

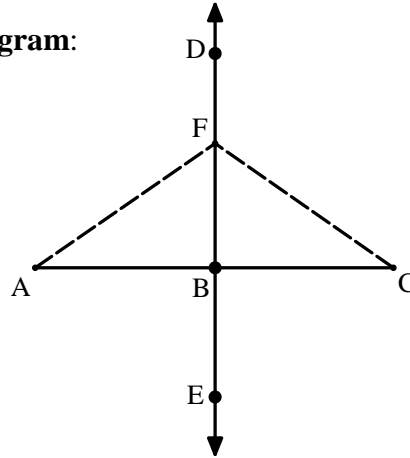
Common Core Geometry Proof - Lines and Angles_4

Points on Perpendicular Bisector

Theorem: If a point lies on the perpendicular bisector of a line segment, then it is equidistant from the segment's endpoints.

Given: \overleftrightarrow{DE} is the perpendicular bisector of \overline{AC} ,
 intersecting at point B
 F is a point on \overleftrightarrow{DE}

Diagram:



Prove: $\overline{AF} \cong \overline{CF}$

Statement	Reason
1. \overleftrightarrow{DE} is the perpendicular bisector of \overline{AC} , intersecting at point B; F is a point on \overleftrightarrow{DE}	1. Given
2. $\overleftrightarrow{DE} \perp \overline{AC}$; B is the midpoint of \overline{AC}	2. Definition of Perpendicular Bisector
3. $\overline{AB} \cong \overline{CB}$	3. Definition of Midpoint
4. $\angle ABD$ and $\angle CBD$ are right angles	4. Definition of Perpendicular Lines
5. $\angle ABD \cong \angle CBD$	5. Theorem: If two angles are right angles, then they are congruent
6. $\overline{FB} \cong \overline{FB}$	6. Reflexive Axiom
7. $\triangle ABF \cong \triangle CBF$	7. SAS \cong SAS
8. $\overline{AF} \cong \overline{CF}$	8. Corresponding Parts of Congruent Triangles are Congruent (CPCTC)