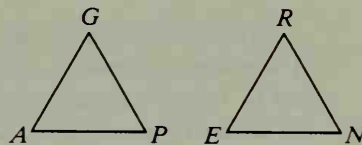


## Self-Test 2

1. In  $\triangle XYZ$ ,  $m\angle X = 50$ ,  $m\angle Y = 60$ , and  $m\angle Z = 70$ . Name the longest side of the triangle.
2. In  $\triangle DOM$ ,  $\angle O$  is a right angle and  $m\angle D > m\angle M$ . Which side of  $\triangle DOM$  is the shortest side?

Complete each statement by writing  $<$ ,  $=$ , or  $>$ .

3. If  $ER > EN$ , then  $m\angle R$   $\underline{\hspace{1cm}}$   $m\angle N$ .
4. If  $\overline{AG} \cong \overline{ER}$ ,  $\overline{AP} \cong \overline{EN}$ , and  $\angle A \cong \angle E$ , then  $\overline{GP}$   $\underline{\hspace{1cm}}$   $\overline{RN}$ .
5. If  $\overline{GA} \cong \overline{RE}$ ,  $\overline{GP} \cong \overline{RN}$ , and  $AP > EN$ , then  $m\angle G$   $\underline{\hspace{1cm}}$   $m\angle R$ .



Exs. 3-5

6. The lengths of the sides of a triangle are 5, 6, and  $x$ . Then  $x$  must be greater than  $\underline{\hspace{1cm}}$  and less than  $\underline{\hspace{1cm}}$ .

The longer diagonal of  $\square QRST$  is  $\overline{QS}$ . Tell whether each statement *must be*, *may be*, or *cannot be true*.

7.  $\angle R$  is an acute angle.
8.  $QS > RS$
9.  $RS > RT$

### Extra

## Non-Euclidean Geometries

When you develop a geometry, you have some choice as to which statements you are going to postulate and which you are going to prove. For example, consider these two statements:

- (A) If two parallel lines are cut by a transversal, then corresponding angles are congruent.
- (B) Through a point outside a line, there is exactly one line parallel to the given line.

In this book, statement (A) is Postulate 10 and statement (B) is Theorem 3-8. In some books, statement (B) is a postulate (commonly called Euclid's *Parallel Postulate*) and statement (A) is a theorem. In still other developments, both of these statements are proved on the basis of some third statement chosen as a postulate.

A geometry that provides for a unique parallel to a line through a point not on the line is called *Euclidean*, so this text is a Euclidean geometry book. In the nineteenth century, it was discovered that geometries exist in which the Parallel Postulate is *not true*. Such geometries are called *non-Euclidean*. The statements at the top of the next page show the key differences between Euclidean geometry and two types of non-Euclidean geometry.