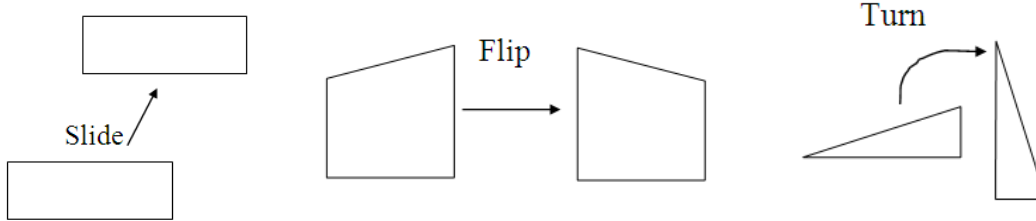Honors Math 2

- **Congruent figures:** Figures that have the same _____ and _____.

  ➤ When two figures are congruent, you can move one so that it fits exactly on the other. Three ways to make such a move are: a slide, a flip, and a turn.

- **Congruent Polygons:** Polygons that have _____ _____ _____ (their matching sides and angles). Matching vertices are corresponding vertices.

  ➤ When you name congruent polygons, you should always list corresponding vertices in the same order.
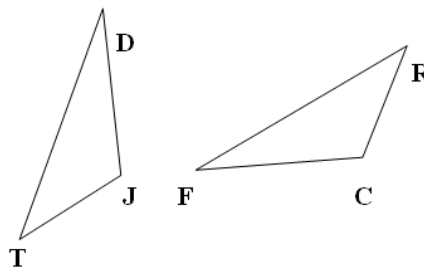
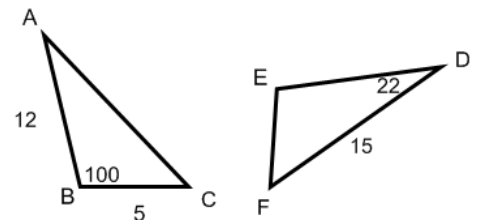**Correspondence Notation:** ACBX ↔PRQY

thus $ACBX \cong PRQY$
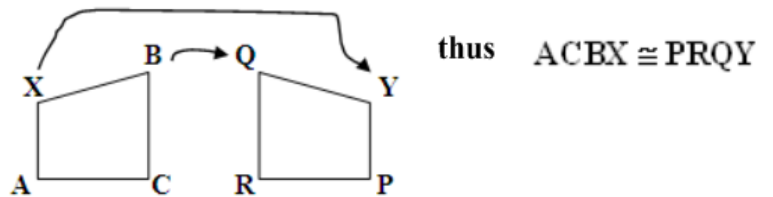
Name the corresponding parts in exs 1 & 2.

1. $\triangle TJD \cong \triangle RCF$

2. $\triangle WYS \cong \triangle MKV$
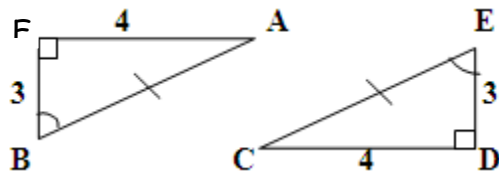

3. Find the missing angles and sides if $\triangle ABC \cong \triangle DEF$.
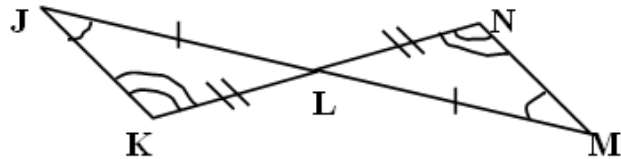

4. Given: $\triangle WYS \cong \triangle MKV$. If m∠Y = 35°, what is m∠K? _____ Why?

1

5.   Are the triangles below congruent? Explain your answer.

5.   Do we have enough information to show these triangles are congruent? Explain.
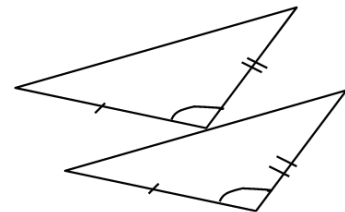

Theorem: If two angles of one triangle are congruent to two angles of another triangle, then the third angles are congruent.

