



Congruency & Proofs

RECALL: Triangle Congruency Rules

Revise the side angle rules for triangle congruency below.

Note: The “SSA” is not sufficient to prove congruency.

SSS

SAS

ASA

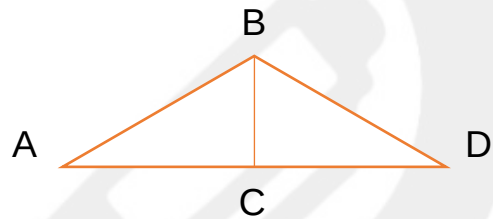
AAS

RHS

Congruency Proofs

When triangles are congruent, all pairs of corresponding angles and sides are congruent with one another. Proof of triangle congruency is written in the form of congruence statements and reasons, drawing on your knowledge of triangle properties and congruency rules.

EXAMPLE: Prove $\triangle ABC \cong \triangle DBC$,
given that C is the midpoint of $\overline{AD}$
and $\overline{AB} \cong \overline{DB}$



STATEMENTS

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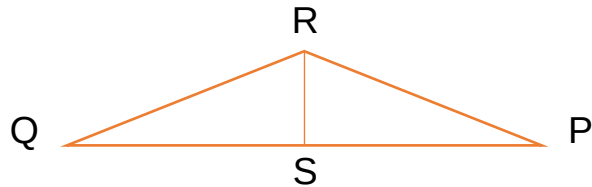
- | | |
|---|---|
| 1) C is the midpoint of $\overline{AD}$ | 1) Given |
| 2) $\overline{AB} \cong \overline{DB}$ | 2) Given |
| 3) $\overline{AC} \cong \overline{DC}$ | 3) Definition of a midpoint |
| 4) $\overline{BC} \cong \overline{BC}$ | 4) Reflexive property (equal to itself) |
| 5) $\triangle ABC \cong \triangle DBC$ | 5) SSS (Statements 2, 3 and 4) |



Instructions: Complete the triangle proofs below.

1

Prove that $\triangle QRS \cong \triangle PRS$,
given that $\overline{RS} \perp \overline{QP}$
and $\overline{QS} \cong \overline{PS}$.

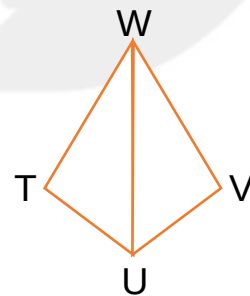


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2

Prove that $\triangle TUW \cong \triangle VUW$,
given that $\overline{TU} \cong \overline{VU}$
and $\angle TUW \cong \angle VUW$.



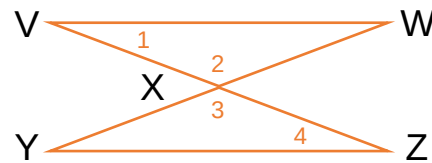
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3

Prove that $\triangle VWX \cong \triangle ZYX$,
given that $\angle 1 \cong \angle 4$
and $\overline{VX} \cong \overline{ZX}$.

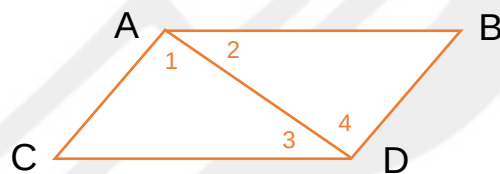


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4

Prove that $\triangle ACD \cong \triangle ABD$,
given that $\overline{AB} \parallel \overline{CD}$
and $\overline{AC} \parallel \overline{BD}$.



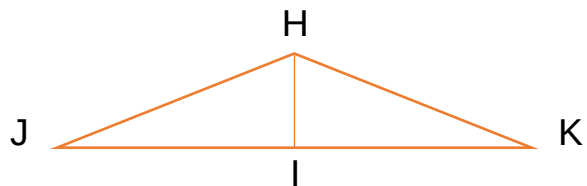
STATEMENTS

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5

Prove that $\triangle HIJ \cong \triangle HIK$,
given that $\angle HJI \cong \angle HKI$
and $\overline{HI}$ bisects $\angle JHK$.



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6

Prove that $\triangle GFH \cong \triangle IHF$,
given that $\overline{GH} \cong \overline{IF}$,
 $\overline{GF} \perp \overline{FH}$ and $\overline{IH} \perp \overline{FH}$.



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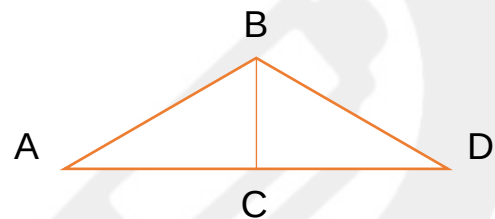
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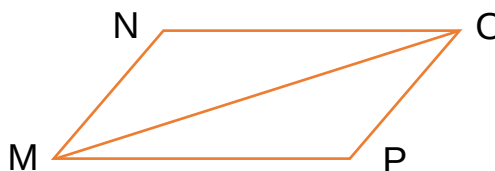
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Instructions: Complete the triangle proofs below.

1

Prove that $\triangle MNO \cong \triangle OPM$,
given that $\overline{NO} \cong \overline{PM}$
and $\overline{NO} \parallel \overline{PM}$.

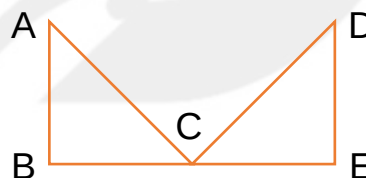


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2

Prove that $\triangle ABC \cong \triangle DEC$,
given that $\overline{AC} \cong \overline{DC}$, $\overline{AB} \perp \overline{BE}$,
 $\overline{DE} \perp \overline{BE}$ and C is the midpoint of $\overline{BE}$.



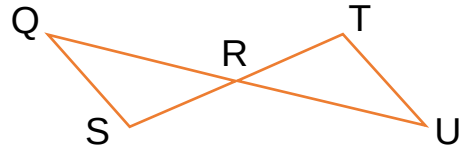
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3

Prove that $\triangle QRS \cong \triangle URT$,
given that $\overline{QS} \cong \overline{TU}$ and
R is the midpoint of $\overline{QU}$ and $\overline{TS}$.

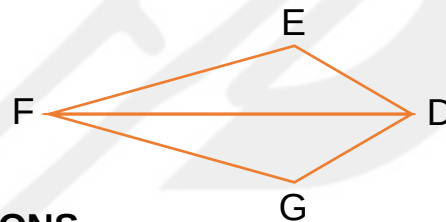


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4

Prove that $\triangle DEF \cong \triangle DGF$,
given that $\overline{DE} \parallel \overline{DG}$
and $\overline{DF}$ bisects $\angle EDG$.



STATEMENTS

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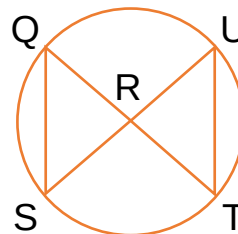


5

Prove that $\triangle QRS \cong \triangle TRU$,
given that R is the midpoint of $\overline{QT}$ and $\overline{SU}$.

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6

Prove that $\triangle ABC \cong \triangle ADE$,
given that $\overline{AB} \cong \overline{AD}$,
 $\overline{BC} \cong \overline{DE}$ and $\angle 2 \cong \angle 3$.

STATEMENTS

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