



### Problem 1 – SAS Inequality Theorem

The SAS Inequality Theorem states:

*If two sides of one triangle are congruent to two sides of another triangle, and the included angle of the first triangle is larger than the included angle of the second triangle, then the third side of the first triangle is longer than the third side of the second triangle.*

1. What is the relationship between the two lengths of  $\overline{BC}$  and  $\overline{EF}$  when  $m\angle BAC > m\angle EDF$ ?
2. What is the relationship between the two lengths of  $\overline{BC}$  and  $\overline{EF}$  when  $m\angle BAC = m\angle EDF$ ?
3. What is the relationship between the two lengths of  $\overline{BC}$  and  $\overline{EF}$  when  $m\angle BAC < m\angle EDF$ ?
4. Does the SAS Inequality Theorem hold true for  $\triangle ABC$  and  $\triangle DEF$ ?

### Problem 2 – SSS Inequality Theorem

The SSS Inequality Theorem states:

*If two sides of one triangle are congruent to two sides of another triangle, and the third side of the first triangle is longer than the third side of the second triangle, then the included angle of the first triangle is larger than the included angle of the second triangle.*

5. What is the relationship between the measurements of  $\angle EDF$  and  $\angle BAC$  when  $BC > EF$ ?
6. What is the relationship between the measurements of  $\angle EDF$  and  $\angle BAC$  when  $BC < EF$ ?
7. What is the relationship between the measurements of  $\angle EDF$  and  $\angle BAC$  when  $BC = EF$ ?
8. Does the SSS Inequality Theorem hold true for  $\triangle ABC$  and  $\triangle DEF$ ?