1. In $\triangle ABC$, if $\overline{CA} \cong \overline{CB}$ and $m\angle A = 50$, find $m\angle B$.
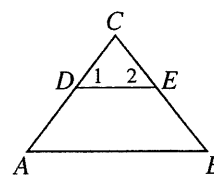2. In $\triangle ABC$, $\overline{AB} \cong \overline{BC}$. If $AB = 5x$ and $BC = 2x + 18$, find $AB$ and $BC$.
3. In isosceles triangle $ABC$, $\overline{AB} \cong \overline{BC}$. If $AB = 5x + 10$, $BC = 3x + 40$, and $AC = 2x + 30$, find the length of each side of the triangle.

4. In $\triangle ABC$, $\overline{AB} \cong \overline{BC}$. If $m\angle A = 7x$ and $m\angle C = 2x + 50$, find $m\angle A$ and $m\angle C$.
5. In $\triangle EFG$, $\overline{EF} \cong \overline{FG}$. If $m\angle E = 4x + 50$, $m\angle F = 2x + 60$, and $m\angle G = 14x + 30$, find $m\angle E$, $m\angle F$, and $m\angle G$.
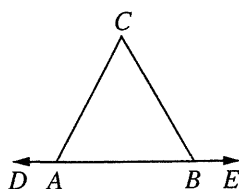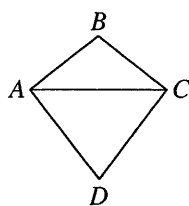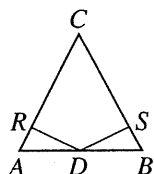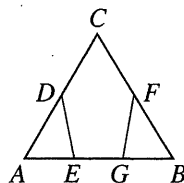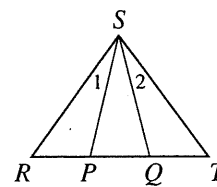


Ex. 6          Ex. 7          Ex. 8

6. *Given:* $\triangle ABC$ with $\overline{CA} \cong \overline{CB}$ and $\overleftrightarrow{DABE}$.
   *Prove:* $\angle CAD \cong \angle CBE$.
7. *Given:* Isosceles triangles $ABC$ and $ADC$ have common base $\overline{AC}$.
   *Prove:* $\angle BAD = \angle BCD$.
8. If $\overline{CA} \cong \overline{CB}$, and $\overline{DA} \cong \overline{EB}$, prove that $\angle 1 \cong \angle 2$.
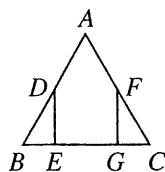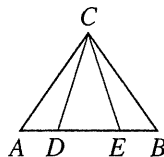
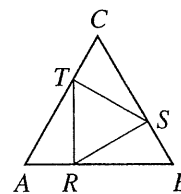

Ex. 9          Ex. 10          Ex. 11

9. *Given:* In $\triangle ABC$, $\overline{CA} \cong \overline{CB}$, $\overline{AR} \cong \overline{BS}$, $\overline{DR} \perp \overline{AC}$, and $\overline{DS} \perp \overline{BC}$.
   *Prove:* $\overline{DR} \cong \overline{DS}$.
10. In isosceles triangle $ABC$, $D$ and $F$ are midpoints of the congruent legs, and $E$ and $G$ are the trisection points of the base ($\overline{AE} \cong \overline{EG} \cong \overline{GB}$). Prove that $\overline{DE} \cong \overline{FG}$.
11. Given $\overline{RPQT}$, $\overline{SR} \cong \overline{ST}$, and $\angle 1 \cong \angle 2$, prove that $\triangle PSQ$ is an isosceles triangle.



Ex. 12          Ex. 13          Ex. 14

12. In $\triangle ABC$, $\overline{AB} \cong \overline{AC}$, $\overline{DE} \perp \overline{BC}$, $\overline{FG} \perp \overline{BC}$, and $\overline{BG} \cong \overline{CE}$. Prove that $\overline{BD} \cong \overline{CF}$.
13. Given $\overline{AD} \cong \overline{BE}$, $\overline{CD} \cong \overline{CE}$, and $\overline{ADEB}$, prove that $\overline{AC} \cong \overline{BC}$.
14. If $\triangle ABC$ is an equilateral triangle and $\overline{CT} \cong \overline{AR} \cong \overline{BS}$, prove:
   a. $\overline{TA} \cong \overline{RB} \cong \overline{SC}$
   b. $\triangle TAR \cong \triangle RBS \cong \triangle SCT$
   c. $\overline{TR} \cong \overline{RS} \cong \overline{ST}$
   d. $\triangle TRS$ is an equilateral triangle.