

Geometry CC - Mr. Valentino

Name: _____

Unit 5 Lesson 8: Hypotenuse

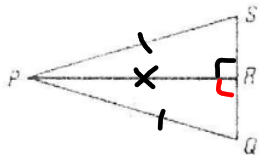
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HL! The hypotenuse and any one leg of a right triangle.



Let's jump right into solving some of these proofs and the correct way to do so.

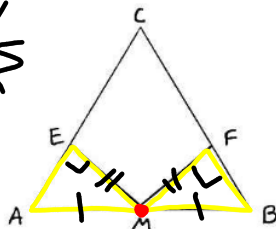
1. Given $\overline{PR} \perp \overline{SQ}$
 $\overline{PQ} \cong \overline{PS}$
 Prove $\triangle PRQ \cong \triangle PRS$



Statements	Reasons
① $\overline{PR} \perp \overline{SQ}$	① Given
② $\angle PRS$ and $\angle PRQ$ are right \angle 's	② \perp lines create right \angle 's
③ $\angle PRS \cong \angle PRQ$	③ All right \angle 's are \cong
④ $\overline{PQ} \cong \overline{PS}$	④ Given
⑤ $\overline{PR} \cong \overline{PR}$	⑤ Reflexive Property
⑥ $\triangle PRQ \cong \triangle PRS$	⑥ HL \cong HL

2. Given M is the midpoint of \overline{AB}
 $\overline{ME} \perp \overline{AC}$, $\overline{MF} \perp \overline{CB}$
 $\overline{ME} \cong \overline{MF}$
 Prove $\triangle AEM \cong \triangle BFM$

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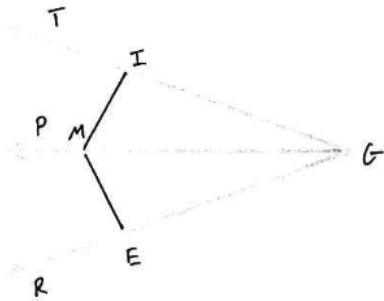
Statements	Reasons
① M is the midpt of \overline{AB}	① Given
② $\overline{ME} \perp \overline{AC}$, $\overline{MF} \perp \overline{CB}$	② Given
③ $\overline{ME} \cong \overline{MF}$	③ Given
④ $\overline{AM} \cong \overline{BM}$	④ Def. of a midpoint
⑤ $\angle AEM$ and $\angle BFM$ are right \angle 's	⑤ \perp lines form right \angle 's
⑥ $\angle AEM \cong \angle BFM$	⑥ All right \angle 's are \cong
⑦ $\triangle AEM \cong \triangle BFM$	⑦ HL \cong HL

3. Given: $\overline{MI} \cong \overline{IG}$, $\overline{ME} \cong \overline{EG}$
 $\overline{GI} \cong \overline{GE}$

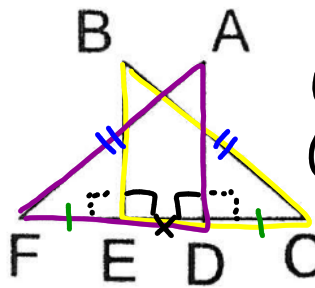
Statements

Reasons

Prove: $\triangle MEG \cong \triangle MGI$



4. Given: $\overline{AD} \perp \overline{DF}$, $\overline{BE} \perp \overline{EC}$
 $\overline{EF} \cong \overline{DC}$, $\overline{BC} \cong \overline{AF}$
 Prove: $\triangle BEC \cong \triangle ADF$



Statements

Reasons

- | | |
|---|--|
| ① $\overline{AD} \perp \overline{DF}$, $\overline{BE} \perp \overline{EC}$ | ① Given |
| ② $\overline{EF} \cong \overline{DC}$ | ② Given |
| ③ $\overline{BC} \cong \overline{AF}$ | ③ Given |
| ④ $\angle BEC$ and $\angle ADF$ are right \angle 's | ④ \perp lines form right \angle 's |
| ⑤ $\triangle BEC \cong \triangle ADF$ | ⑤ All right \angle 's are \cong |
| ⑥ $\overline{ED} \cong \overline{ED}$ | ⑥ Reflexive Prop. |
| ⑦ $\overline{FD} \cong \overline{CE}$ | ⑦ Addition Postulate |
| ⑧ $\triangle BEC \cong \triangle ADF$ | ⑧ HL \cong HL |