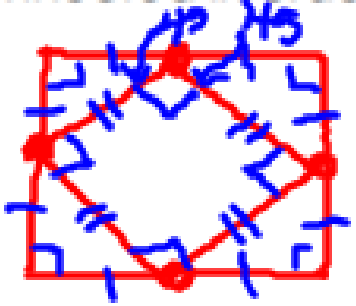
1. State whether you agree or disagree with the following statements. Justify your answers.

   a. The diagonals of a square separate the square into four congruent isosceles right triangles.

Yes Diag. are $\cong$ & $\perp$

   b. If the midpoints of the sides of a square are connected in order, another square is formed.

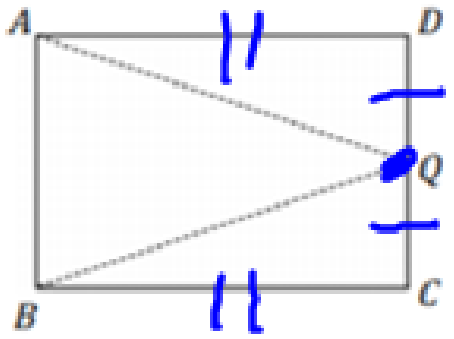


All sides & $\angle$'s are $\cong$

4. Complete the following proof.

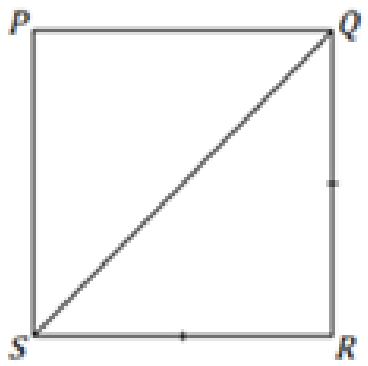
Given: $ABCD$ is a rectangle and Q is the midpoint of $\overline{CD}$.

Prove: $\overline{AQ} \cong \overline{BQ}$



Statements	Reasons
1. $ABCD$ is a rectangle and Q is the midpoint of $\overline{CD}$.	1. Given
2. $\overline{DQ} \cong \overline{QC}$	2. Def of a midpoint
3. $\overline{AD} \cong \overline{BC}$	3. In a rectangle, opposite sides are congruent.
4. $\angle D \cong \angle C$	4. All Rt $\angle$'s are $\cong$
5. $\triangle ADQ \cong \triangle BCQ$	5. SAS
6. $\overline{AQ} \cong \overline{BQ}$	6. CPCTC

2. Complete the following proof.

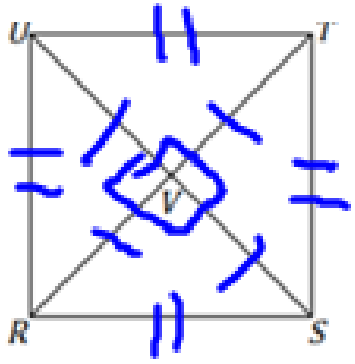


Given: $PQRS$ is a square.

Prove: $\overline{PR} \cong \overline{QS}$

Statements	Reasons
1. $PQRS$ is a square.	1. Given
2. $PQ \cong QR \cong RS \cong PS$	2. Definition of a square: All sides are congruent
3. $\angle P \cong \angle Q \cong \angle R \cong \angle S$	3. All Rt $\angle$'s are $\cong$
4. $m\angle P = m\angle Q = m\angle R = m\angle S$	4. Definition of congruence
5. $90° = m\angle Q = m\angle R = m\angle S$	5. Substitution
6. $m\angle P = 90°$	6. Substitution
7. $\triangle PQS \cong \triangle RSQ$	7. SAS
8. $\overline{PR} \cong \overline{QS}$	8. CPCTC

3. Complete the following proof.



Given: $\overline{RT} \cong \overline{SU}$
$\overline{US}$ is the perpendicular bisector of $\overline{RT}$.
$\overline{RT}$ is the perpendicular bisector of $\overline{US}$.

Prove: $RSTU$ is a square.

Statements	Reasons
1. $\overline{RT} \cong \overline{SU}$; $\overline{US}$ is the perpendicular bisector of $\overline{RT}$. $\overline{RT}$ is the perpendicular bisector of $\overline{US}$.	1. Given
2. $\overline{UV} \cong \overline{VS} \cong \overline{VT} \cong \overline{RV}$; $\angle UVR, \angle RVS, \angle SVT, \angle TVU$ are Rt $\angle$s	2. Definition of perpendicular bisector
3. $m\angle UVR = m\angle RVS = m\angle SVT = m\angle TVU = 90°$	3. Def of Rt $\angle$'s
4. $\angle UVR \cong \angle RVS \cong \angle SVT \cong \angle TVU$	4. All Rt $\angle$'s are $\cong$
5. $\triangle UVR \cong \triangle RVS \cong \triangle SVT \cong \triangle TVU$	5. SAS
6. $\overline{UT} \cong \overline{TS} \cong \overline{RS} \cong \overline{RU}$	6. CPCTC
7. $RSTU$ is a square.	7. Def of a Sq.