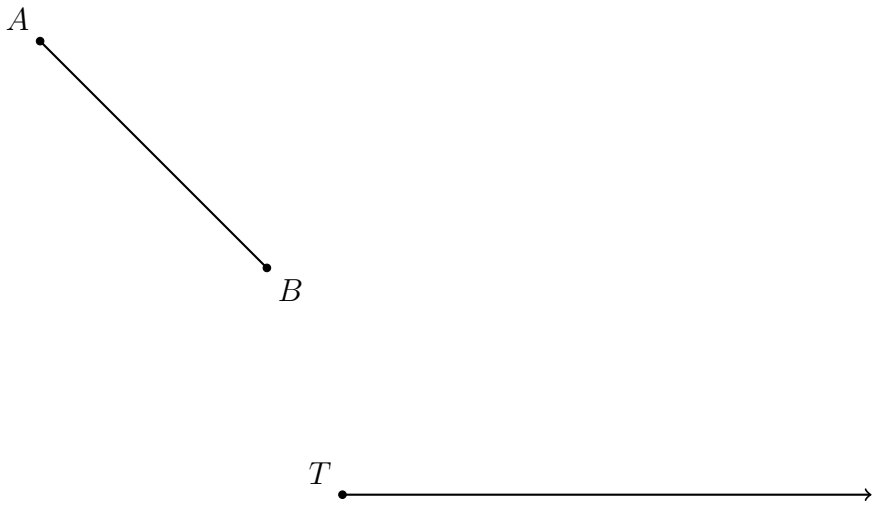
Classical constructions

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)
3. Hexagon and square inscribed in a circle.

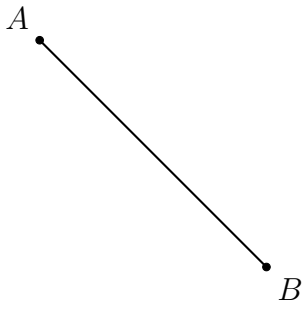
Equilateral triangle

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



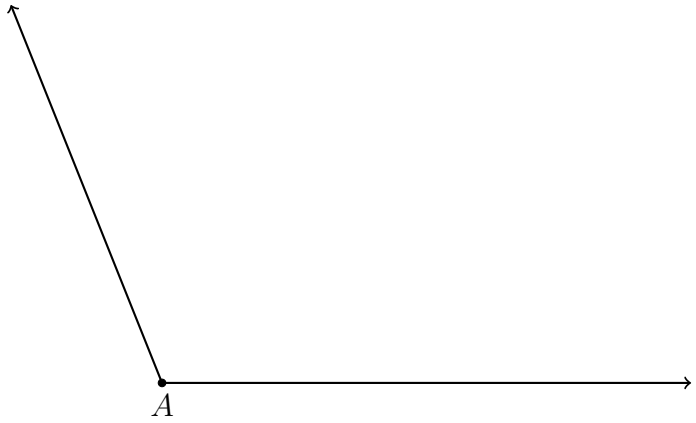
Perpendicular (bisector, through a point on/off the line)

