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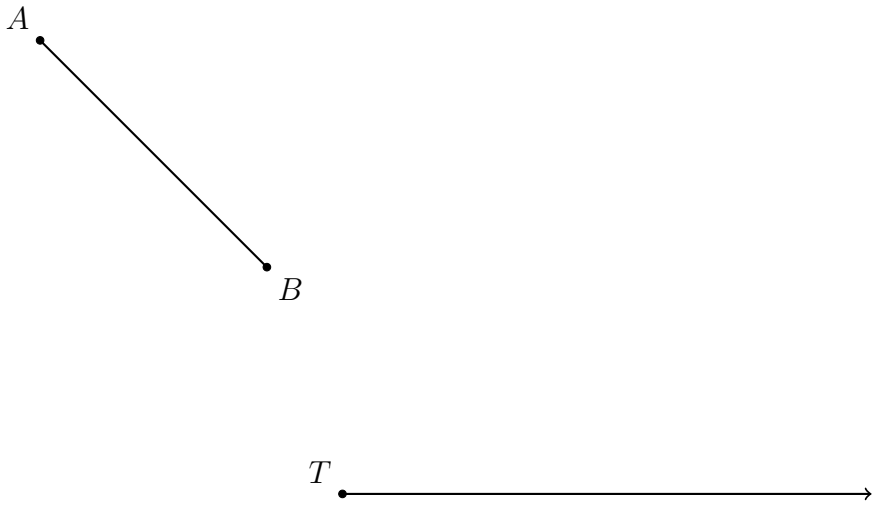
Learning trajectory: Constructions

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.]



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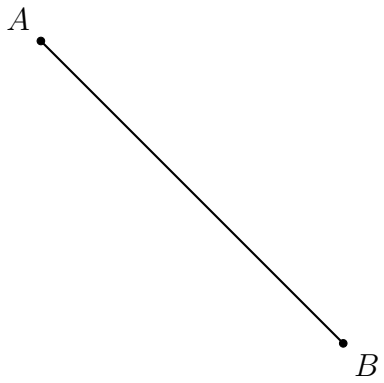
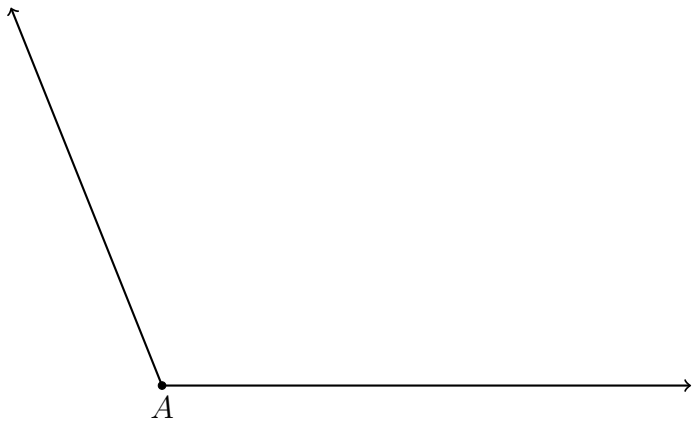
2. Construct a perpendicular bisector the given line segment $\overline{AB}$. Label the midpoint of $\overline{AB}$ as M. [Leave all construction marks.]



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



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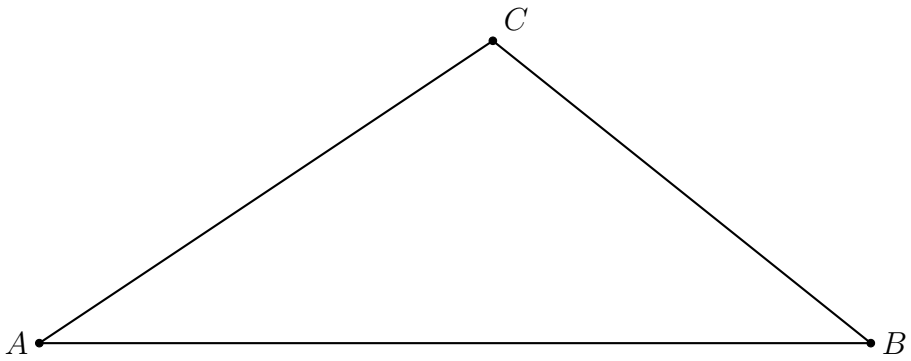
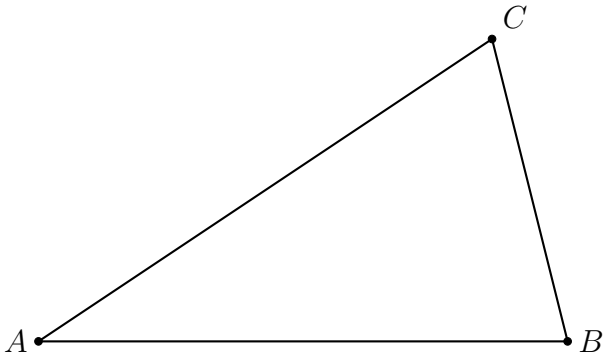
Triangle centers

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



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



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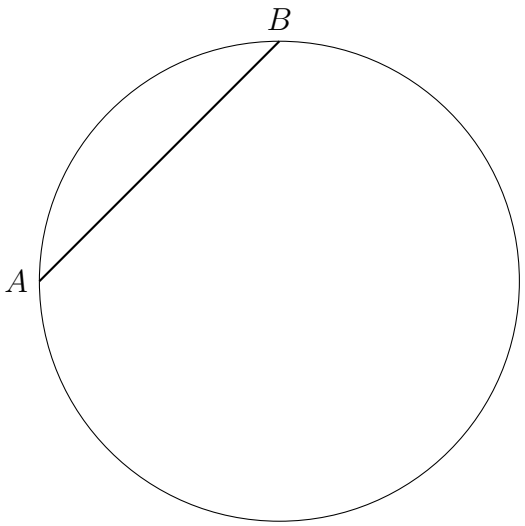
6. In the circle below, $\overline{AB}$ is a chord. Using a compass and straightedge, construct a perpendicular bisector of $\overline{AB}$, and hence, a diameter of the circle. [Leave all construction marks.]



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