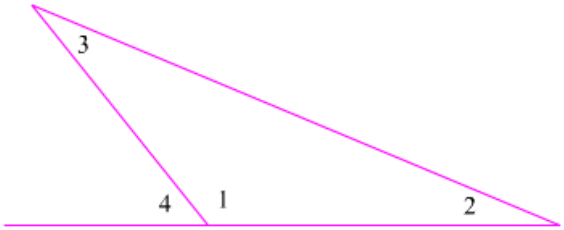
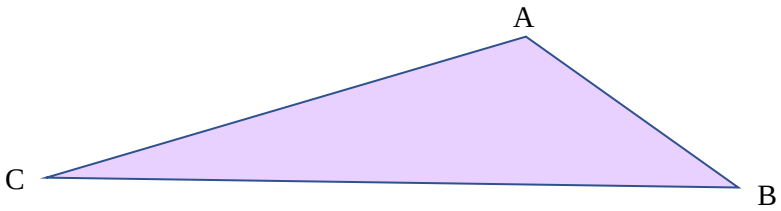
Ch 5 Topic #1Guided Notes: Inequalities in One Triangle

Example 1: Find the measure of ∠4 if ∠3 = 23º and ∠2 = 19º.
Is it possible for ∠4 to ever be smaller than ∠2 or ∠3? Explain your reasoning.



- **Theorem:** The measure of an exterior angle of a triangle is _____ than the measure of either remote interior angle.

Example 2: Use a protractor and ruler to find the measure of the angles and sides (in cm) of the triangle below.



AB = _____ cm

BC = _____ cm

AC = _____ cm

∠A = _____º

∠B = _____º

∠C = _____º

What side is the longest? Which angle is the largest?

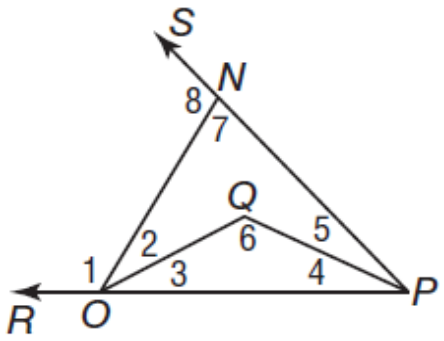
What side is the smallest? Which angle is the smallest?

Draw a conclusion about the relationship between side lengths and angle measures in a triangle:

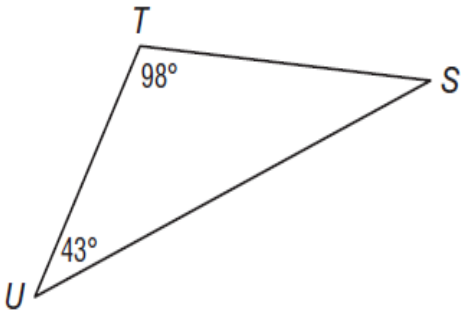
- **Theorems:**
  - If one side of a triangle is longer than another side, then the angle _____ the longer side is larger than the angle opposite the shorter side.

  - If one angle of a triangle is larger than another angle, then the side opposite the larger angle is _____ than the side opposite the smaller angle.

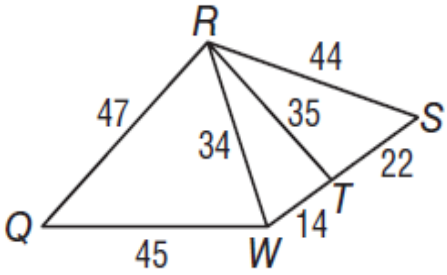
Example 3: Identify any angles that are smaller than <1.



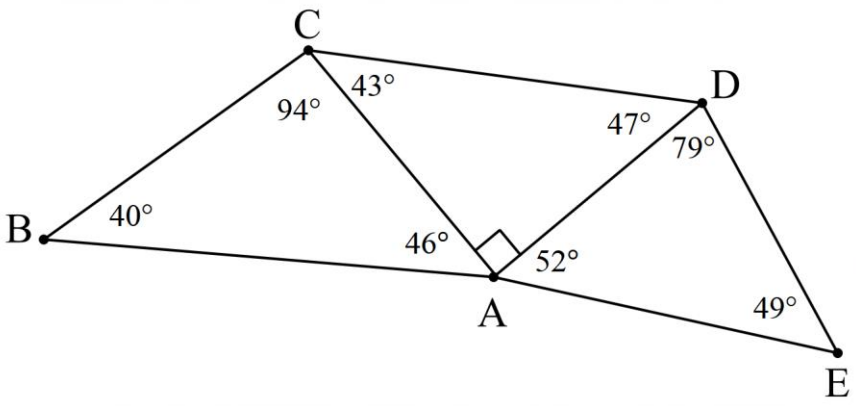
Example 4: List the sides from shortest to longest.



Example 5: Write an inequality comparing the measures of <RWQ and <QRW.



Example 6: Which is the shortest side in the diagram shown below?



Ch 5 Topic 2 Guided Notes: The Triangle Inequality

Example 7: Use the side lengths given to your group to create a triangle. Can any three side lengths be used to create a triangle? Explain your conclusion.

- **Theorem:** The sum of the lengths of any two sides of a triangle must be _____ than the length of the third side

Example 8: Is it possible to form a triangle with the given side lengths? If not, explain why not.

a.) 4 mm, 7mm, 12 mm

b.) 13 in, 15 in, 28 in

Example 9: Find the range for the measure of the third side of a triangle given the measures of two sides.

a) 12 yds , 15 yds.

b) 6 cm, 6 cm

Example 10: Find the range of possible measures of x if each set of expressions represents measures of the sides of a triangle.

$$3x + 2,\ x + 4,\ x + 6$$