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



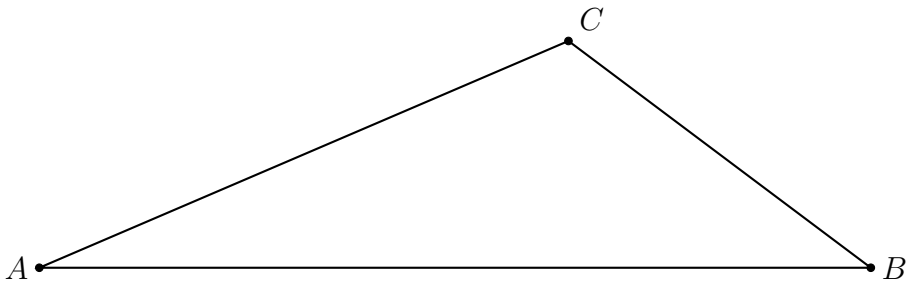
Angle bisector

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

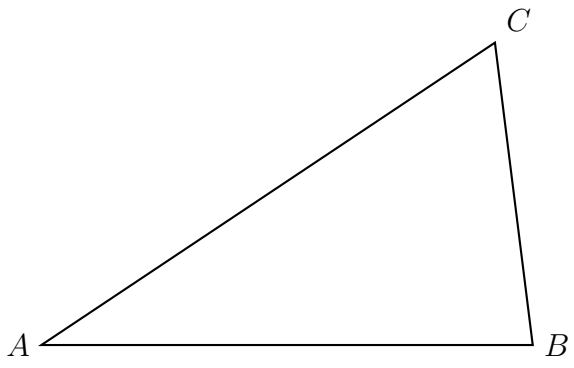


Triangle centers

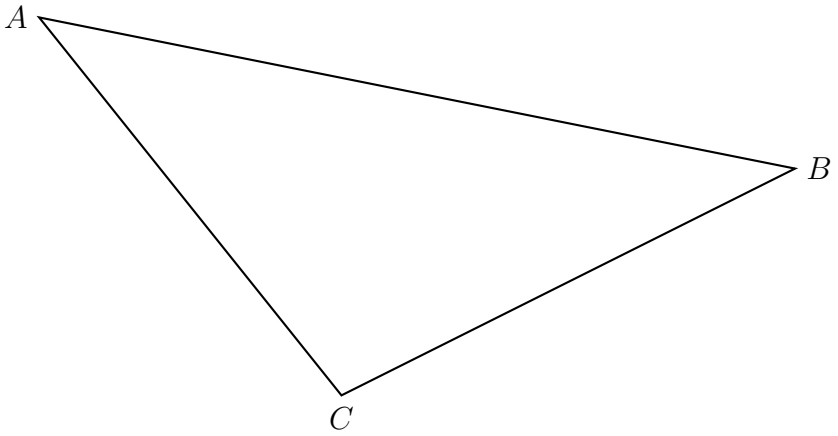
4. Construct a perpendicular to $\overline{AB}$ through C.



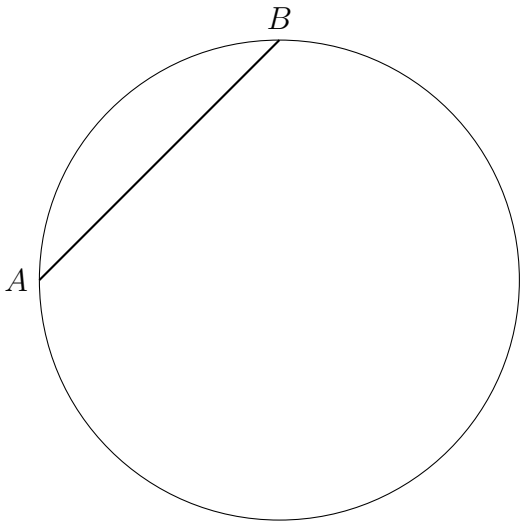
5. Construct the midpoint M of $\overline{AC}$ by using the perpendicular bisector construction. Draw $\overline{BM}$, a *median* of $\triangle ABC$.
   Spicy: Construct the other two medians, and hence, the centroid.



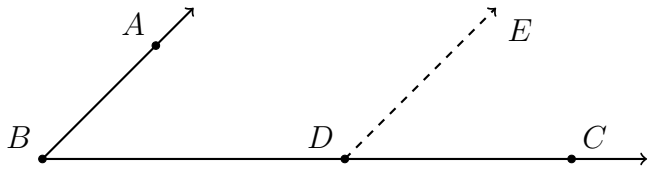
6. Using a compass and straightedge, construct the median to side $\overline{AC}$ in $\triangle ABC$ below. (Leave all construction marks.)


A
B
C

7. 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.]



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



Triangle congruence ($\triangle \cong$)

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

10. 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.

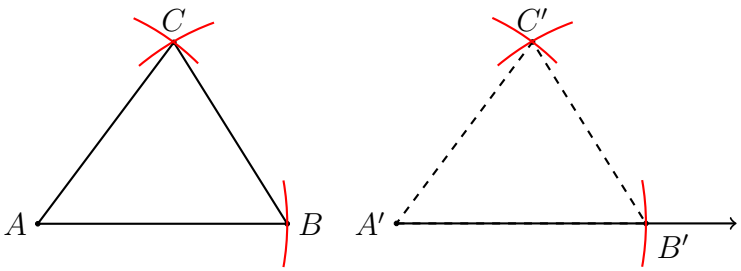
    (c) Intersection B'.

    (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.



11. 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 $\overline{AC} \cong \overline{A'C'}$