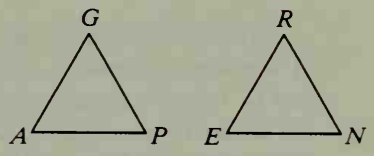
Self-Test 2

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



Exs. 3-5

6. The lengths of the sides of a triangle are 5, 6, and x. Then x must be greater than ___?___ and less than ___?___.

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.