Flowchart and Paragraph Proofs

Although the presentation is titled flowchart and paragraph proofs, the following slides are all 2 column proofs for your practice. All proofs have no supportive information embedded within the proof. The solutions to them will be uploaded at some point before the Unit 1 test. Until then, compare with each other and see me in tutorial. I hope this helps!!!!

Flowchart and Paragraph Proofs

PROOF PROCESS

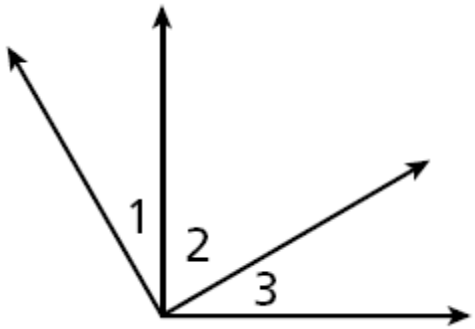
Step 1: State the given
Step 2: Make some equivalency
Step 3: Transition from given to prove
Step 4: Conclude with the proven

Flowchart and Paragraph Proofs

Example 1: Reading a Flowchart Proof

Use the given to write a two-column proof.

Given: $\angle 2$ and $\angle 3$ are comp.
$\angle 1 \cong \angle 3$
Prove: $\angle 2$ and $\angle 1$ are comp.



Flowchart and Paragraph Proofs

Check It Out! Example 1

Use the given to write a two-column proof.

Given: $RS = UV, ST = TU$

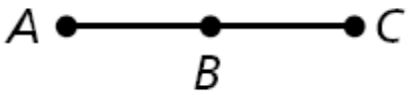
Prove: $\overline{RT} \cong \overline{TV}$

Flowchart proof:

Flowchart and Paragraph Proofs

Example 2: Writing a Flowchart Proof

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



Given: *B* is the midpoint of $\overline{AC}$.

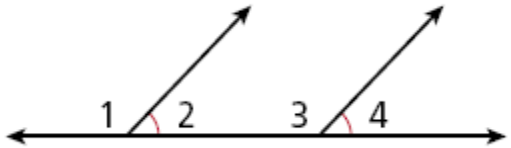
Prove: $2AB = AC$

Flowchart and Paragraph Proofs

Check It Out! Example 2

Use the given to write a two-column proof

Given: $\angle 2 \cong \angle 4$
Prove: $m\angle 1 \cong m\angle 3$
Two-column Proof:

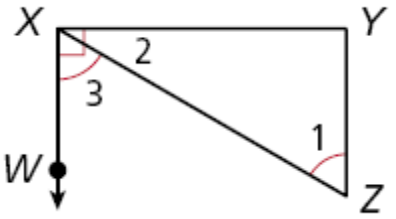


Flowchart and Paragraph Proofs

Check It Out! Example 3

Use the given to write a 2 column proof.

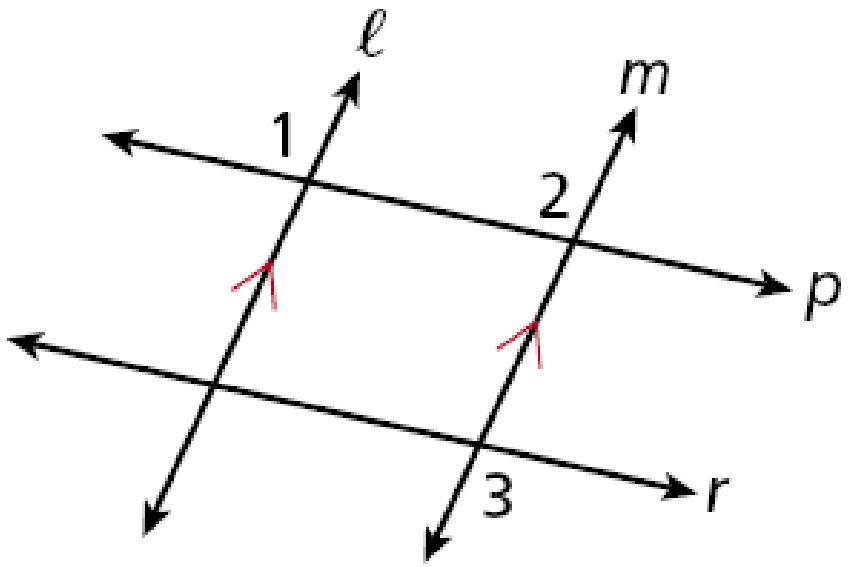
Given: $\angle WXY$ is a right angle. $\angle 1 \cong \angle 3$
Prove: $\angle 1$ and $\angle 2$ are complementary.



