**Activity 2.7.6 Construction of the Perpendicular Bisector of a Line Segment**



**Construction**

Given: Segment $\overbar{AB}$

To construct: The perpendicular bisector of $\overbar{AB}$.

Steps in the construction:

1. Construct the circle with center *A* passing through *B*.
2. Construct the circle with center *B* passing through *A*.
3. Label points where the circles intersect *C* and *D*.
4. Construct line $\overleftrightarrow{CD}$.
5. Label the intersection of $\overleftrightarrow{CD}$ and $\overbar{AB}$ point *E*.

Claim: $\overleftrightarrow{CD}$ $⊥\overbar{AB}$ and *EA = EB.*

**Proof**

1. Construct segments $\overbar{AC}$, $\overbar{BC}$, $\overbar{AD}$, and $\overbar{BD}$.
2. Prove that two pairs of triangles are congruent:

First ∆*CAD* $≅ $∆*CBD.*

Then ∆*CAE* $≅ $∆*CBE.*

1. Use the second pair of triangles to prove that $\overleftrightarrow{CD}$ $⊥\overbar{AB}$ and *EA = EB.*