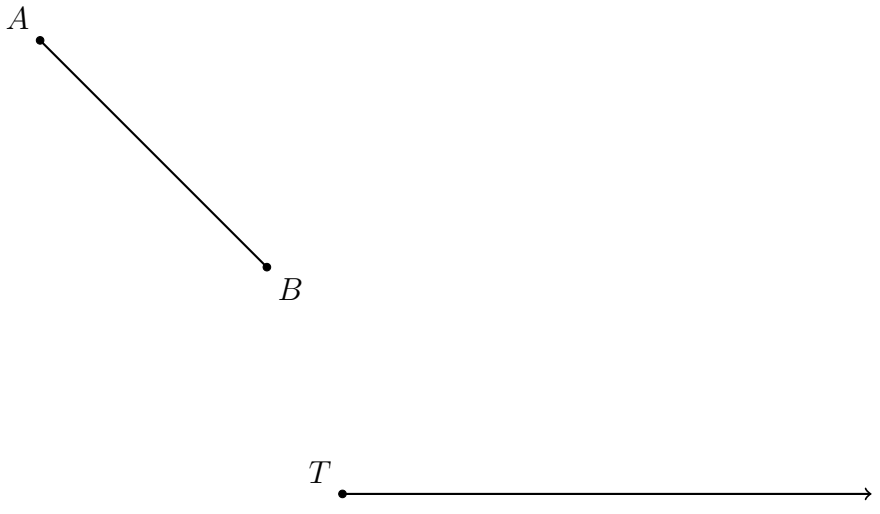
BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

**Classical constructions**

1. Elementary, single constuctions
   (a) Equilateral Triangle
   (b) Duplicate a line segment
   (c) Perpendicular (bisector, through a point on/off the line)
   (d) Bisect an angle
   (e) Duplicate an angle
2. Triangle centers (perpendicular, bisectors, altitudes, medians)

**Equilateral triangle**

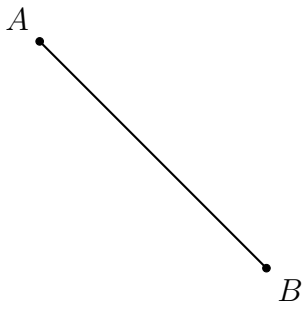
1. Construct an equilateral triangle having one side on $\overrightarrow{T}$ with each leg congruent to $\overline{AB}$. [Leave all construction marks.]



BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

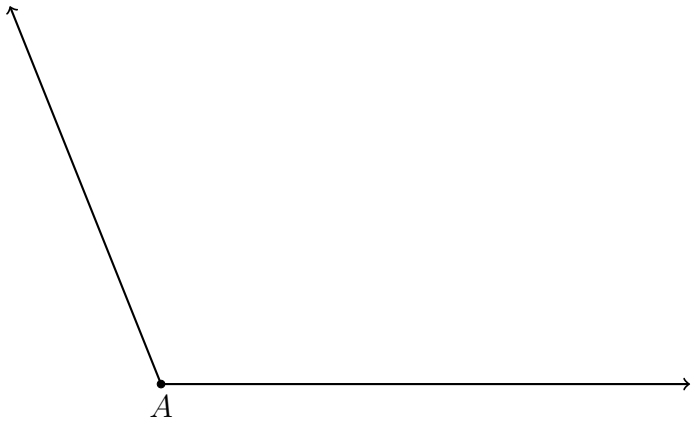
**Perpendicular (bisector, through a point on/off the line)**

2. Construct a perpendicular bisector the given line segment $\overline{AB}$. Label the midpoint of $\overline{AB}$ as $M$. [Leave all construction marks.]




**Angle bisector**

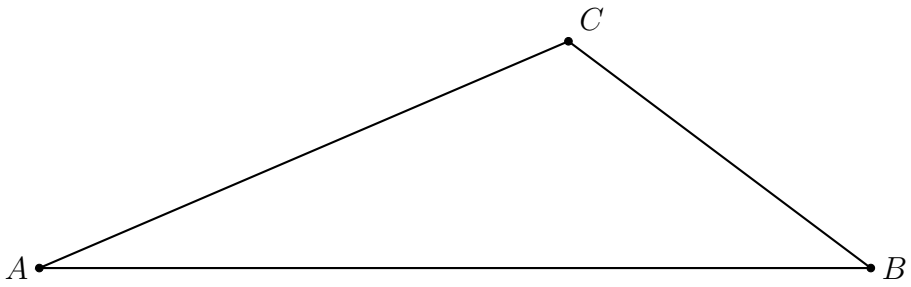
3. Construct an angle bisector the given angle $A$. [Leave all construction marks.]



