

Geometry Notes Section 2-7
Flowchart and Paragraph Proofs

Oct 8

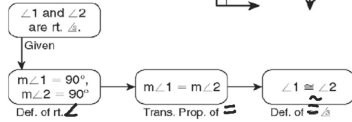
In addition to the two-column proof, there are other types of proofs that you can use to prove conjectures are true.

Flowchart Proof	<ul style="list-style-type: none"> • Uses boxes and arrows. • Steps go left to right or top to bottom, as shown by arrows. • The justification for each step is written below the box.
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You can write a flowchart proof of the Right Angle Congruence Theorem (all right angles are congruent).

Given: $\angle 1$ and $\angle 2$ are right angles.

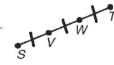
Prove: $\angle 1 \cong \angle 2$



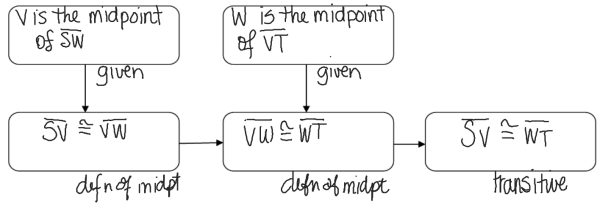
1. Use the given two-column proof to write a flowchart proof.

Given: V is the midpoint of \overline{SW} , and W is the midpoint of \overline{VT} .

Prove: $\overline{SV} \cong \overline{WT}$



Statements	Reasons
1. V is the midpoint of \overline{SW} .	1. Given
2. W is the midpoint of \overline{VT} .	2. Given
3. $\overline{SV} \cong \overline{VW}$, $\overline{VW} \cong \overline{WT}$	3. Definition of midpoint
4. $\overline{SV} \cong \overline{WT}$	4. Transitive Property of Equality



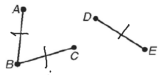
To write a paragraph proof, use sentences to write a paragraph that presents the statements and reasons.

You can use the given two-column proof to write a paragraph proof.

Given: $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{DE}$

Prove: $\overline{AB} \cong \overline{DE}$

Two-Column Proof:



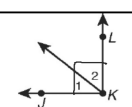
Statements	Reasons
1. $\overline{AB} \cong \overline{BC}$, $\overline{BC} \cong \overline{DE}$	1. Given
2. $AB = BC$, $BC = DE$	2. Definition of congruent segments
3. $AB = DE$	3. Transitive Property of Equality
4. $\overline{AB} \cong \overline{DE}$	4. Definition of congruent segments

Paragraph Proof: It is given that $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{DE}$, so $AB = BC$ and $BC = DE$ by the definition of congruent segments. By the Transitive Property of Equality, $AB = DE$. Thus, by the definition of congruent segments, $\overline{AB} \cong \overline{DE}$.

2. Use the given two-column proof to write a paragraph proof.

Given: $\angle JKL$ is a right angle.

Prove: $\angle 1$ and $\angle 2$ are complementary angles.



Two-Column Proof:

Statements	Reasons
1. $\angle JKL$ is a right angle.	1. Given
2. $m\angle JKL = 90^\circ$	2. defn of right \angle
3. $m\angle JKL = m\angle 1 + m\angle 2$	3. Angle addition postulate (or transitive)
4. $90^\circ = m\angle 1 + m\angle 2$	4. Substitution
5. $\angle 1$ and $\angle 2$ are complementary angles.	5. defn of complementary \angle s.

Paragraph Proof: It is given that $\angle JKL$ is a right angle, so $m\angle JKL = 90^\circ$ by definition of right angle. By the Angle Addition Postulate, $m\angle JKL = m\angle 1 + m\angle 2$, and $90^\circ = m\angle 1 + m\angle 2$ by substitution. Thus, by the definition of complementary angles, $\angle 1$ and $\angle 2$ are complementary angles.