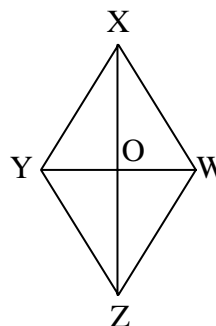


## Two-Column Proofs

1. Mark the given information on the diagram. Give a reason for each step in the two-column proof. Choose the reason for each statement from the list below.

Given:  $\overline{YX} \cong \overline{WX}$   
 $\overline{ZX}$  bisects  $\angle YXW$

Prove:  $\overline{YZ} \cong \overline{WZ}$



Statement	Reason
1. $\overline{YX} \cong \overline{WX}$	1.
2. $\overline{ZX}$ bisects $\angle YXW$	2.
3. $\angle YXZ \cong \angle WXZ$	3.
4. $\overline{XZ} \cong \overline{XZ}$	4.
5. $\triangle YXZ \cong \triangle WXZ$	5.
6. $\overline{YZ} \cong \overline{WZ}$	6.

Choose a reason from this list:

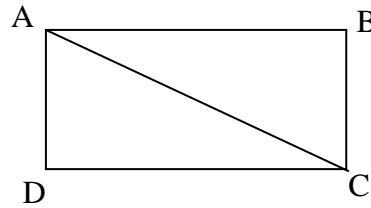
- Definition of angle bisector
- Definition of congruent triangles or CPCTC
- Given
- Given
- Reflexive property of congruence
- Side-Angle-Side congruence

## Two-Column Proofs (Continued)

2. Mark the given information on the diagram. Give a reason for each step in the two-column proof. Choose the reason for each statement from the list below.

Given:  $\overline{AD} \cong \overline{BC}$   
 $\overline{AB} \cong \overline{DC}$

Prove:  $\overline{AD} \parallel \overline{BC}$



Statement	Reason
1. $\overline{AD} \cong \overline{BC}$	1.
2. $\overline{AB} \cong \overline{DC}$	2.
3. $\overline{AC} \cong \overline{AC}$	3.
4. $\triangle CAD \cong \triangle ACB$	4.
5. $\angle DAC \cong \angle BCA$	5.
6. $\overline{AD} \parallel \overline{BC}$	6.

Choose a reason from this list:

Definition of congruent triangles

Given

Given

If alternate interior angles are congruent then the lines are parallel.

Reflexive property of congruence

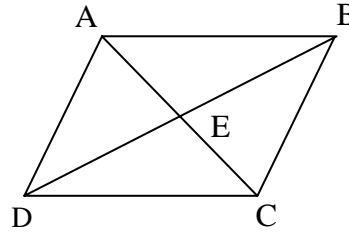
Side-Side-Side congruence

## Two-Column Proofs (Continued)

3. Complete the following proof by filling in each statement. Remember to mark all given information on the diagram.

Given: ABCD is a parallelogram

Prove:  $\triangle ABE \cong \triangle CDE$



Statement	Reason
1.	1. Given
2.	2. In a parallelogram, opposite sides are congruent.
3.	3. In a parallelogram, diagonals bisect each other.
4.	4. In a parallelogram, diagonals bisect each other.
5.	5. Side-Side-Side congruence

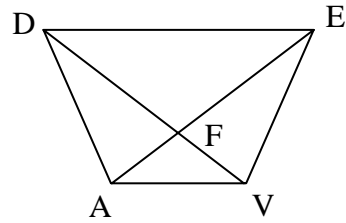
Choose a statement from this list:

$$\begin{aligned} &\overline{AE} \cong \overline{EC} \\ &ABCD \text{ is a parallelogram} \\ &\overline{DE} \cong \overline{EB} \\ &\triangle ABE \cong \triangle CDE \\ &\overline{AB} \cong \overline{DC} \end{aligned}$$

## Two-Column Proofs (Continued)

4. Fill-in the statements and reasons for the following proof.

Given:  $\overline{DE} \parallel \overline{AV}$   
 $\triangle DAV \cong \triangle EVA$



Prove: DAVE is an isosceles trapezoid

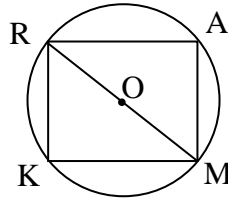
Statement	Reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Possible Statements	Possible Reasons
DAVE is a trapezoid	Given
$\overline{DA} \cong \overline{EV}$	Definition of isosceles trapezoid
DAVE is an isosceles trapezoid	Given
$\triangle DAV \cong \triangle EVA$	Definition of trapezoid
$\overline{DE} \parallel \overline{AV}$	Definition of congruent triangles

## Two-Column Proofs (Continued)

5. Complete the following proof.

Given:  $\overline{MR}$  is a diameter of  $\odot O$   
 $\overline{AR} \cong \overline{MK}$



Prove:  $\triangle MAR \cong \triangle RKM$

Statement	Reason
1. $\overline{MR}$ is a diameter of $\odot O$	1.
2. $\widehat{MAR}$ and $\widehat{MKR}$ are semicircles	2.
3. $\angle MAR$ and $\angle MKR$ are right angles	3.
4. $\angle MAR \cong \angle MKR$	4.
5. $\overline{MR} \cong \overline{MR}$	5.
6. $\overline{AR} \cong \overline{MK}$	6.
7. $\triangle MAR \cong \triangle RKM$	7.

Choose from this list of reasons.

- An angle inscribed in a semicircle is a right angle.
- All right angles are congruent
- Definition of a semicircle
- Given
- Given
- Hypotenuse-Leg Congruence
- Reflexive property of congruence

- Answers:
1.
    1. Given
    2. Given
    3. Definition of angle bisector
    4. Reflexive property of congruence
    5. Side-angle-side triangle congruence
    6. Definition of congruent triangles
  
  2.
    1. Given
    2. Given
    3. Reflexive property of congruence
    4. Side-side-side triangle congruence
    5. Definition of congruent triangles
    6. If alternate interior angles are congruent then the lines are parallel.
  
  3.
    1. ABCD is a parallelogram
    2.  $\overline{AB} \cong \overline{DC}$
    3.  $\overline{AE} \cong \overline{EC}$
    4.  $\overline{DE} \cong \overline{EB}$
    5.  $\triangle ABE \cong \triangle CDE$

} Note: lines 3 and 4 are interchangeable
  
  4.
 

<u>Statement</u>	<u>Reason</u>
1. $\overline{DE} \parallel \overline{AV}$	1. Given
2. DAVE is a trapezoid	2. Definition of trapezoid
3. $\triangle DAV \cong \triangle EVA$	3. Given
4. $\overline{DA} \cong \overline{EV}$	4. Definition of cong. tri.
5. DAVE is an isosceles trapezoid	5. Definition of isosceles trapezoid
  
  5.
    1. Given
    2. Definition of a semicircle
    3. An angle inscribed in a semicircle is a right angle
    4. All right angles are congruent
    5. Reflexive property of congruence
    6. Given
    7. Hypotenuse-Leg Congruence