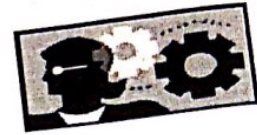


Geometry's Scrambled Proofs



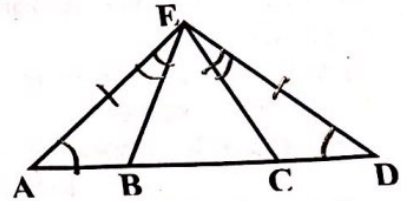
In Geometry, one of the crucial tasks is to think and reason logically. In a court of law, evidence is built upon known and established facts. In order for an attorney to make his case, he must build each set of facts one step at a time. This skill is the same used in Mathematics to "prove" a concept or a theorem. You get practice doing this by proving various geometric figures congruent. These written procedures are called "Two-Column Proofs". These proofs test your ability to think in a logical and orderly fashion.

In the following activity you will be given a few two-column proofs of various geometric concepts with one catch. The Statements and the Reasons are written "scrambled" and out of correct order. Your task is to "unscramble" the proof's Statements and Reasons so that the Proof is written correctly. Do this on a separate sheet of paper by using these steps and writing out the proof correctly.

Scrambled Proof # 1

Given: $\overline{AE} \cong \overline{DE}$, $\angle A \cong \angle D$, $\angle AEB \cong \angle DEC$

Prove: $\triangle AEB \cong \triangle DEC$

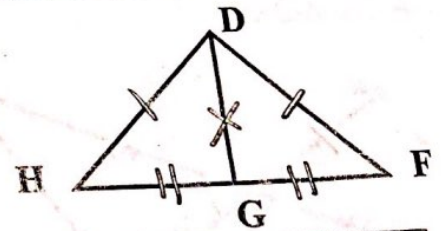


Statements	Reasons
$\triangle AEB \cong \triangle DEC$ #4	Given #1
$\overline{AE} \cong \overline{DE}$ #1	ASA Postulate #4
$\angle A \cong \angle D$ #2	Given #2
$\angle AEB \cong \angle DEC$ #3	Given #3

Scrambled Proof # 2

Given: $\overline{HD} \cong \overline{DF}$, G is the midpoint of \overline{HF}

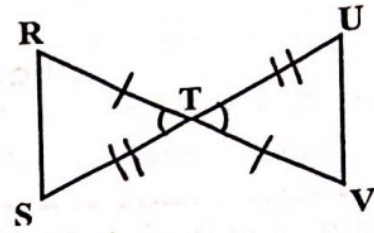
Prove: $\triangle HDG \cong \triangle FDG$



Statements	Reasons
$\overline{HG} \cong \overline{GF}$ #3	Given #1
$\triangle HDG \cong \triangle FDG$ #5	Given #2
$\overline{DG} \cong \overline{DG}$ #4	SSS Postulate #5
$\overline{HD} \cong \overline{DF}$ #1	A mid point cuts a segment into 2 \cong pieces. #3
G is the mid point of \overline{HF} #2	Reflexive Property #4

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Example 1-1001 # 3
Given: $\overline{RT} \cong \overline{TV}$, $\overline{ST} \cong \overline{TU}$



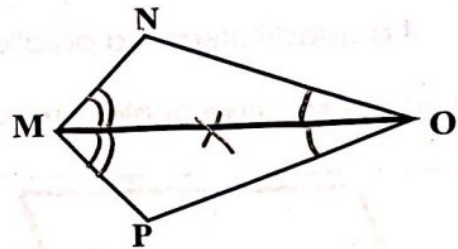
Prove: $\Delta RTS \cong \Delta VTU$

Statements	Reasons
$\Delta RTS \cong \Delta VTU$ #4	Given #2
$\angle STR \cong \angle UTV$ #3	SAS Postulate #4
$\overline{ST} \cong \overline{TU}$ #2	Vertical angles are congruent #3
$\overline{RT} \cong \overline{TV}$ #1	Given #1

Example 1-1001 # 4

Given: \overline{MO} Bisects $\angle NOP$, $\angle NMO \cong \angle PMO$

Prove: $\Delta MNO \cong \Delta MPO$



Statements	Reasons
$\Delta MNO \cong \Delta MPO$ #5	Given #1
$\overline{MO} \cong \overline{MO}$ #4	ASA Postulate #5
\overline{MO} Bisects $\angle NOP$ #1	Reflexive Property #4
$\angle NMO \cong \angle PMO$ #2	a bisector cuts an angle into 2 \cong angles #3
$\angle NOM \cong \angle POM$ #3	Given #2