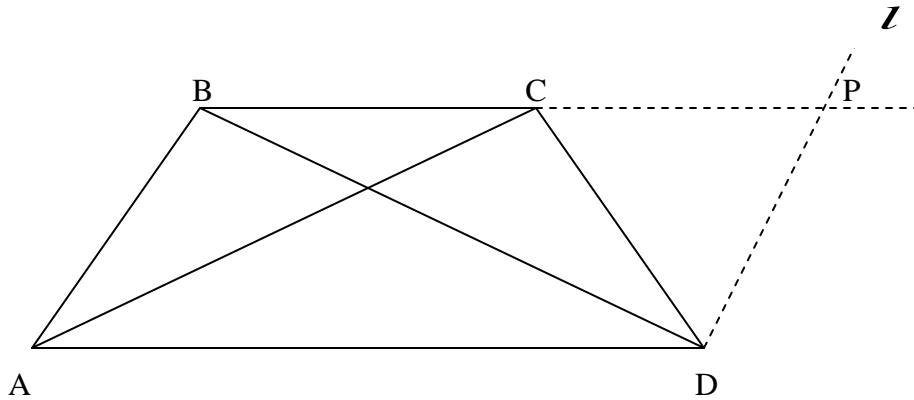


Prove: The diagonals of an isosceles trapezoid ABCD are equal. ($\overline{AC} \cong \overline{DB}$)



Statements	Reasons
1. Isosceles trapezoid ABCD with leg $\overline{CD} \cong \text{leg } \overline{BA}$	1. Given
2. Construct line l Parallel to \overline{BA} through point D.	2. A line can be constructed parallel to a given line through a given external point.
3. Extend \overline{BC} to intersect line l at point P.	3. A line can be extended without limit in either direction.
4. \overline{BP} parallel \overline{AD}	4. Definition of isosceles trapezoid. Construction.
5. \overline{BA} parallel \overline{PD}	5. Construction
6. Quadrilateral ABPD is a parallelogram	6. If the opposite sides of a quadrilateral are parallel, the quadrilateral is a parallelogram.
7. $\overline{BA} \cong \overline{PD}$	7. Opposite sides of a parallelogram are congruent.
8. $\overline{CD} \cong \overline{PD}$	8. Transitive property
9. In triangle CDP $\angle DCP \cong \angle CPD$	9. If two sides of a triangle are equal, the angles opposite those sides are equal.

10. In parallelogram ABPD $\angle ABC$ and $\angle CPD$ are supplementary	10. When two parallel lines are cut by a transversal, the interior angles on the same side of the transversal are supplementary.
11. $\angle ABC + \angle CPD = 180^\circ$	11. Definition of supplementary angles.
12. $\angle BCP$ is a straight angle.	12. Definition of a straight angle.
13. $\angle BCP = 180^\circ$	13. All straight angles = 180° .
14. $\angle BCP = \angle BCD + \angle DCP$	14. The whole of any quantity is equal to the sum of all its parts.
15. $\angle BCD + \angle DCP = 180^\circ$	15. Substitution
16. $\angle BCD + \angle CPD = 180^\circ$	16. Substitution
17. $\angle BCD$ and $\angle CPD$ are supplementary	17. Definition of supplementary angles
18. $\angle ABC \cong \angle BCD$	18. Supplements of the same or equal angles are equal.
19. $\overline{BC} \cong \overline{BC}$	19. reflexive property.
20. triangle ABC \cong triangle DCB	20. s.a.s. \cong s.a.s.
21. $\overline{AC} \cong \overline{DB}$	21. C.P.C.T. C.