

Geometry Honors Unit 2, Day 07 HW
2-7 Proving Segment Relationships

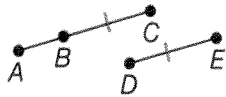
Name Master G
Date _____ Block 9

1-9: Justify each statement with a property of equality, a property of congruence, or a postulate.

- $QA = QA$ Reflexive POE
- If $AB = CD$, then $\overline{AB} \cong \overline{CD}$. Def. \cong segments
- If $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{CE}$ then $\overline{AB} \cong \overline{CE}$. Transitive POC
- If Q is between P and R, then $PQ + QR = PR$ Segment Addition Post.
- If $AB + BC = EF + FG$ and $AB + BC = AC$, then $EF + FG = AC$. Substitution POE
- If $MN = PQ$, then $MN + RS = PQ + RS$. Addition POE
- If B is the midpoint of \overline{AC} , then $AB = BC$. Def. midpoint
- If $AB = CD$, then $CD = AB$. Symmetric POE
- If $AB + BD = AD$ and $BD = RS$, then $AB + RS = AD$. Substitution POE

10-11: Complete each proof.

10. Given: $BC = DE$
Prove: $AB + DE = AC$



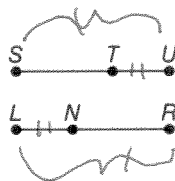
| Statements | Reasons |
|-------------------------------------|----------------------------|
| 1. $BC = DE$ | 1. <u>Given</u> |
| 2. <u>$AB + BC = AC$</u> | 2. Seg. Add. Post. |
| 3. $AB + DE = AC$ | 3. <u>Substitution POE</u> |

11. Given: $\overline{AB} \cong \overline{CD}$
Prove: $\overline{CD} \cong \overline{AB}$
Proof:

| Statements | Reasons |
|--|--|
| a. <u>$\overline{AB} \cong \overline{CD}$</u> | a. Given |
| b. $AB = CD$ | b. <u>Def. \cong segments</u> |
| c. $CD = AB$ | c. <u>Symmetric POE</u> |
| d. <u>$\overline{CD} \cong \overline{AB}$</u> | d. Definition of \cong segments |

12-13: Complete each proof.

12. Given: $\overline{SU} \cong \overline{LR}$
 $\overline{TU} \cong \overline{LN}$
 Prove: $\overline{ST} \cong \overline{NR}$



Statements

Reasons

a. $\overline{SU} \cong \overline{LR}, \overline{TU} \cong \overline{LN}$

a. Given

b. $SU = LR, TU = LN$

b. Definition of \cong segments

c. $SU = ST + TU$
 $LR = LN + NR$

c. Segment Addition Post.

d. $ST + TU = LN + NR$

d. Substitution POE

e. $ST + LN = LN + NR$

e. Substitution POE

f. $ST + LN - LN = LN + NR - LN$

f. Subtraction

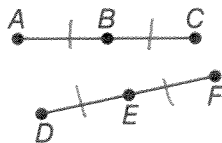
g. $ST = NR$

g. Substitution Property (Simplify e)

h. $\overline{ST} \cong \overline{NR}$

h. Def. \cong segments

13. Given: $\overline{AB} \cong \overline{DE}$
 B is the midpoint of \overline{AC} .
 E is the midpoint of \overline{DF} .
 Prove: $\overline{BC} \cong \overline{EF}$



Statements

Reasons

a. $\overline{AB} \cong \overline{DE}$

a. Given

B is the midpoint of \overline{AC}
 E is the midpoint of \overline{DF}

b. Def. \cong segments

b. $AB = DE$

c. Definition of Midpoint

c. $AB = BC$
 $DE = EF$

d. $BC = DE$

d. Substitution POE (sub c into b)

e. $BC = EF$

e. Substitution POE (sub c into d)

f. $\overline{BC} \cong \overline{EF}$

f. Def. \cong segments