# Reteaching 3-3

**Parallel Lines and the Triangle Angle-Sum Theorem**

**OBJECTIVE:** Classifying triangles and finding the measures of their angles

**MATERIALS:** Ruler

## Example

In the diagram at the right, *ACED* has four right angles. Find the missing angle measures in $\triangle ABC$, and classify them. Then classify $\triangle ABC$ in as many ways as you can.

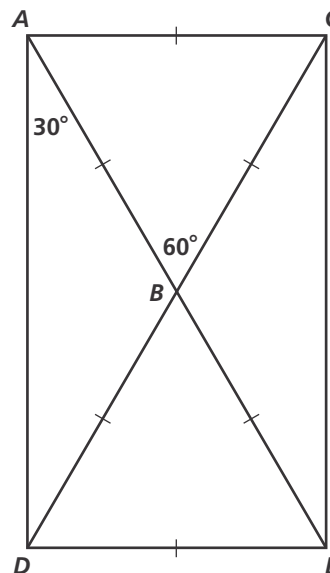| | |
|---|---|
| $m\angle CAB + m\angle DAB = 90$ | Angle Addition Postulate |
| $m\angle CAB + 30 = 90$ | Substitution |
| $m\angle CAB = 60$ | Subtraction Property of Equality |
| $m\angle ACB + m\angle CAB + m\angle ABC = 180$ | Triangle Angle-Sum Theorem |
| $m\angle ACB + 60 + 60 = 180$ | Substitution |
| $m\angle ACB + 120 = 80$ | Addition |
| $m\angle ACB = 60$ | Subtraction Property of Equality |

Because $m\angle CAB < 90$ and $m\angle ACB < 90$, $\angle CAB$ and $\angle ACB$ are acute.

Therefore, $\triangle ABC$ is equilateral, equiangular, and acute.

## Exercises

**Refer to the diagram above.**

1. Find the missing angle measures in $\triangle ABD$, $\triangle CBE$, and $\triangle BDE$.

2. Name the eight triangles in the diagram. Then sketch the triangles, and classify them in as many ways as possible. ($\triangle ABC$ has been classified in the example.)

**In the diagram at the right, $\angle RPT$, $\angle PTS$, $\angle TSR$, and $\angle SRP$ are right angles.**

3. Find the missing angle measures in $\triangle PQT$, $\triangle PQR$, $\triangle RQS$, and $\triangle SQT$.

4. Measure the side lengths of $\triangle PQT$, $\triangle PQR$, $\triangle RQS$, and $\triangle SQT$ to the nearest millimeter.

5. List and classify each triangle. (*Hint:* There are eight triangles.)