

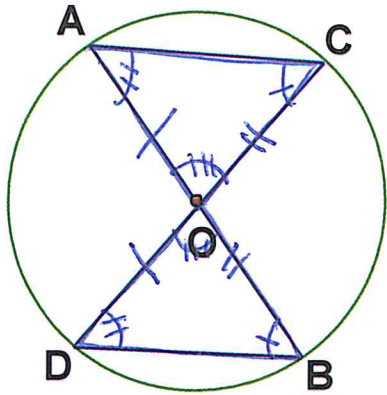
Look for: Inscribed angles  
Radii  
Diameters

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Geometry

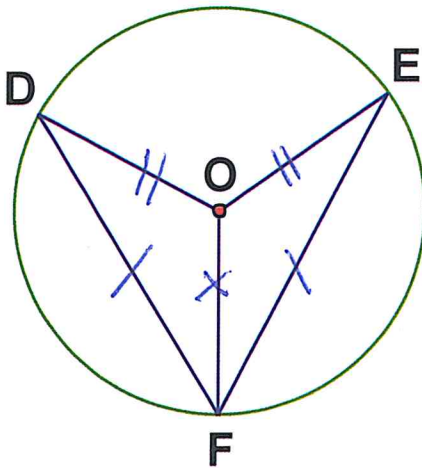
## Congruent Triangle Proofs with Circle Theorems

1. Given: Circle O with diameters  $\overline{AOB}$  and  $\overline{COD}$ , and chords  $\overline{AC}$  and  $\overline{DB}$   
Prove:  $\overline{AC} \cong \overline{DB}$



Statements	Reasons
① $\overline{AO} \cong \overline{OD}, \overline{CO} \cong \overline{OB}$	① All radii of a circle are $\cong$
② $\angle C \cong \angle B, \angle A \cong \angle D$	② Inscribed angles that intercept the same arc are congruent.
③ $\angle AOC \cong \angle DOB$	③ Vertical angles are congruent
④ $\triangle AOC \cong \triangle DOB$	④ ASA, AAS, SAS
⑤ $\overline{AC} \cong \overline{DB}$	⑤ CPCTC

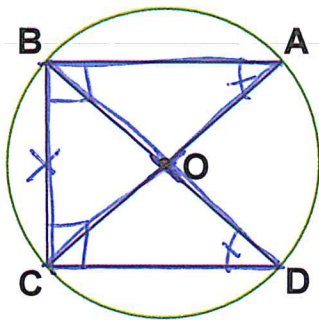
2. In circle O,  $\overline{FD} \cong \overline{FE}$   
Prove:  $\angle ODF \cong \angle OEF$



Statements	Reasons
① $\overline{FD} \cong \overline{FE}$	① Given
② $\overline{OD} \cong \overline{OE}$	② All radii of a circle are congruent.
③ $\overline{OF} \cong \overline{OF}$	③ Reflexive Property
④ $\triangle ODF \cong \triangle OEF$	④ SSS
⑤ $\angle ODF \cong \angle OEF$	⑤ CPCTC

3. Given: Diameters  $\overline{BOD}$  and  $\overline{COA}$  intersect at the center of the circle O.

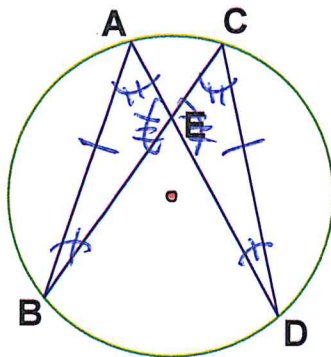
Prove:  $\triangle ABC \cong \triangle DCB$



Statements	Reasons
① $\angle A \cong \angle D$	① Inscribed angles that intercept the same arc are congruent
② $\angle BCO \cong \angle CBO$	② Angles in isosceles triangles that intercept the same arc are congruent
③ $\overline{BO} \cong \overline{OD}$	③ All diameters of a circle are $\cong$
④ $\overline{CO} \cong \overline{OA}$	④ Reflexive Property
⑤ $\triangle ABC \cong \triangle DCB$	⑤ SAS, ASA, HL

4. Given: Chords  $\overline{AD}$  and  $\overline{BC}$  of circle O intersect at E,  $\overline{AB} \cong \overline{CD}$

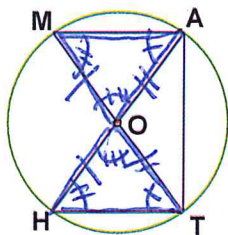
Prove:  $\overline{BE} \cong \overline{ED}$



Statements	Reasons
① $\overline{AB} \cong \overline{CD}$	① Given
② $\angle B \cong \angle D, \angle C \cong \angle A$	② Inscribed angles that intercept the same arc are congruent
③ $\angle AEB \cong \angle CED$	③ Vertical angles are congruent
④ $\triangle ABE \cong \triangle CDE$	④ ASA, AAS
⑤ $\overline{BE} \cong \overline{ED}$	⑤ CPCTC

5. Given: Circle O with diameters  $\overline{MOT}$  and  $\overline{AOH}$ .

Prove:  $\overline{MA} \cong \overline{HT}$



Statements	Reasons
① $\overline{MO} \cong \overline{OT}$ $\overline{AO} \cong \overline{OH}$	① All radii of a circle are congruent
② $\angle A \cong \angle T$ $\angle M \cong \angle H$	② Inscribed angles that intercept the same arc are congruent
③ $\angle MOA \cong \angle HOT$	③ Vertical angles are congruent
④ $\triangle MOA \cong \triangle HOT$	④ AAS, ASA, SAS
⑤ $\overline{MA} \cong \overline{HT}$	⑤ CPCTC