

Construction 2

Given an angle, construct an angle congruent to the given angle.

Given: $\angle ABC$

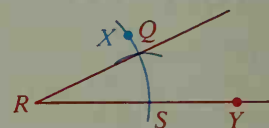
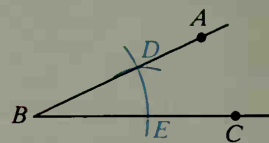
Construct: An angle congruent to $\angle ABC$

Procedure:

1. Draw a ray. Label it \overrightarrow{RY} .
2. Using B as center and any radius, draw an arc intersecting \overrightarrow{BA} and \overrightarrow{BC} . Label the points of intersection D and E , respectively.
3. Using R as center and the same radius as in Step 2, draw an arc intersecting \overrightarrow{RY} . Label the arc \widehat{XS} , with S the point where the arc intersects \overrightarrow{RY} .
4. Using S as center and a radius equal to DE , draw an arc that intersects \widehat{XS} at a point Q .
5. Draw \overrightarrow{RQ} .

$\angle QRS$ is congruent to $\angle ABC$.

Justification: If you draw \overline{DE} and \overline{QS} , $\triangle DBE \cong \triangle QRS$ (SSS Postulate).
Then $\angle QRS \cong \angle ABC$.



Construction 3

Given an angle, construct the bisector of the angle.

Given: $\angle ABC$

Construct: The bisector of $\angle ABC$

Procedure:

1. Using B as center and any radius, draw an arc that intersects \overrightarrow{BA} at X and \overrightarrow{BC} at Y .
2. Using X as center and a suitable radius, draw an arc. Using Y as center and the same radius, draw an arc that intersects the arc with center X at a point Z .
3. Draw \overrightarrow{BZ} .

\overrightarrow{BZ} bisects $\angle ABC$.

Justification: If you draw \overline{XZ} and \overline{YZ} , $\triangle XBZ \cong \triangle YBZ$ (SSS Postulate).
Then $\angle XBZ \cong \angle YBZ$ and \overrightarrow{BZ} bisects $\angle ABC$.