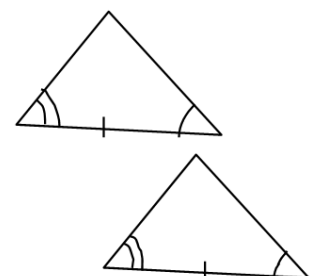**Ways to Prove Triangles Congruent**
- **Side-Side-Side Postulate**: If 3 sides of one triangle are congruent to 3 sides of another triangle, then the triangles are congruent. (SSS)
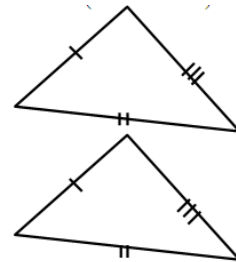

- **Side-Angle-Side Postulate**: If 2 sides and the included angle of one triangle are congruent to 2 sides and the included angle of another triangle, then the triangles are congruent. (SAS)

- **Angle-Side-Angle Postulate**: If 2 angles and the included side of one triangle are congruent to two angles and the included side of anther triangle, then the triangles are congruent. (ASA)

2

- **Angle-Angle-Side Theorem**:If two angles and the non-included side of one triangle are congruent to two angles and the non-included side of another triangle, then the triangles are congruent. (AAS)
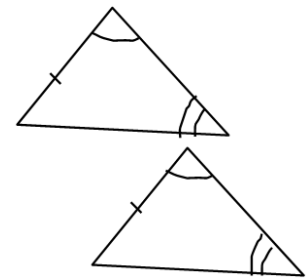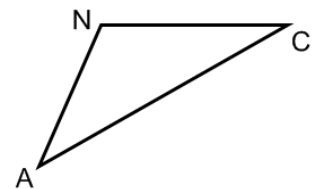
**Notice how ASA and AAS are different:

Do not confuse SAS with SSA. There is <u>not</u> an SSA reason to prove triangles congruent.

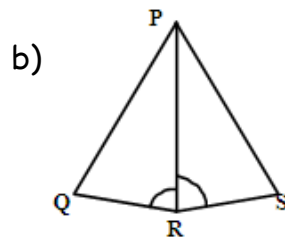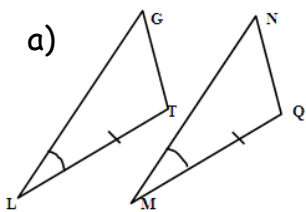*(use triangle to the right for #1 & 2)*
1. Which angle is included between $\overline{NC}$ and $\overline{AN}$?

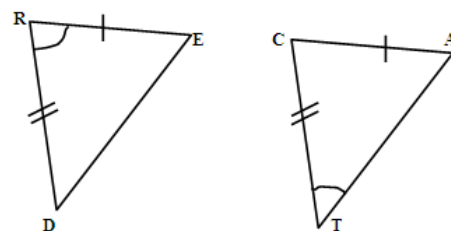2. Which side is included between $\angle C$ and $\angle N$?

(no picture drawn for #3 & 4)
3. Which side is included between $\angle X$ and $\angle Z$ in $\triangle XYZ$?

4. Which angle is included between $\overline{XY}$ and $\overline{XZ}$ in $\triangle XYZ$?

5. What additional information would you need to prove the following two triangles congruent by SAS?

a)

b)

6. Given: $\overline{RE} \cong \overline{CA}; \overline{RD} \cong \overline{CT}; \angle R \cong \angle T$
Is the information enough to prove $\triangle RED \cong \triangle CAT$?

9.   Write the congruence statement for the two triangles you can prove congruent by the ASA Postulate.