

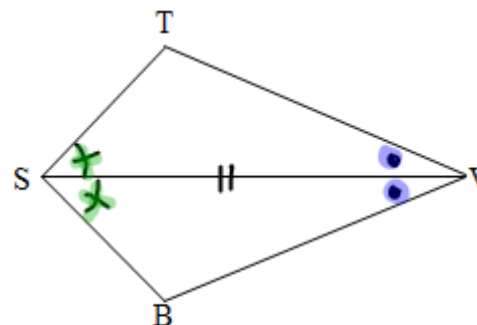
### 3.2. Honors Geometry Target 3B and 3C

DATE: 11/6

Write a two column proof.

Given:  $\overline{SV}$  bisects  $\angle TSB$   
 $\overline{VS}$  bisects  $\angle TVB$

Prove:  $\triangle TSV \cong \triangle BSV$



Statement	Reason
① $\overline{SV}$ bis $\angle TSB$ $\overline{VS}$ bis $\angle TVB$	① Given
② $\angle TSV \cong \angle BSV$	② If a segment bisects an angle, then it divides the angle into two $\cong$ angles.
③ $\angle TVS \cong \angle BVS$	③ Same as step 2
④ $\overline{SV} \cong \overline{SV}$	④ Reflexive Property of Segments
⑤ $\triangle TSV \cong \triangle BSV$	⑤ ASA (2, 4, 3)

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B I U abc x<sub>2</sub> x<sup>2</sup> ab A

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Write a two column proof.

Given:  $BG \perp AE$

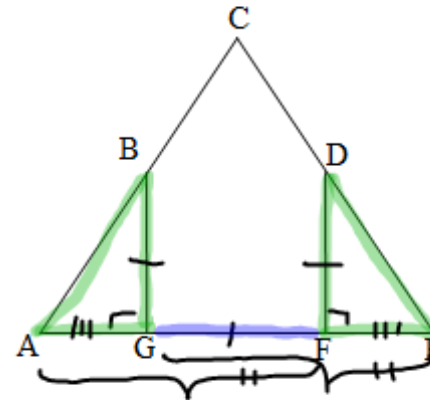
$BG \cong GF$

$DF \perp AE$

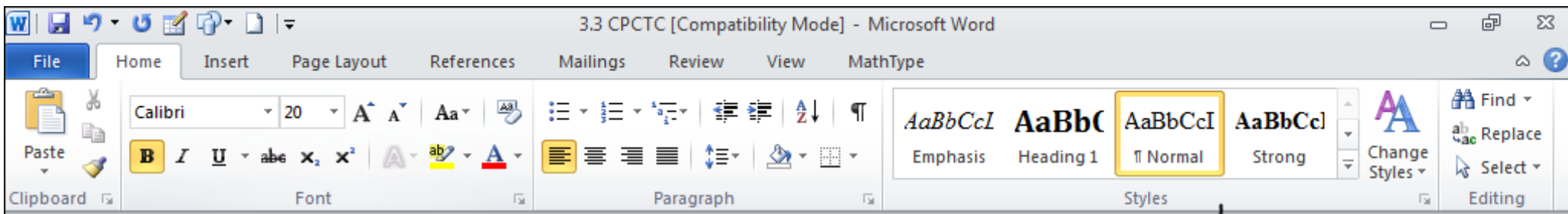
$AF \cong GE$

$GF \cong DF$

Prove:  $\triangle ABG \cong \triangle EDF$



statement	Reason
① $\overline{BG} \perp \overline{AE}$ $\overline{DF} \perp \overline{AE}$	① Given
② $\angle BGA$ rt. $\angle$ $\angle DFE$ rt. $\angle$	② If 2 seg. $\perp$ , then they intersect to form rt. $\angle$ s.
③ $\angle BGA \cong \angle DFE$	③ If 2 $\angle$ s rt., then they are $\cong$ .
④ $\overline{BG} \cong \overline{GF}$	④ Given
⑤ $\overline{GF} \cong \overline{DF}$	⑤ Given
⑥ $\overline{BG} \cong \overline{DF}$	⑥ Transitive Property (4,5)
⑦ $\overline{AF} \cong \overline{GE}$	⑦ Given
⑧ $\overline{GF} \cong \overline{GF}$	⑧ Reflexive Property.
⑨ $\overline{AG} \cong \overline{FE}$	⑨ Sub. prop. of seg.
⑩ $\triangle ABG \cong \triangle EDF$	⑩ SAS (6,3,9)



### B.3. Honors Geometry

DATE: 11/8

*Target 3C. Know and utilize sufficient conditions to prove triangles are congruent*  
*Target 3D. Prove congruent triangles using the Law of Syllogism*

How can we prove that two sides or angles of a triangle are congruent?

First, prove  $\cong \Delta s!$  Then

C P C T C  
 corresponding Parts Congruent Triangles Congruent

To prove that two sides or angles of a triangle are congruent we must first prove 2  $\Delta s$   
 $\cong$ . Then, we use CPCTC as reason to justify our conclusion.

**CIRCLES**

Circle X or  $\odot X$



$r = \text{radius}$

Conclusion: All radii are  $\cong$ .

Given: Circle O  
 $\overline{BC} \cong \overline{ED}$

A  E

3.3 CPCTC [Compatibility Mode] - Microsoft Word

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Calibri 20 A A Aa Paste B I U abc x<sub>2</sub> x<sup>2</sup> A ab A

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Conclusion: All radii are \_\_\_\_\_.

Given: Circle O

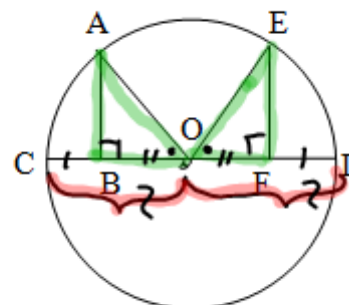
$$\overline{BC} \cong \overline{FD}$$

$$\overline{EF} \perp \overline{CD}$$

$$\overline{AB} \perp \overline{CD}$$

$$\angle BOA \cong \angle FOE$$

Prove:  $\overline{AB} \cong \overline{EF}$



Statement	Reason
① $\odot O$	① Given
② $\overline{EF} \perp \overline{CD}$ $\overline{AB} \perp \overline{CD}$	① Given
③ $\angle ABO$ rt. $\angle$ $\angle EFO$ rt. $\angle$	③ If 2 seg. $\perp$ , then rt. $\angle$
④ $\angle ABO \cong \angle EFO$	④ Rt. $\angle s \cong$
⑤ $\overline{BC} \cong \overline{FD}$	⑤ Given
⑥ $\overline{CO} \cong \overline{DO}$	⑥ All radii are $\cong$ .
⑦ $\overline{BO} \cong \overline{FO}$	⑦ Sub. prop. of seg.
⑧ $\angle BOA \cong \angle FOE$	⑧ Given
⑨ $\triangle BOA \cong \triangle FOE$	⑨ ASA (4, 7, 8)
⑩ $\overline{AB} \cong \overline{EF}$	⑩ CPCTC