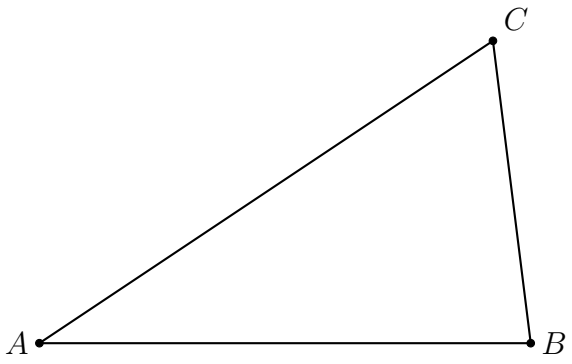
BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

**Triangle centers**

4. Construct a perpendicular to $\overline{AB}$ through $C$.

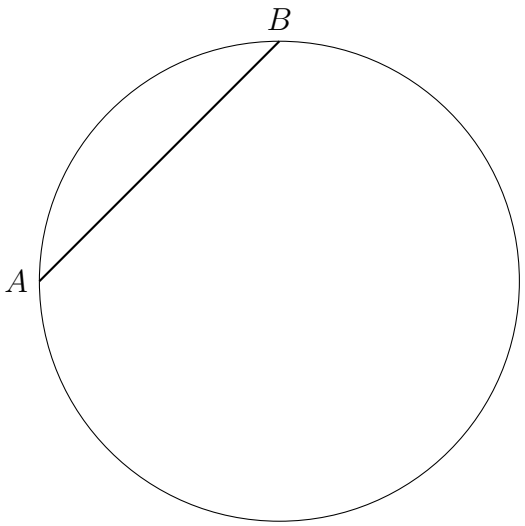



5. Construct the midpoint $M$ of $\overline{AC}$ by using the perpendicular bisector construction. Draw $\overline{BM}$, a *median* of $\triangle ABC$.
   Spicy: Construct the other two medians, and hence, the centroid.



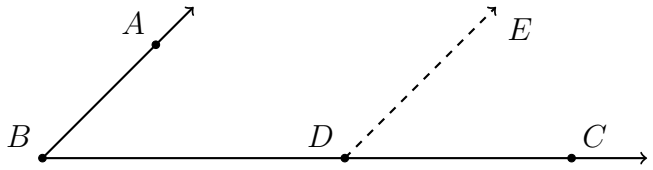
BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

6. In the circle below, $\overline{AB}$ is a chord. Using a compass and straightedge, construct a perpendicular bisector of $\overline{AB}$, and hence, a diameter of the circle. [Leave all construction marks.]



BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

7. Spicy: Given $\angle ABC$, construct duplicate $\angle CDE$. (Leave all construction marks.)



BECA / Dr. Huson / Geometry 10th Grade Name: .
Learning trajectory: Constructions

**Triangle congruence ($\triangle \cong$)**

8. Function notation: $A \to A'$ is pronounced "A gets mapped to A prime," or "A corresponds to A prime."

9. Given $\triangle ABC$, duplicate $\triangle ABC$ by duplicating each side. ("side-side-side" or "SSS")

   (a) Construct $\overrightarrow{A'}$.

   (b) Circle $A'$ with radius $AB$.

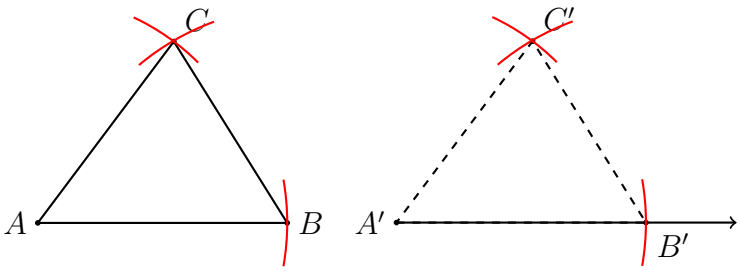
   (c) Intersection $B'$.

   (d) Circle $A'$ with radius $AC$.

   (e) Circle $B'$ with radius $BC$.

   (f) Intersection $C'$.

   (g) $\triangle ABC \cong \triangle A'B'C'$ by the SSS $\triangle \cong$ Postulate.




10. The Side-side-side triangle congruence postulate (SSS $\triangle \cong$).
    $\triangle ABC \cong \triangle A'B'C'$ iff $\overline{AB} \cong \overline{A'B'}, \overline{BC} \cong \overline{B'C'},$ and $\overline{AC} \cong \overline{A'C'}$