

Reasoning and Proof – Proving Segments

Hw Section 2.3

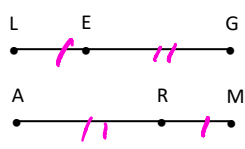
Name _____

1. Prove the Midpoint Theorem using a two-column proof.

Given M is the MIDPOINT of \overline{AB}
 Prove $\overline{AM} \cong \overline{MB}$

Statement	Reason
a. M is the MIDPOINT of \overline{AB}	a. GIVEN
b. $AM = MB$	b. Def'n of MIDPOINT
c. $\overline{AM} \cong \overline{MB}$	c. Def'n of \cong seg's
d.	d.
e.	e.
f.	f.

2. Given $\overline{LE} \cong \overline{MR}, \overline{EG} \cong \overline{RA}$
 Prove $\overline{LG} \cong \overline{MA}$



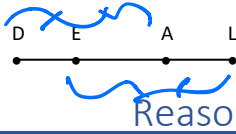
Statement	Reason
a. $\overline{LE} \cong \overline{MR}$ $\overline{EG} \cong \overline{RA}$	a. Given
b. $LE = MR$ $EG = RA$	b. Def'n of \cong seg's
c. $LG = LE + EG$ } Picture $MA = MR + RA$	c. Segment Add'n Postulate
d. $LG = MR + RA$ } (#2 and #3)	d. Substitution Property of Equality (double)
e. $LG = MA$ (#3 and #4)	e. Substitution Property of Equality
f. $\overline{LG} \cong \overline{MA}$	f. Def'n of \cong seg's

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3. Given $DA = EL$
 Prove $DE = AL$

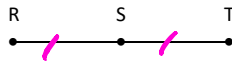


Statement

Reason

- | | |
|---|---|
| <p>a. $DA = EL$</p> <p>b. $DA = DE + EA$
 $EL = EA + AL$ (Picture)</p> <p>c. $DE + EA = EA + AL$ (Combine # 1, 2, 3)</p> <p>d. $DE = AL$</p> | <p>a. Given</p> <p>b. Segment Add'n Postulate</p> <p>c. Substitution Property of Equality</p> <p>d. Subtraction PoE</p> |
|---|---|

4. Given $RS = ST$
 Prove $RT = 2ST$



Statement

Reason

- | | |
|--|---|
| <p>a. $RS = ST$</p> <p>b. $RT = RS + ST$</p> <p>c. $RT = ST + ST$</p> <p>d. $RT = 2ST$</p> <p>e.</p> <p>f.</p> | <p>a. GIVEN</p> <p>b. Seg't Add'n Postulate</p> <p>c. Substitution PoE</p> <p>d. Substitution PoE</p> <p>e.</p> <p>f.</p> |
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