5.5

Practice A

Inequalities in One Triangle

Fill in the blanks to complete the theorems.

1. If two angles of a triangle are not congruent, then the longer side is

   _____ the larger angle.

2. The sum of any two side lengths of a triangle is _____ than the third side length.

3. If two sides of a triangle are not congruent, then the larger

   _____ is opposite the longer side.

4. Write the angles of $\triangle PQR$ in order from smallest to largest.

   _____

5. Write the sides of $\triangle GHI$ in order from shortest to longest.

   _____

Tell whether a triangle can have sides with the given lengths. If not, explain why not.

6. 8, 8, 16 _____

7. 0.5, 0.7, 0.3 _____

8. $10\frac{1}{2}$, 4, 14 _____

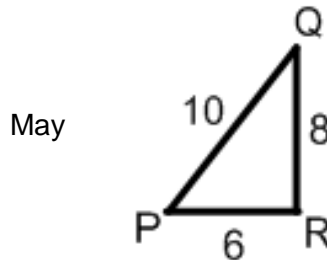9. $3x + 2$, x^2, $2x$ when $x = 4$

   _____

10. $3x + 2$, x^2, $2x$ when $x = 6$

   _____

The lengths of two sides of a triangle are given. Find the range of possible lengths for the third side.
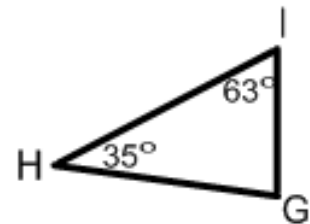
11. 8.2 m, 3.5 m

12. 298 ft, 177 ft

13. $3\frac{1}{2}$ mi, 4 mi

_____   _____

14. The annual Cheese Rolling happens in May at

Gloucestershire, England. As the name suggests, large, 7–9 pound wheels of cheese are rolled down a steep hill, and people chase after them. The

first person to the bottom wins cheese. Renaldo wants to go to the Cheese Rolling. He plans to leave from Atlanta and fly into London (4281 miles). On the return, he will fly back from London to New York City (3470 miles) to visit his aunt. Then Renaldo heads back to Atlanta. Atlanta, New York City, and London do not lie on the same line. Find the range of the total distance Renaldo could travel on his trip.

State if the three numbers can be the measures of the sides of a triangle.

1) 8, 11, 20

2) 14, 11, 9

3) 12, 14, 11

4) 6, 7, 6

Two sides of a triangle have the following measures. Find the range of possible measures for the third side.

5) 9, 7

6) 6, 12

7) 6, 7

8) 6, 10

Order the sides of each triangle from shortest to longest.

9)

10)

11)

12)

Order the angles in each triangle from smallest to largest.

13)

14)

15)

16)