shorter in the evening than in the morning. Use your height to write a conditional that uses this fact.
34. **Communicate Precisely** In the year 1881, three different men were president of the United States—Rutherford B. Hayes, James Garfield, and Chester A. Arthur.
- Use this fact to write a conditional and a biconditional.
  - There was one other year in which three different men were president of the United States. In 1841, Martin Van Buren, William Henry Harrison, and John Tyler were president. Using this information, determine the truth value of the conditional and the biconditional you wrote for part (a).
35. **Reason** The sign shows the hours for an art museum.

MO ART Modern Art Museum HOURS		
Monday	Closed	
Tuesday	10:00 AM	8:00 PM
Wednesday	10:00 AM	6:00 PM
Thursday	10:00 AM	8:00 PM
Friday	9:00 AM	6:00 PM
Saturday	9:00 AM	6:00 PM
Sunday	12:00 AM	5:00 PM

- Write a conditional to describe the hours of the museum on Mondays.
- Write a conditional to describe the hours of the museum on Thursdays.
- Write the converse, inverse, and contrapositive of the conditional you wrote in part (b). Then give the truth value for each statement.
- Can each conditional you wrote for parts (a) and (b) be written as a true biconditional? Why or why not? If so, give each biconditional.

**ASSESSMENT PRACTICE**

36. Consider the conditional  $p \rightarrow q$ , where  $p$  is true and  $q$  is false. Copy and complete the table to show the truth value of each statement.

Statement	Truth Value
Conditional	F
Converse	
Inverse	
Contrapositive	

37. **SAT/ACT** Which represents the contrapositive of  $p \rightarrow q$ ?
- $p \leftrightarrow q$
  - $q \rightarrow p$
  - $\sim p \rightarrow \sim q$
  - $\sim q \rightarrow \sim p$
  - $\sim q \leftrightarrow \sim p$
38. **Performance Task** A group of students drew several different right triangles and found the measures of the two non-right angles. Their findings are shown in the table.

Angle Measure	Angle Measure	Sum
27	63	90
41	49	90
70	20	90
33	57	90

**Part A** Make a conjecture about the sum of two non-right angles in a right triangle. Write the conjecture in the form of a conditional.

**Part B** Construct several right triangles, and then measure the angles of each triangle. Do your measurements support your conjecture, or were you able to find a counterexample?

**Part C** Write the converse, the inverse, and the contrapositive of your conditional. Then, write a biconditional. Is the biconditional true? Explain.