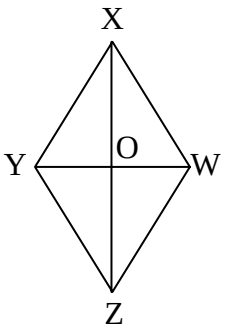
Two-Column Proofs

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. $\Delta YXZ \cong \Delta WXZ$	5.
6. $\overline{YZ} \cong \overline{WZ}$	6.

Choose a reason from this list:

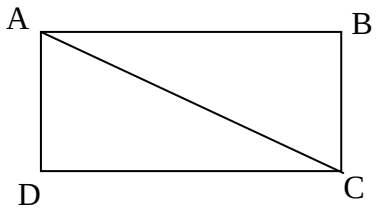
Definition of angle bisector
Definition of congruent triangles or CPCTC
Given
Given
Reflexive property of congruence
Side-Angle-Side congruence

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. $\Delta CAD \cong \Delta ACB$	4.
5. $\angle DAC \cong \angle BCA$	5.
6. $\overline{AD} \parallel \overline{BC}$	6.

Choose a reason from this list:

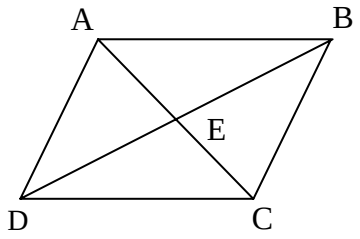
Definition of congruent triangles
Given
Given
If alternate interior angles are congruent then the lines are parallel.
Reflexive property of congruence
Side-Side-Side congruence

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: $\Delta ABE \cong \Delta CDE$



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:

$\overline{AE} \cong \overline{EC}$
ABCD is a parallelogram
$\overline{DE} \cong \overline{EB}$
$\Delta ABE \cong \Delta CDE$
$\overline{AB} \cong \overline{DC}$

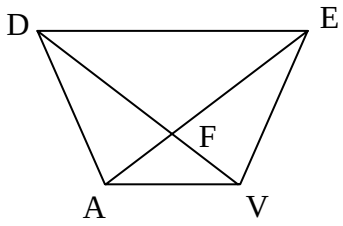
Two-Column Proofs (Continued)

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

Given: $\overline{DE} \parallel \overline{AV}$

$\Delta DAV \cong \Delta EVA$

Prove: DAVE is an isosceles trapezoid

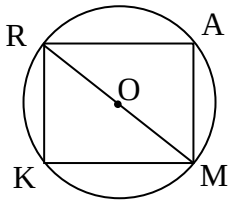


Statement	Reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Possible Statements	Possible Reasons
DAVE is a trapezoid	Given
$\overline{DA} \cong \overline{EV}$	Definition of isosceles trapezoid
DAVE is an isosceles trapezoid	Given
$\Delta DAV \cong \Delta EVA$	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 ⊙ O
$\overline{AR} \cong \overline{MK}$

Prove: $\Delta MAR \cong \Delta RKM$

Statement	Reason
1. $\overline{MR}$ is a diameter of ⊙ O	1.
2. $\overset{\frown}{MAR}$ and $\overset{\frown}{MKR}$ 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. $\Delta MAR \cong \Delta RKM$	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


Note: lines 3 and 4 are interchangeable