Flowchart and Paragraph Proofs

Example 3: Proving Lines Parallel

Given: $p \parallel r$, $\angle 1 \cong \angle 3$
Prove: $\ell \parallel m$

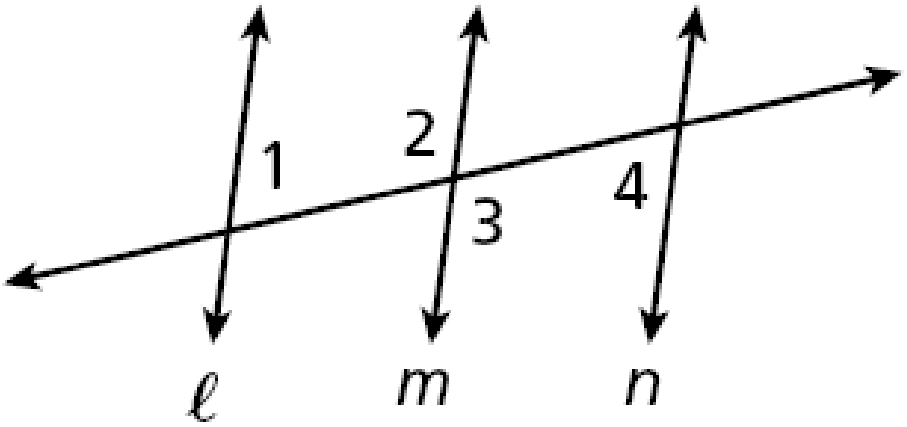


Flowchart and Paragraph Proofs

Check It Out! Example 3

Given: $\angle 1 \cong \angle 4$, $\angle 3$ and $\angle 4$ are supplementary.

Prove: $\ell \parallel m$

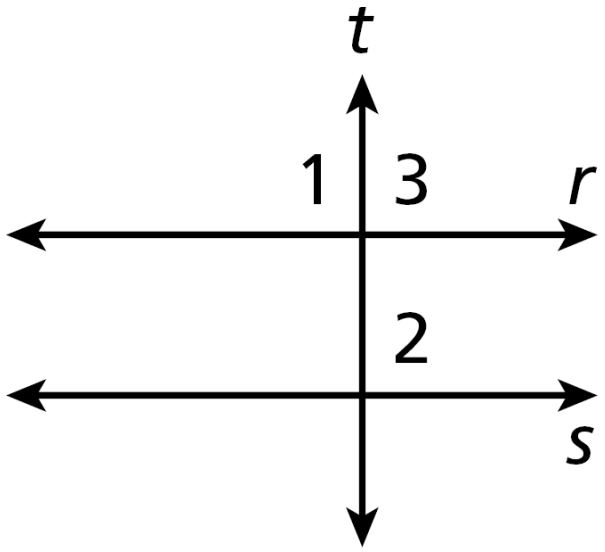


Example 2: Proving Properties of Lines

Write a two-column proof.

Given: $r \parallel s$, $\angle 1 \cong \angle 2$

Prove: $r \perp t$



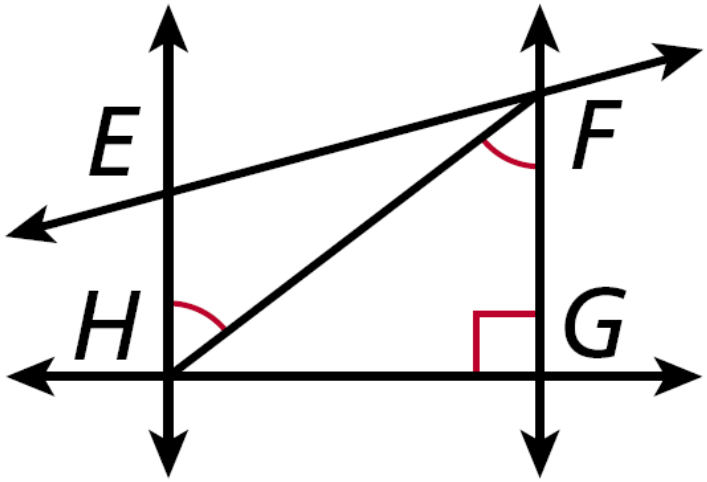
Flowchart and Paragraph Proofs

Check It Out! Example 2

Write a two-column proof.

