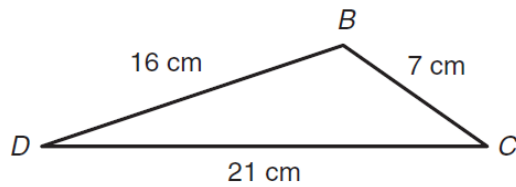


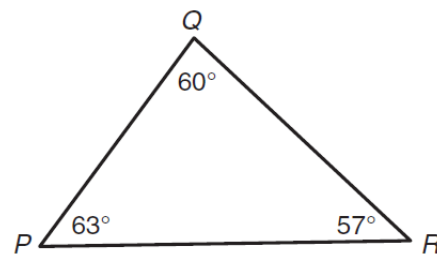
5.3 – The Triangle Inequality Theorem

List the angles and sides of each triangle in order from least to greatest.

1.



2.



3. $\triangle ABC$ with the following: $m\angle A = 27^\circ$,
 $m\angle B = 119^\circ$, and $m\angle C = 34^\circ$

4. $\triangle RST$ with the following: $RS = 8$ cm, $ST = 20$ cm, and $RT = 14$ cm

Determine whether it is possible to form a triangle using segments with the following measurements. Explain your reasoning.

5. 14 inches, 21 inches, 7 inches

6. 26 feet, 10 feet, 18 feet

7. 2.2 millimeters, 7.2 millimeters, 5.1 millimeters

You are building a triangular pen for baby ducks. The sides of the pen will be made from lumber you have left over from other projects. You have two 12-foot boards, one 14-foot board, one 8-foot board, one 4-foot board, one 3-foot board, and one 2-foot board. Use this information to answer questions 8 – 13.

8. Suppose you choose the 14-foot board and the 4-foot board. Of the boards you have left over, what is the longest board that can be used for the third side of the pen? Explain your reasoning.

9. Suppose you choose a 12-foot board and the 8-foot board. Of the boards you have left over, what is the shortest board that can be used for the third side of the pen? Explain your reasoning.

10. Suppose you choose a 12-foot board and the 4-foot board. Of the boards you have left over, which board(s) can be used for the third side of the pen? Explain your reasoning.

11. How many different triangular pens can be formed using the 4-foot board? List the side lengths of each possible triangular pen.

12. If you only have three boards and their lengths are 5 feet, 8 feet, and 4 feet, can you form a triangular pen? Explain your reasoning.

13. Suppose you decide to build a pen with side lengths of 14 feet, 12 feet, and 8 feet as shown. Which angle has the greatest measure? Which angle has the least measure?

