Name

Class

Date

4.12 Inequalities in One Triangle

**Explain why *m***∠**1 >** ***m***∠**2.**

**1. 2.**

**For Exercises 3–6, list the angles of each triangle**

**in order from smallest to largest.**

**3. 4.**

**5. 6.**

**For Exercises 7–10, list the sides of each triangle in order from shortest to longest.**

**7. 8.**

**9.** ∆*ABC,* with *m*∠*A* = 99, *m*∠*B* = 44, and *m*∠*C* = 37

**10.** ∆*ABC,* with *m*∠*A* = 122, *m*∠*B* = 22, and *m*∠*C* = 36

**For Exercises 11 and 12, list the angles of each triangle in order from smallest to largest.**

**11.** ∆*ABC,* where *AB* = 17, *AC* = 13, and *BC* = 29

**12.** ∆*MNO,* where *MN* = 4, *NO* = 12, and *MO* = 10

 *Form G*

**Determine which side is shortest in the diagram.**

**13. 14.**

**Can a triangle have sides with the given lengths? Explain.**

**15.** 8 cm, 7 cm, 9 cm

**16.** 7 ft, 13 ft, 6 ft

**17.** 20 in., 18 in., 16 in.

**18.** 3 m, 11 m, 7 m

**Algebra The lengths of two sides of a triangle are given. Describe the possible lengths for the third side.**

**19.** 5, 11

**20.** 12, 12

**21.** 25, 10

**22.** 6, 8

**23. Algebra** List the sides in order from shortest to longest in ∆*PQR,* with *m*∠*P* = 45, *m*∠*Q* = 10*x* + 30, and *m*∠*R* = 5*x.*

**24. Algebra** List the sides in order from shortest to longest in ∆*ABC,* with *m*∠*A* = 80, *m*∠*B* = 3*x* + 5, and *m*∠*C* = 5*x* − 1.

**25. Error Analysis** A student draws a triangle with a perimeter 36 cm. The student says that the longest side measures 18 cm. How do you know that the student is incorrect? Explain.