# Special Constructions for Lines and Angles

Part 2

1 - Bisecting a Line Segment with a Compass

The final construction that we will do is **bisecting a line segment with a compass.**

When a line is **bisected** it means that we have divided it into **two equal parts.**

The **midpoint** of a line is the **point where the line has been bisected.**

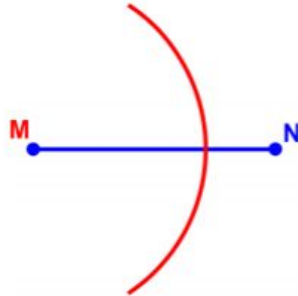For example, a bisected line looks like this:

The Midpoint
↓
A   M   B

├── 3cm ──┼── 3cm ──┤
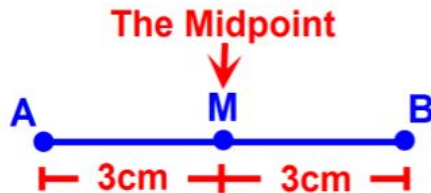
1 - Continued

Now, let's see how we can bisect a line with a compass.

Locate the midpoint of $\overline{MN}$ by constructing a right bisector.
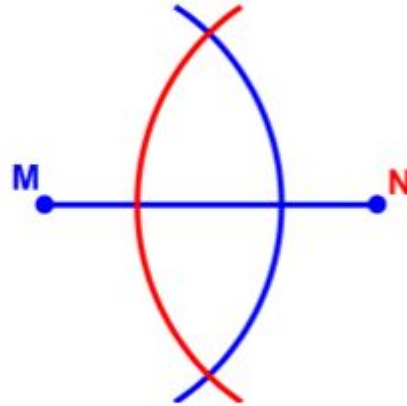
M _____ N

First, we will make an arc with a compass from **point M** that is more than half way to **point N**.
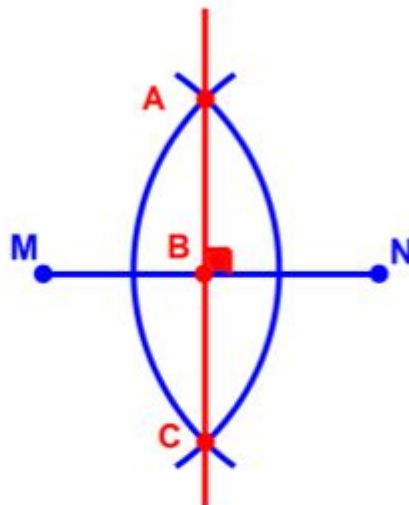
1 - Continued

Next, we will make an arc with a compass from **point N** that is the same radius as the arc made from **point M**.

Finally, draw a line through the two places where the arcs meet. This line is the **right bisector of** $\overline{MN}$. The **midpoint of** $\overline{MN}$ is where the **right bisector** passes through $\overline{MN}$.

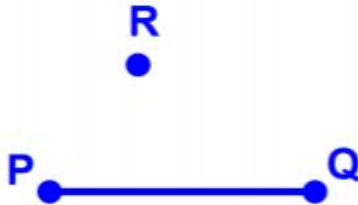# 1 – Continued

Point B is the midpoint of $\overline{MN}$

Line AC is the right bisector of $\overline{MN}$

Classwork

1. Given ray BA, construct ∠ABC = 140° using a protractor.

2. Construct a line that is parallel to $\overline{PQ}$ and that passes through the point R.

Classwork Continued

3. Determine the shortest distance from point P to $\overline{QR}$

●P

Q ————————————— R

Classwork Continued

4. Locate the midpoint of $\overline{AB}$ by constructing a right bisector.

A   B