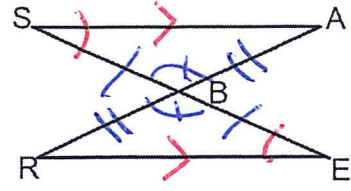


Proving Segments are Parallel

1. Given: \overline{SE} and \overline{AR} bisect each other.

Prove that $\overline{SA} \parallel \overline{RE}$



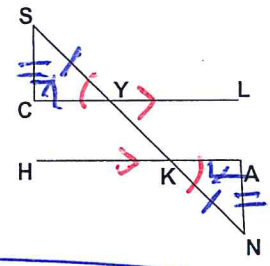
Statements

Reasons

- | | |
|--|---|
| <ol style="list-style-type: none"> ① \overline{SE} and \overline{AR} bisect each other ② $\overline{SB} \cong \overline{BE}$
$\overline{AB} \cong \overline{BR}$ ③ $\angle SBA \cong \angle RBE$ ④ $\triangle SBA \cong \triangle EBR$ ⑤ $\angle ASB \cong \angle BER$ ⑥ $\overline{SA} \parallel \overline{RE}$ | <ol style="list-style-type: none"> ① given ② A line bisector creates two congruent segments ③ vertical angles are congruent ④ SAS ⑤ CPCTC ⑥ parallel lines cut by a transversal create congruent alternate interior angles. |
|--|---|

2. Given: $\overline{SC} \perp \overline{CL}$, $\overline{HA} \perp \overline{AN}$, $\overline{SY} \cong \overline{KN}$, and $\overline{SC} \cong \overline{AN}$.

Prove $\overline{CL} \parallel \overline{HA}$



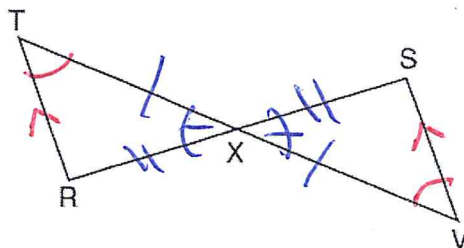
Statements

Reasons

- | | |
|--|--|
| <ol style="list-style-type: none"> ① $\overline{SC} \perp \overline{CL}$ ② $\overline{HA} \perp \overline{AN}$ ③ $\angle SCY \cong \angle NAK$ ④ $\overline{SY} \cong \overline{KN}$ ⑤ $\overline{SC} \cong \overline{AN}$ ⑥ $\triangle SCY \cong \triangle NAK$ ⑦ $\angle SYC \cong \angle NKA$ ⑧ $\overline{CL} \parallel \overline{HA}$ | <ol style="list-style-type: none"> ① given ② Perpendicular lines create congruent right angles ③ given ④ given ⑤ HL ⑥ CPCTC ⑦ parallel lines cut by a transversal create congruent alternate exterior angles. |
|--|--|

3. Given: \overline{RS} and \overline{TV} bisect each other at point X
 \overline{TR} and \overline{SV} are drawn

Prove: $\overline{TR} \parallel \overline{SV}$



statements

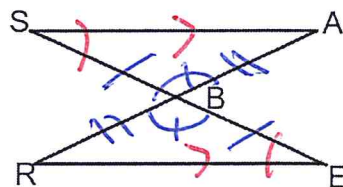
Reasons

- ① \overline{RS} and \overline{TV} bisect each other
- ② $\overline{TX} \cong \overline{XV}$, $\overline{RX} \cong \overline{XS}$
- ③ $\angle TXR \cong \angle SXV$
- ④ $\triangle TXR \cong \triangle VXS$
- ⑤ $\angle RTX \cong \angle SVX$
- ⑥ $\overline{TR} \parallel \overline{SV}$

- ① given
- ② A line bisector creates two congruent segments
- ③ vertical angles are congruent
- ④ SAS
- ⑤ CPCTC
- ⑥ Parallel lines cut by a transversal create congruent alternate interior angles.

4. Given: $\overline{SA} \cong \overline{RE}$ and B is the midpoint of \overline{SE} .

Prove: $\overline{SA} \parallel \overline{RE}$.



statements

Reasons

- ① $\overline{AB} \cong \overline{BR}$
- ② B is the midpoint of \overline{SE}
- ③ $\overline{SB} \cong \overline{BE}$
- ④ $\angle SBA \cong \angle RBE$
- ⑤ $\triangle SBA \cong \triangle RBE$
- ⑥ $\angle ASB \cong \angle BER$
- ⑦ $\overline{SA} \parallel \overline{RE}$

- ① given
- ② given
- ③ A midpoint creates two congruent segments.
- ④ vertical angles are congruent
- ⑤ SAS
- ⑥ CPCTC
- ⑦ Parallel lines cut by a transversal create congruent alternate interior angles.