Given: $\angle EHF \cong \angle HFG, \overleftrightarrow{FG} \perp \overleftrightarrow{GH}$

Prove: $\overleftrightarrow{EH} \perp \overleftrightarrow{GH}$



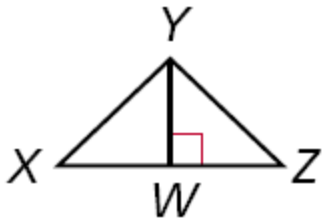
Flowchart and Paragraph Proofs

Example 3: Proving Triangles Congruent

Given: $\angle YWX$ and $\angle YWZ$ are right angles.

$\overline{YW}$ bisects $\angle XYZ$. W is the midpoint of $\overline{XZ}$. $\overline{XY} \cong \overline{YZ}$

Prove: $\Delta XYW \cong \Delta ZYW$



Flowchart and Paragraph Proofs

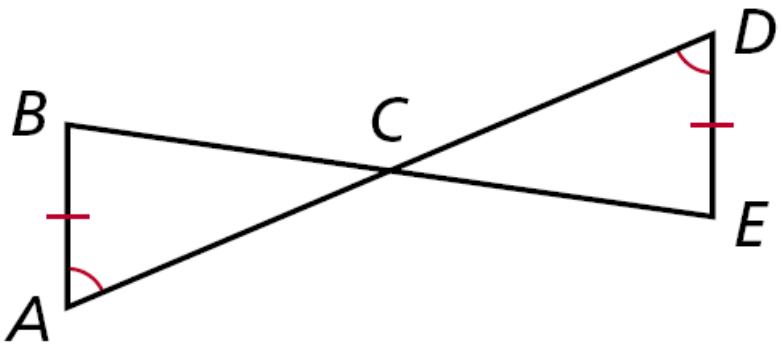
Check It Out! Example 3

Given: $\overline{AD}$ bisects $\overline{BE}$.

$\overline{BE}$ bisects $\overline{AD}$.

$\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$

Prove: $\Delta ABC \cong \Delta DEC$



Flowchart and Paragraph Proofs

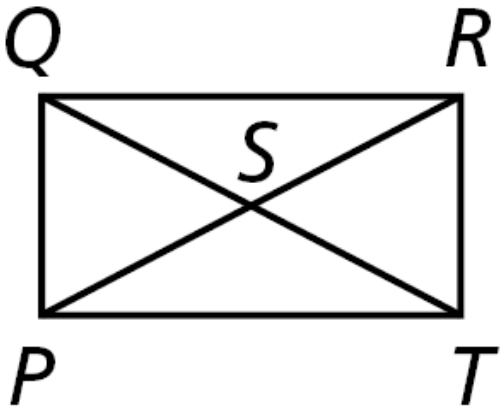
Example 4: Engineering Application

The diagonal bars across a gate give it support. Since the angle measures and the lengths of the corresponding sides are the same, the triangles are congruent.

Given: $\overline{PR}$ and $\overline{QT}$ bisect each other.

$\angle PQS \cong \angle RTS$, $\overline{QP} \cong \overline{RT}$

Prove: $\Delta QPS \cong \Delta TRS$

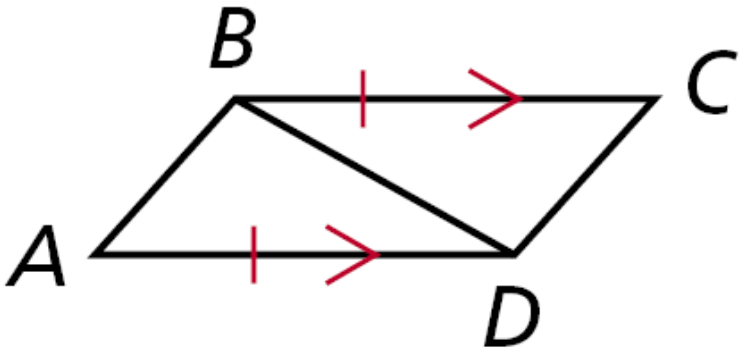


Flowchart and Paragraph Proofs

Example 4: Proving Triangles Congruent

Given: $BC \parallel AD$, $\overline{BC} \cong \overline{AD}$

Prove: $\Delta ABD \cong \Delta CDB$

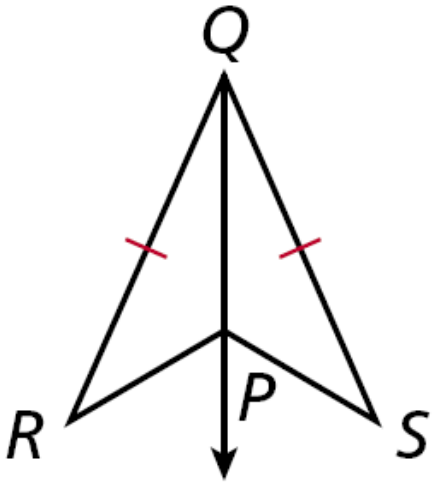


Flowchart and Paragraph Proofs

Check It Out! Example 4

Given: $\overrightarrow{QP}$ bisects $\angle RQS$. $\overline{QR} \cong \overline{QS}$

