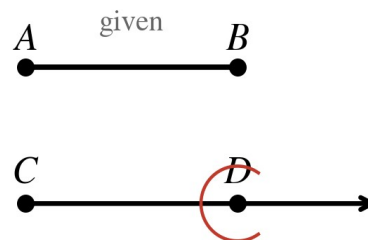


Constructions use only two tools: a compass and a straightedge. No measuring allowed!

Construction 1 - Copying a Segment

1. Draw a ray with endpoint C, longer than segment AB.
2. Open the compass to the length AB.
3. Keeping that setting, put the compass point on C and draw an arc across the ray. Label the intersection D.

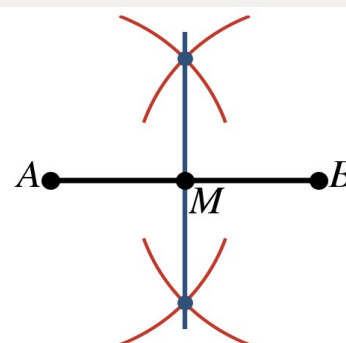
Result: $CD \cong AB$



Construction 2 - Bisecting a Segment

1. Open the compass to more than half of AB.
2. From A, draw arcs above and below the segment.
3. Keeping the same setting, do the same from B.
4. Draw a line through the two arc intersections. It crosses the segment at its midpoint M — and it is perpendicular to the segment.

Result: $AM \cong MB$



Practice A

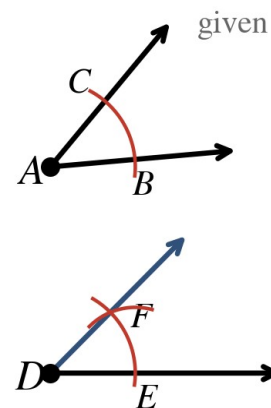
Copy segment PQ onto scratch space below. Then bisect your copy and label the midpoint M.



Construction 3 - Copying an Angle

1. Draw a ray with endpoint D.
2. From vertex A, draw an arc crossing both sides of the angle. Label the intersections B and C.
3. With the same setting, draw an arc from D crossing the ray. Label it E.
4. Open the compass to the distance BC. From E, draw an arc crossing the first arc. Label it F.
5. Draw ray DF.

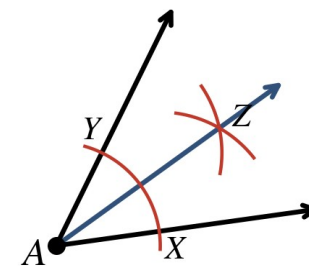
Result: $\angle D \cong \angle A$



Construction 4 - Bisecting an Angle

1. From vertex A, draw an arc crossing both sides. Label the intersections X and Y.
2. From X, then from Y (same setting), draw arcs that cross in the interior of the angle. Label the crossing Z.
3. Draw ray AZ.

Result: ray AZ bisects $\angle XAY$, so $\angle XAZ \cong \angle ZAY$



Practice B

Copy $\angle K$ below, then bisect your copy. Check your work with a protractor: the two halves should have equal measures.

