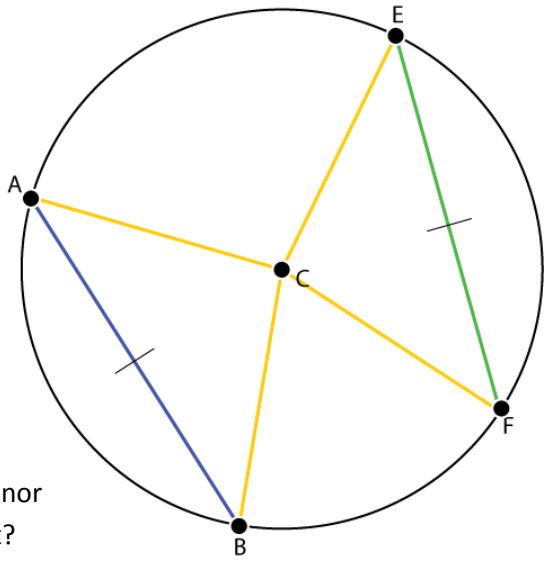
Arcs and Chords: Construct and Discuss

Tools and Materials

- **Ruler**
- **Compass**
- **Protractor**
- **Paper**
- **Pencil**
- **Definitions and Theorems Reference**

Construction 1



1. Construct a circle with a 3 inch radius and label its center **C**.
2. Construct two congruent chords and label them **AB** and **EF**.
3. Construct the radii **AC**, **BC**, **EC**, and **FC**.
4. Measure the central angles ∠**ACB** and ∠**ECF**.
5. Interpret and discuss your results.
    a. What do you know about the measure of two minor arcs when their central angles are congruent?
    b. What can you propose about the measure of two minor arcs when their corresponding chords are congruent?

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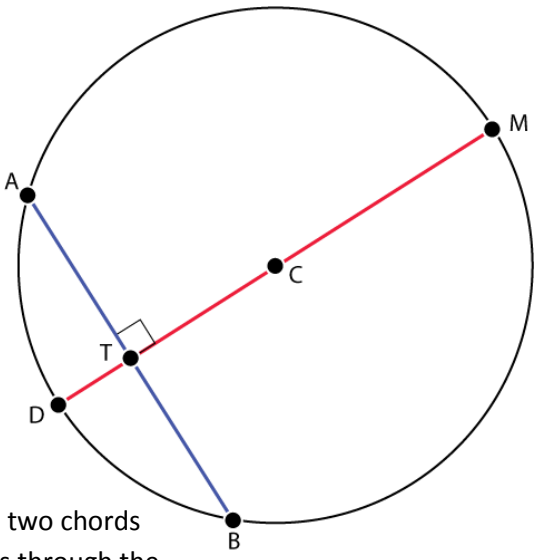
Construction 2



1. Construct a circle with a 3 inch radius and label its center **C**.
2. Construct a chord that is not a diameter and label it **AB**.
3. Construct a chord through **C** that is perpendicular to **AB** and label it **DM**.
4. Label the point where **AB** and **DM** intersect **T**.
5. Measure the lengths of line segments **AT** and **BT**.
6. Interpret and discuss your results.
    a. What is the chord **DM**?
    b. What can you propose about the relationship between two chords that are perpendicular to one another when one passes through the center?

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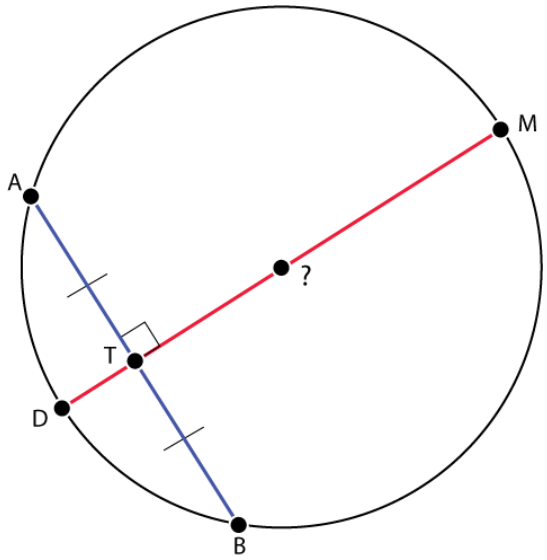
Construction 3

1. Construct a circle with a 3 inch radius and label its center **C**.
2. Construct a chord that is not a diameter and label it **AB**.
3. Construct a chord that is a perpendicular bisector to **AB** and label it **DM**.
4. Interpret and discuss your results.
    a. What point does **DM** pass through?
    b. What can you propose about the relationship between two chords when one is the perpendicular bisector of the other?



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Construction 4

1. Construct a circle with a 3 inch radius and label its center **C**.
2. Construct two congruent chords and label them **AB** and **EF**.
3. Construct a perpendicular bisector to **AB** and label the intersection **T**.
4. Construct a perpendicular bisector to **EF** and label the intersection **N**.
5. Measure the lengths of line segments **TC** and **NC**.
6. Interpret and discuss your results.
    a. What can you propose about the relationship between two congruent chords and the center of a circle?