Prove: $\Delta RQP \cong \Delta SQP$



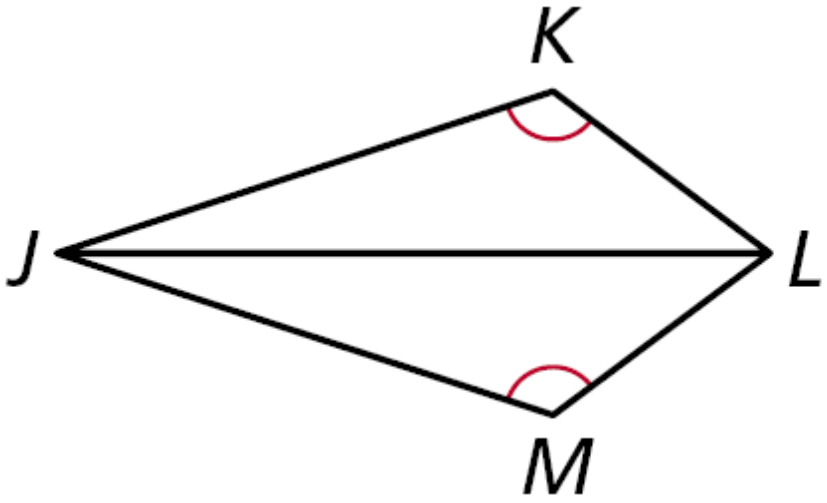
Flowchart and Paragraph Proofs

Check It Out! Example 3

Use AAS to prove the triangles congruent.

Given: $\overleftrightarrow{JL}$ bisects $\angle KLM$, $\angle K \cong \angle M$

Prove: $\Delta JKL \cong \Delta JML$

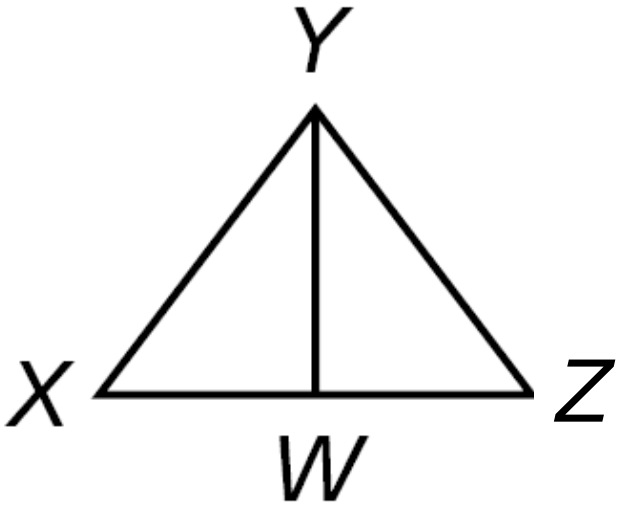


Flowchart and Paragraph Proofs

Example 2: Proving Corresponding Parts Congruent

Given: $\overline{YW}$ bisects $\overline{XZ}$, $\overline{XY} \cong \overline{YZ}$.

Prove: $\angle XYW \cong \angle ZYW$

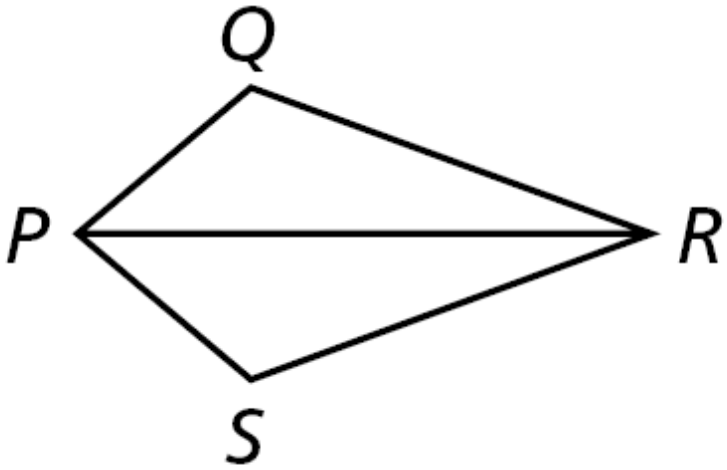


Flowchart and Paragraph Proofs

Check It Out! Example 2

Given: $\overline{PR}$ bisects $\angle QPS$ and $\angle QRS$.

