

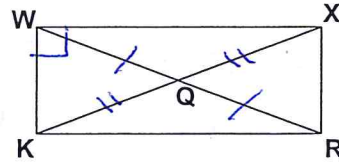
## Proving All Parallelograms

1. Given:  $\overline{KX}$  bisects  $\overline{WR}$ ,  $\overline{KQ} \cong \overline{QX}$ ,  $\overline{KW} \perp \overline{WX}$

Prove:  $WXRK$  is a rectangle

- Statements
- ①  $\overline{KX}$  bisects  $\overline{WR}$
  - ②  $\overline{KQ} \cong \overline{QX}$
  - ③  $\overline{KQ} \cong \overline{QX}$
  - ④  $WXRK$  is a parallelogram
  - ⑤  $\overline{KW} \perp \overline{WX}$
  - ⑥  $\angle KWX$  is a right angle
  - ⑦  $WXRK$  is a rectangle

- Reasons
- ① given
  - ② ~~given~~ A line bisector creates two  $\cong$  segments
  - ③ given
  - ④ A parallelogram has diagonals that bisect each other
  - ⑤ given
  - ⑥ perpendicular lines form right angles
  - ⑦ A rectangle is a parallelogram with a right angle

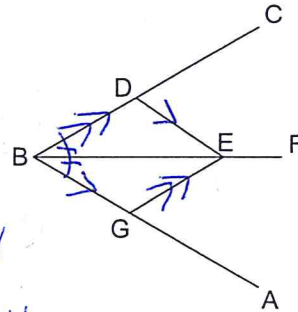


2. Given:  $\overline{BF}$  bisects  $\angle CBA$ ,  $\overline{DE} \parallel \overline{BA}$ ,  $\overline{GE} \parallel \overline{BC}$

Prove:  $DEGB$  is a rhombus

- Statements
- ①  $\overline{DE} \parallel \overline{BA}$ ,  $\overline{GE} \parallel \overline{BC}$
  - ②  $DEGB$  is a parallelogram
  - ③  $\overline{BF}$  bisects  $\angle CBA$
  - ④  $DEGB$  is a rhombus

- Reasons
- ① given
  - ② A parallelogram has 2 pairs of opposite sides parallel
  - ③ given
  - ④ A rhombus is a parallelogram with diagonals that bisect the angles.



3. Given:  $\triangle ABD \cong \triangle CDB$ ,  $\overline{BC} \perp \overline{CD}$

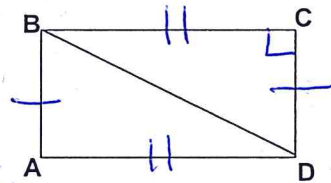
Prove:  $ABCD$  is a rectangle

Statements

- ①  $\triangle ABD \cong \triangle CDB$
- ②  $\overline{AB} \cong \overline{CD}$ ,  $\overline{BC} \cong \overline{AD}$
- ③  $ABCD$  is a parallelogram
- ④  $\overline{BC} \perp \overline{CD}$
- ⑤  $\angle BCD$  is a right angle
- ⑥  $ABCD$  is a rectangle

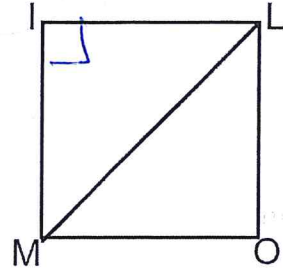
Reasons

- ① Given
- ② CPCTC
- ③ A parallelogram has 2 pairs of opposite sides congruent
- ④ given
- ⑤ perpendicular lines form right angles
- ⑥ A rectangle is a parallelogram with a right angle.



must prove a rectangle property

4. Given: MILO is a rhombus,  $\overline{MI} \perp \overline{IL}$   
 Prove: MILO is a square



statements

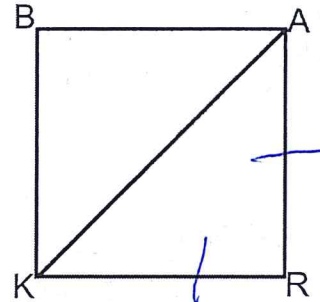
Reasons

- ① MILO is a rhombus
- ②  $\overline{MI} \perp \overline{IL}$
- ③  $\angle MIL$  is a right angle
- ④ MILO is a square

- ① given
- ② given
- ③ Perpendicular lines form right angles.
- ④ A square is a rhombus with a right angle.

must prove property of rhombus

5. Given: BARK is a rectangle and  $\triangle ARK$  is isosceles.  
 Prove: BARK is a square



statements

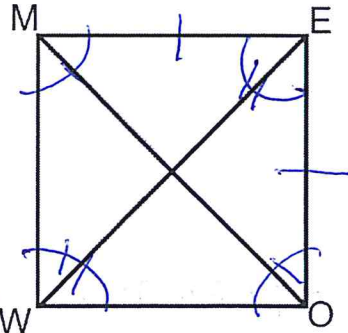
Reasons

- ① BARK is a rectangle
- ②  $\triangle ARK$  is isosceles
- ③  $\overline{AR} \cong \overline{RK}$
- ④ BARK is a square

- ① given
- ② given
- ③ Isosceles Triangle theorem
- ④ A square is a rectangle with consecutive sides congruent

consecutive sides  $\cong$   
 diagonals  $\cong$

6. Given:  $\angle WME \cong \angle EOW$ ,  $\angle MWO \cong \angle MEO$ ,  $\overline{ME} \cong \overline{EO}$ ,  $\overline{MO} \cong \overline{EW}$   
 Prove: MEOW is a square



statements

Reasons

- ①  $\angle WME \cong \angle EOW$   
 $\angle MWO \cong \angle MEO$
- ② MEOW is a parallelogram
- ③  $\overline{ME} \cong \overline{EO}$
- ④  $\overline{MO} \cong \overline{EW}$
- ⑤ MEOW is a square

- ① given
- ② A parallelogram has two pairs of opposite angles  $\cong$
- ③ given
- ④ given
- ⑤ A square is a parallelogram with consecutive sides congruent and diagonals congruent.