EXERCISE 7.1

1. In the given figure, AD = CD and AB = CB.
   (a) State the three pairs of equal sides in \( \triangle ABD \) and \( \triangle CBD \).
   (b) Is \( \triangle ABD \cong \triangle CBD \)? Why?
   (c) Does BD bisect \( \angle ABC \)? Give reasons.

2. In \( \triangle PQR \) and \( \triangle XYZ \), PQ = XZ and QR = YZ. What additional information is required to make the two triangles congruent by SSS congruence criterion?

3. If \( \triangle PQR \) is an isosceles triangle such that PQ = PR, then prove that the altitude PS from P on QR bisects QR.

4. In the given figure, AB \perp QR, AC \perp QP and QC = QB.
   (a) Is \( \triangle AQB \cong \triangle ACQ \)?
   Give reasons in support of your answer.
   (b) Which angle is equal to \( \angle AQB \)?

5. In the given figure, AB \parallel DC and AB = DC.
   (a) Is \( \angle BAC = \angle DCA \)? Why?
   (b) Is \( \triangle ABC \cong \triangle CDA \)?
6. In the given figure, AB = AC and D is the mid-point of BC.
   (a) State the three pairs of equal sides.
   (b) Is Δ ADB = Δ ADC? Give reasons.

   **EXERCISE 7.2**

1. In Δ ABC and Δ DEF, AB = DE and BC = EF. What additional information is required to make the two triangles congruent by SAS congruence criterion?

2. In the given figure, PX and QY are perpendicular to PQ and PX = QY. Show that AX = AY, using AAS congruence criterion.

3. In the given figure, Δ ABC is a right-angled triangle in which ∠B = 90° and D is the mid-point of AC. Prove that BC = AB
   [Hint: Prove that Δ ABD ≅ Δ CBD, using SAS congruence criterion]

4. In the given figure, AB || CD. If O is the midpoint of BC, show that O is also the midpoint of AD.

5. Prove that the three angles of an equilateral triangle are equal.

6. In the given figure, Δ ABC is an isosceles triangle in which AB = AC. If BD ⊥ AC and CE ⊥ AB, prove that BD = CE.

7. In the given figure, the triangles are congruent. Find the values of x and y.