Name: _____ **Unit 2:** Logic & Proof

Date: _____ **Per:** _____ **Homework 8:** Segment Proofs

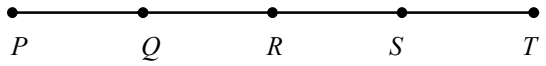
**** This is a 2-page document! ****

Use the segment addition postulate to write three equations using the diagram below.

1. _____

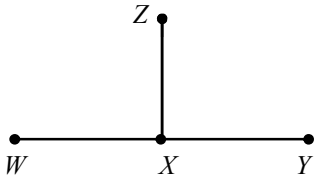
2. _____

3. _____



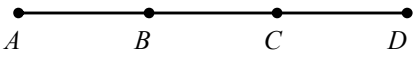
Complete each proof.

4. Given: X is the midpoint of $\overline{WY}$, $\overline{WX} \cong \overline{XZ}$
Prove: $\overline{XY} \cong \overline{XZ}$



Statements	Reasons
1. X is the midpoint of $\overline{WY}$	**1.**
2. $WX = XY$	**2.**
3. $\overline{WX} \cong \overline{XZ}$	**3.**
4. $WX = XZ$	**4.**
5. $XY = XZ$	**5.**
6. $\overline{XY} \cong \overline{XZ}$	**6.**

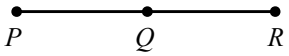
5. Given: $\overline{AB} \cong \overline{CD}$
Prove: $\overline{AC} \cong \overline{BD}$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$	**1.**
2. $AB = CD$	**2.**
3. $AC + CD = AD$	**3.**
4. $AB + BD = AD$	**4.**
5. $CD + BD = AD$	**5.**
6. $AC + CD = CD + BD$	**6.**
7. $AC = BD$	**7.**
8. $\overline{AC} \cong \overline{BD}$	**8.**

6. Given: $2PQ = PR$

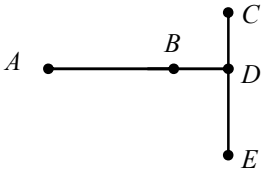
Prove: Q is the midpoint of $\overline{PR}$



Statements	Reasons
1.	**1.** Given
2.	**2.** Segment Addition Postulate
3. $2PQ = PQ + QR$	**3.**
4. $PQ = QR$	**4.**
5.	**5.** Definition of Midpoint

7. Given: $\overline{AB} \cong \overline{CD}$, $\overline{BD} \cong \overline{DE}$

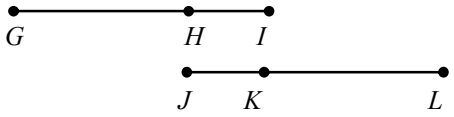
Prove: $\overline{AD} \cong \overline{CE}$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$, $\overline{BD} \cong \overline{DE}$	**1.** Given
2.	**2.** Definition of Congruence
3. $AB + BD = AD$	**3.**
4. $CD + DE = AD$	**4.**
5.	**5.** Segment Addition Postulate
6. $AD = CE$	**6.**
7.	**7.** Definition of Congruence

8. Given: $\overline{GI} \cong \overline{JL}$, $\overline{GH} \cong \overline{KL}$

Prove: $\overline{HI} \cong \overline{JK}$



Statements	Reasons