

**Fill in the missing statements and reasons for the two-column proof below.**

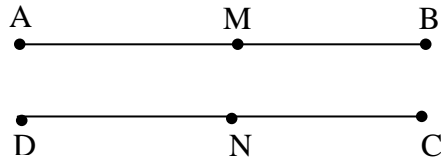
**Theorem 1.7.7**

**If two line segments are congruent, then their midpoints separate these two segments into four congruent segments.**

Given:  $\overline{AB} \cong \overline{DC}$

$M$  is the midpoint of  $\overline{AB}$

$N$  is the midpoint of  $\overline{DC}$



Prove:  $\overline{AM} \cong \overline{MB} \cong \overline{DN} \cong \overline{NC}$

Proof:

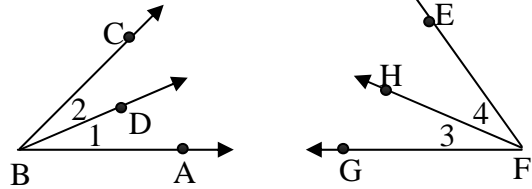
STATEMENTS	REASONS
1.	1. Given
2. $\overline{AM} \cong \overline{MB}$ , $\overline{DN} \cong \overline{NC}$	2.
3. $AB = DC$ , $AM = MB$ , $DN = NC$	3.
4.	4. Segment Addition Postulate
5. $AM + MB = DN + NC$	5.
6.	6. Substitution
7. $2MB = 2DN$	7.
8.	8. Division Property of Equality
9. $\overline{MB} \cong \overline{DN}$	9.
10.	10. Transitive Property of $\cong$

**Fill in the missing statements and reasons for the two-column proof below.**

**Theorem 1.7.8**

**If two angles are  $\cong$ , then their  $\sphericalangle$  bisectors separate them into four  $\cong$   $\sphericalangle$ s.**

Given:  $\sphericalangle ABC \cong \sphericalangle EFG$   
 $\overline{BD}$  bisects  $\sphericalangle ABC$   
 $\overline{FH}$  bisects  $\sphericalangle EFG$   
Prove:  $\sphericalangle 1 \cong \sphericalangle 2 \cong \sphericalangle 3 \cong \sphericalangle 4$



Proof:

STATEMENTS	REASONS
1. $\sphericalangle ABC \cong \sphericalangle EFG$ , $\overline{BD}$ bisects $\sphericalangle ABC$ , $\overline{FH}$ bisects $\sphericalangle EFG$	1.
2.	2. Definition of $\sphericalangle$ bisector
3. $m\angle ABC = m\angle EFG$ , $m\angle 1 = m\angle 2$ , $m\angle 3 = m\angle 4$	3.
4.	4. Angle Addition postulate
5. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	5.
6.	6. Substitution
7. $2 m\angle 2 = 2 m\angle 3$	7.
8. $m\angle 2 = m\angle 3$	8.
9. $\sphericalangle 2 \cong \sphericalangle 3$	9.
10.	10. Transitive Property