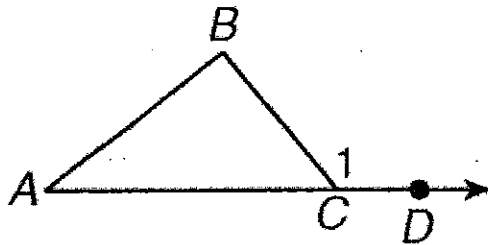


5-3 Inequalities and Triangles

Recognize and apply properties of inequalities to the measures of angles of a triangle and between angles and sides of a triangle.

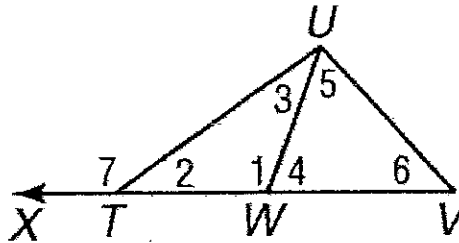
Exterior Angle Inequality Theorem: If an angle is an exterior angle of a triangle, then its measure is greater than the measure of either of its corresponding remote interior angles.



$$m\angle 1 > m\angle A, m\angle 1 > m\angle B$$

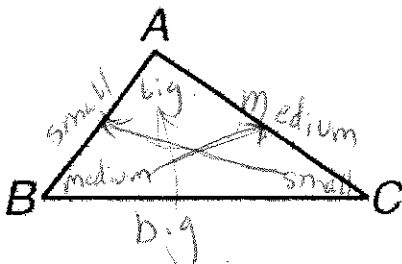
Name all angles

- $\angle 1$: less than angle 1: $\angle 5, \angle 6$
 $\angle 1$: greater than angle 1: $\angle 7$
 $\angle 7$: less than angle 7: $\angle 3, \angle 4$



If one side of a triangle is longer than another side, then the angle opposite the longer side has a greater measure than the angle opposite the shorter side.

If one angle of a triangle has a greater measure than another angle, then the side opposite the greater angle is longer than the side opposite the lesser angle.

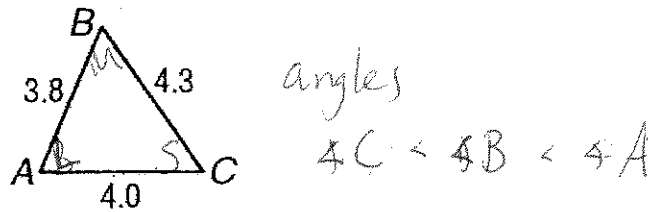
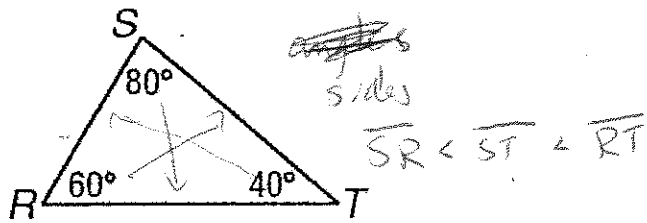


across the Δ

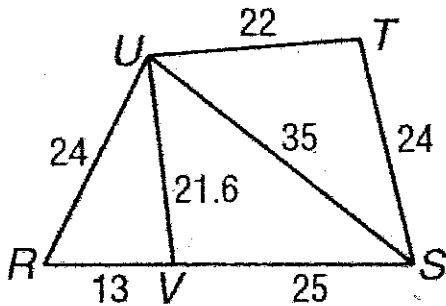
If $AC > AB$, then $m\angle B > m\angle C$.

If $m\angle A > m\angle C$, then $BC > AB$.

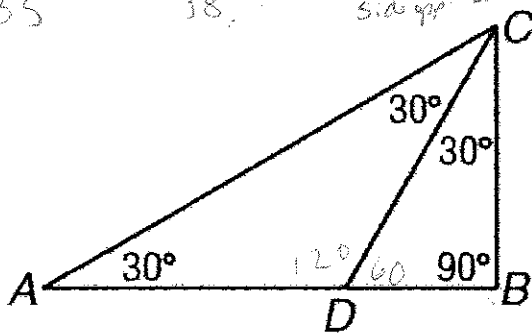
List sides or angles in order from least to greatest:



Determine the relationship between the angles:



$\angle R < \angle RUS$, $\angle UST < \angle T$, $\angle UVS > \angle R$
side opp 35, 38, side opp 22, 35



Determine the relationship between the lengths of the given sides:

$\overline{AC} > \overline{BC}$
angle 90, 30
 $\overline{BC} > \overline{BD}$
angle 60, 30
 $\overline{AC} > \overline{BD}$

NAME _____

DATE _____

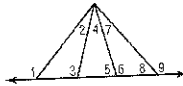
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5-3 Skills Practice

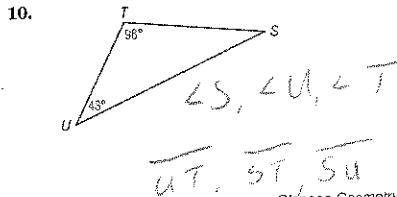
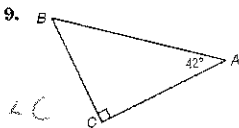
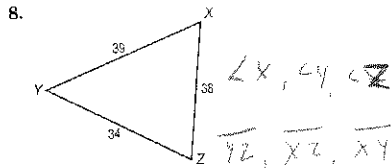
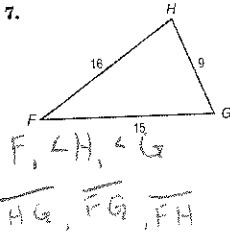
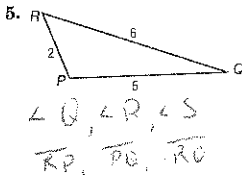
Inequalities in One Triangle

Use the Exterior Angle Inequality Theorem to list all of the angles that satisfy the stated condition.

- measures less than $m\angle 1$
 $\angle 2, \angle 3, \angle 4, \angle 5, \angle 7, \angle 8$
- measures less than $m\angle 9$
 $\angle 2, \angle 4, \angle 6, \angle 7$
- measures greater than $m\angle 5$
 $\angle 1, \angle 3$
- measures greater than $m\angle 8$
 $\angle 1, \angle 3, \angle 5$



List the angles and sides of each triangle in order from smallest to largest.



Lesson 5-3