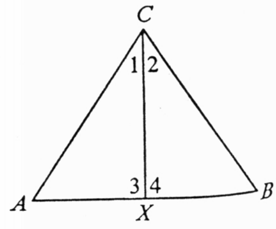
In Exs. 1–6 prove that $\triangle ACX \cong \triangle BCX$.

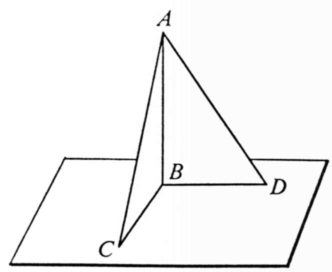
A

1. Given: $AX = BX$; $AC = BC$.
2. Given: $AC = BC$; $\angle 1 = \angle 2$.
3. Given: $\angle 3$ and $\angle 4$ are rt. $\angle$s; $AC = BC$.
4. Given: $\angle 3$ and $\angle 4$ are rt. $\angle$s; $AX = BX$.
5. Given: $\overline{CX} \perp \overline{AB}$; $AC = BC$.
6. Given: $\overline{CX}$ is $\perp$ bisector of $\overline{AB}$.



Exs. 1–6

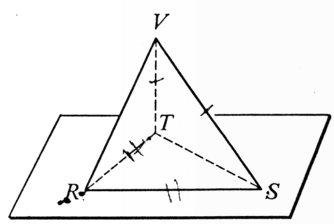
7. Given: $\overline{AB} \perp \overline{BC}$; $\overline{AB} \perp \overline{BD}$;
   $BC = BD$.
   Prove: $\triangle ABC \cong \triangle ABD$.
8. Given: $\overline{AB} \perp \overline{BC}$; $\overline{AB} \perp \overline{BD}$;
   $AC = AD$.
   Prove: $\triangle ABC \cong \triangle ABD$.



Exs. 7, 8

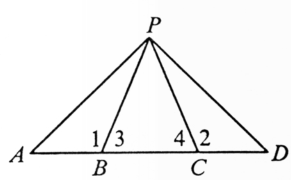
9. Use your ruler and protractor to draw two triangles each having an angle with with a measure of 70, an angle with a measure of 50, and a side of length 4 included between these angles. What seems to be true about the triangles?
10. Repeat Exercise 9, using angle measures of 40 and 100 and a length of 3.

11. Given: $RT = RS$; $VT = VS$.
    Prove: $\triangle VRT \cong \triangle VRS$.
12. Given: $\angle VTR = \angle VTS$; $TR = TS$.
    Prove: $\triangle VTR \cong \triangle VTS$.



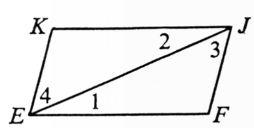
Exs. 11, 12

13. Given: $\triangle ADP$; $\angle 3 = \angle 4$;
    $AB = DC$; $PB = PC$.
    Prove: $\triangle ABP \cong \triangle DCP$.
14. Given: $\triangle ADP$; $\angle 1 + \angle 4 = 180°$;
    $AB = DC$; $PB = PC$.
    Prove: $\triangle ABP \cong \triangle DCP$.



Exs. 13, 14

15. Given: $\overline{EF} \parallel \overline{KJ}$; $EF = JK$.
    Prove: $\triangle EFJ \cong \triangle JKE$.
16. Given: $\overline{JF} \parallel \overline{KE}$; $JF = EK$.
    Prove: $\triangle EFJ \cong \triangle JKE$.



Exs. 15, 16

17. Prove: If $\overline{QX}$ is perpendicular to $\overline{AB}$ at X, the midpoint of $\overline{AB}$, then $\triangle AXQ \cong \triangle BXQ$.
18. Prove: If P is a point on ray OQ in the interior of $\angle RON$, $\overline{PX} \perp \overline{OR}$ at X, $\overline{PY} \perp \overline{ON}$ at Y, and $OX = OY$, then $\triangle POX \cong \triangle POY$.
19. Prove, in a short paragraph, that congruence is transitive. That is, given $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle RST$, prove that $\triangle ABC \cong \triangle RST$.
20. Is congruence reflexive? Is congruence symmetric? Explain.