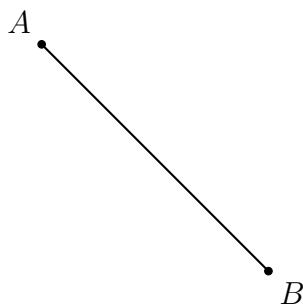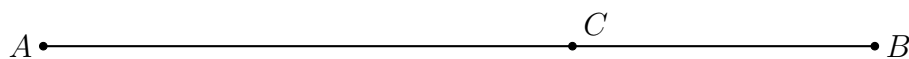**4.7 Classwork: Constructions using perpendicular bisection**

Use only a compass and straightedge for these classical constructions.

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

A

B

2. Construct a perpendicular to $\overline{AB}$ though C.
   Hint: Start with a circle centered on C.

A _____ C _____ B

Construct a triangle's circumcenter

3. Construct a perpendicular bisector of each of the legs of the triangle. Show their intersection, the circumcenter.

   Hint: Circles should be centered at the triangle vertices, but should only be sufficiently large to intersect the other circles.
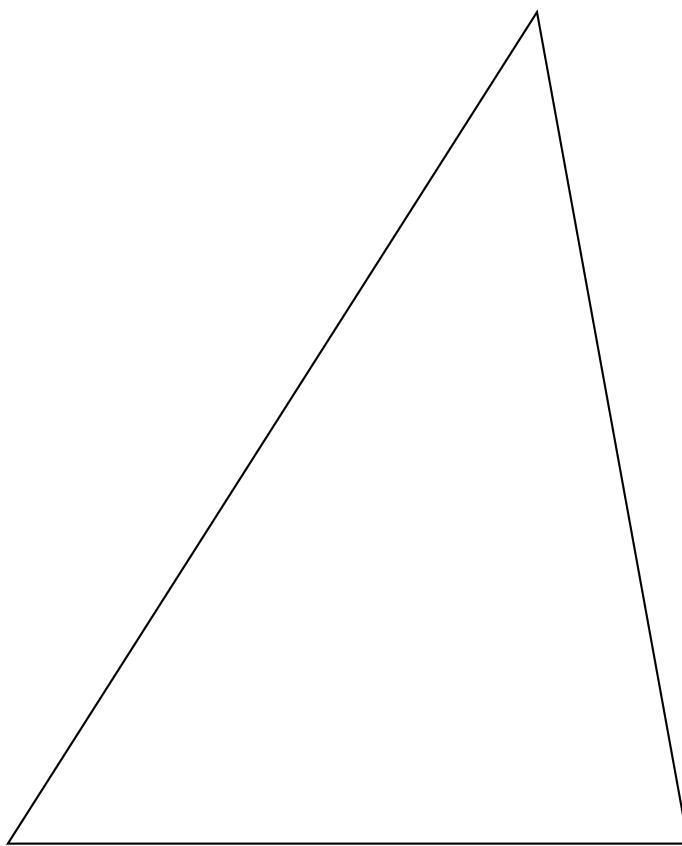
Construct a triangle's centroid

4. Bisect each leg of the triangle using only a compass and straightedge. Mark each midpoint, and draw a line (a *median*) connecting it to the opposite vertex. Show the medians' intersection, the centroid.

   Hint: Circles should be centered at the triangle vertices, but should only be sufficiently large to intersect the other circles.