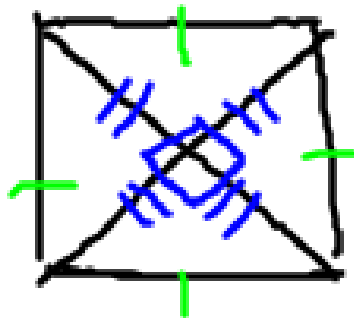
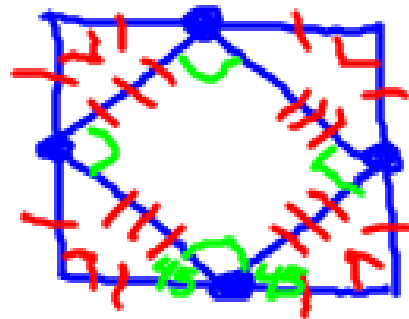


1. State whether you agree or disagree with the following statements. Justify your answers.
- a. The diagonals of a square separate the square into four congruent isosceles right triangles.



Diagonals  $\perp$  and  $\cong$

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

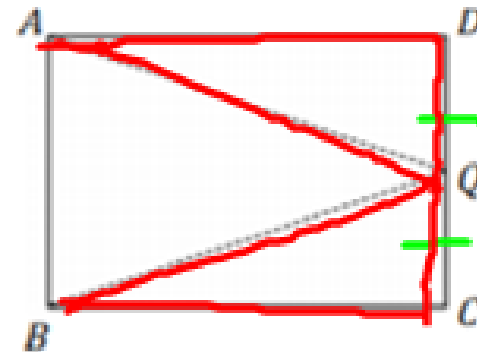


all sides  $\cong$  are  $\cong$

4. Complete the following proof.

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

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

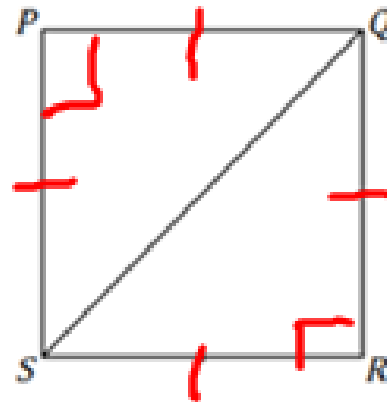


| Statements  | Reasons  |
|---|--|
| 1. $ABCD$ is a rectangle and $Q$ is the midpoint of $\overline{CD}$ . | 1. Given   |
| 2. $\overline{DQ} \cong \overline{QC}$                                | 2. Def of a midpoint                             |
| 3. $\overline{AD} \cong \overline{BC}$            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

2. Complete the following proof.

**Given:**  $PQRS$  is a square.

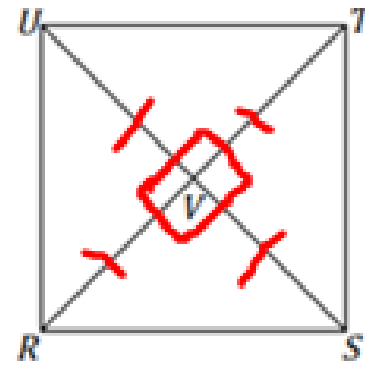
**Prove:**  $\overline{PR} \cong \overline{QS}$



| Statements   | Reasons  |
|--|--|
| 1. $PQRS$ is a square.   | 1. Given   |
| 2. $\overline{PQ} \cong \overline{QR} \cong \overline{SR} \cong \overline{PS}$ | 2. Definition of a square: All sides are congruent |
| 3. $\angle P \cong \angle Q \cong \angle R \cong \angle S$                     | 3. All $\text{Rt} \angle$ s are $\cong$            |
| 4. $m\angle P = m\angle Q = m\angle R = m\angle S$                             | 4. Definition of congruence                        |
| 5. $90^\circ = m\angle Q = m\angle R = m\angle S$                              | 5. Substitution                                    |
| 6. $m\angle P = 90^\circ$  | 6. Substitution                                    |
| 7. $\triangle PSQ \cong \triangle RQS$   | 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. $\overline{RT} \cong \overline{SU}$<br>$\overline{US}$ is the perpendicular bisector of $\overline{RT}$ .<br>$\overline{RT}$ is the perpendicular bisector of $\overline{US}$ . | 1. Given                                |
| 2. $\overline{UV} \cong \overline{VS} \cong \overline{VT} \cong \overline{RV}$<br>$\angle UVT, \angle TVS, \angle RVS, \angle RVU$ are $\text{Rt} \angle$ 's                       | 2. Definition of perpendicular bisector |
| 3. $m\angle UVR = m\angle RVS = m\angle SVT = m\angle TVU = 90^\circ$  | 3. Def of a $\text{Rt} \angle$          |
| 4. $\angle UVR \cong \angle RVS \cong \angle SVT \cong \angle TVU$<br>$\triangle UVT \cong \triangle TVS \cong \triangle RVS$  | 4. All $\text{Rt} \angle$ 's $\cong$    |
| 5. $\cong \triangle RVU$   | 5. SAS                                  |
| 6. $\overline{UV} \cong \overline{VS} \cong \overline{RV} \cong \overline{RU}$   | 6. CPCTC                                |
| 7. $RSTU$ is a square.   | 7. All sides are $\cong$ in a square    |