Prove: $\overline{PQ} \cong \overline{PS}$



Flowchart and Paragraph Proofs

Example 4: Using Coordinate Proof

Prove that the segment joining the midpoints of two sides of an isosceles triangle is half the base.

Given: In isosceles ΔABC, X is the mdpt. of $\overline{AB}$, and Y is the mdpt. of $\overline{AC}$.

Prove: $XY = \frac{1}{2} AC$.

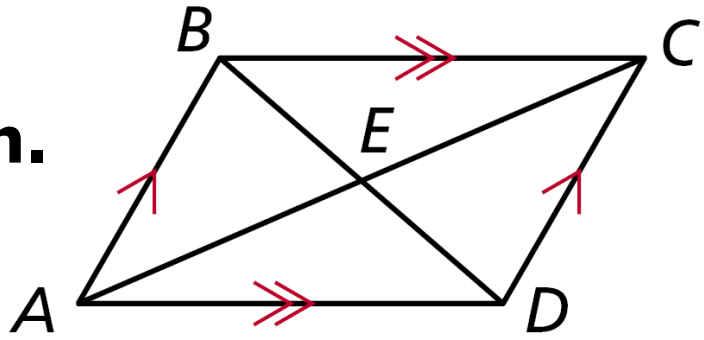
Flowchart and Paragraph Proofs

Example 4A: Using Properties of Parallelograms in a Proof

Write a two-column proof.

Given: ABCD is a parallelogram.

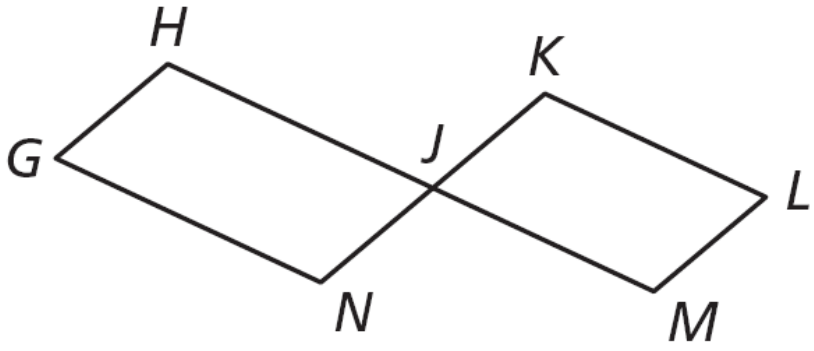
Prove: $\Delta AEB \cong \Delta CED$



Flowchart and Paragraph Proofs

Example 4B: Using Properties of Parallelograms in a Proof

Write a two-column proof.



Given: ***GHJN*** **and** ***JKLM*** **are parallelograms.** ***H*** **and** ***M*** **are collinear.** ***N*** **and** ***K*** **are collinear.**

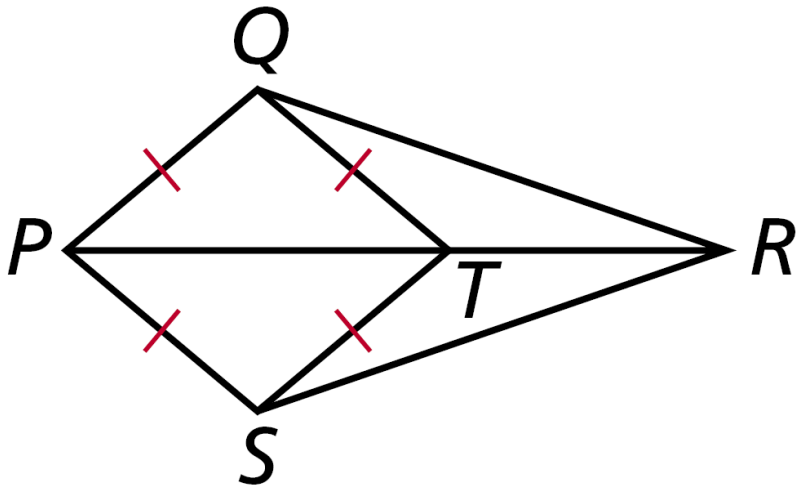
Prove: $\angle H \cong \angle M$

Flowchart and Paragraph Proofs

Check It Out! Example 4

Given: *PQTS* is a rhombus with diagonal $\overline{PR}$.

Prove: $\overline{RQ} \cong \overline{RS}$



Flowchart and Paragraph Proofs

Example 4: Writing Proofs with Similar Triangles

Given: $3UT = 5RT$ and $3VT = 5ST$

Prove: $\Delta UVT \sim \Delta RST$