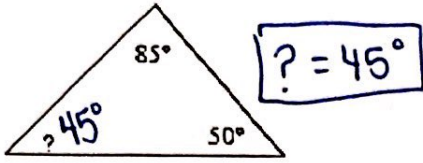


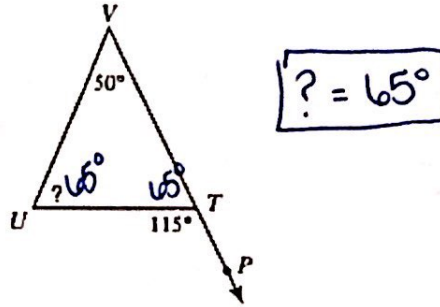
Unit 4 Triangle Congruence Study Guide

Basics of Triangles

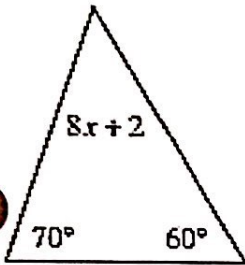
1. Solve for the missing angle measure.



2. Solve for the missing angle measure.

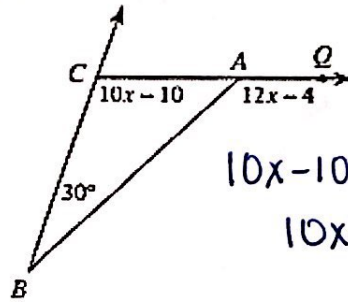


3. Solve for x. **Triangle Sum Theorem**



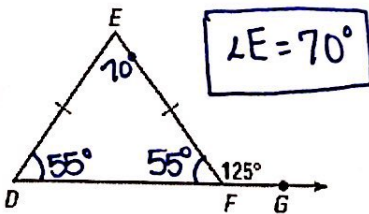
$$\begin{aligned}
 8x + 2 + 70 + 60 &= 180 \\
 8x + 132 &= 180 \\
 -132 &\quad -132 \\
 \hline
 8x &= 48 \\
 \frac{8x}{8} &= \frac{48}{8} \\
 \boxed{x = 6}
 \end{aligned}$$

4. Solve for x. **Exterior Angle Theorem**

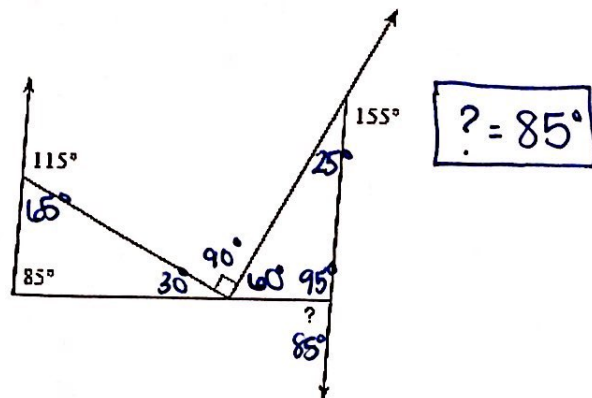


$$\begin{aligned}
 10x - 10 + 30 &= 12x - 4 \\
 10x + 20 &= 12x - 4 \\
 24 &= 2x \\
 \boxed{12 = x}
 \end{aligned}$$

5. What is the measure of angle E?



6. Find the measure of the missing angle.



7. Name the three corresponding angles:

$$\triangle WAT \cong \triangle TRF$$

$$\angle W \cong \angle T$$

$$\angle A \cong \angle R$$

$$\angle T \cong \angle F$$

8. Name the three corresponding sides:

$$\triangle ANG \cong \triangle CSW$$

$$\overline{AN} \cong \overline{CS}$$

$$\overline{AG} \cong \overline{CW}$$

$$\overline{NG} \cong \overline{SW}$$

9. Name the following angles or sides that are congruent to the stated angle or side.

a. $\angle A \cong \angle G$

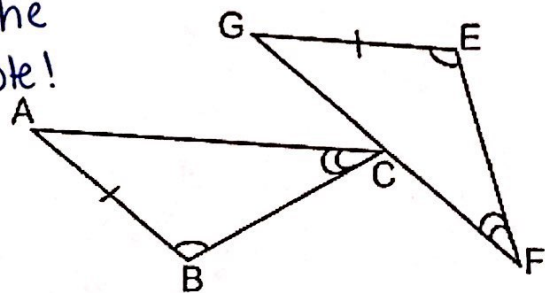
b. $\angle BCA \cong \angle EFG$

c. $\overline{AC} \cong \overline{GF}$

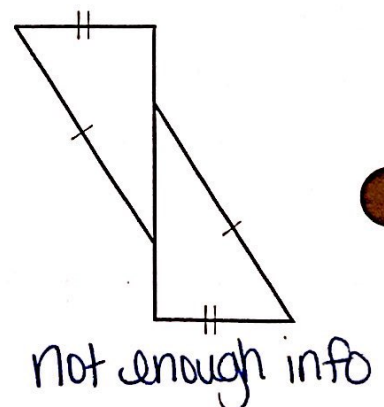
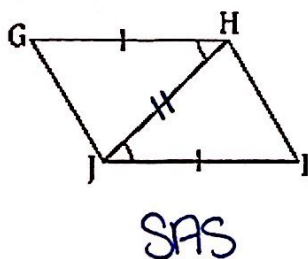
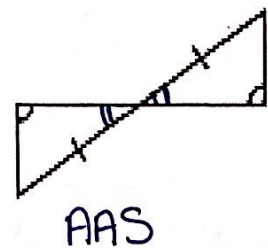
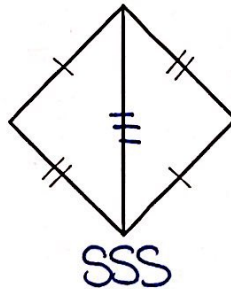
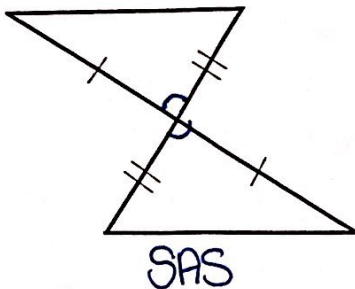
d. $\angle F \cong \angle C$

e. $\angle GEF \cong \angle ABC$

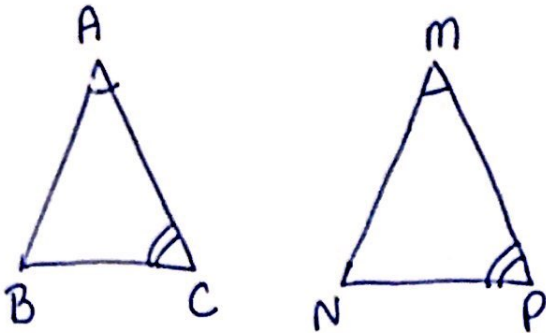
Must be in the order I wrote!



10. If so, determine how the following triangles are congruent:



11. Suppose $\triangle ABC \cong \triangle MNP$ and $\angle A \cong \angle M$ and $\angle C \cong \angle P$. What additional information would be needed to prove the triangles are congruent by ASA and AAS?



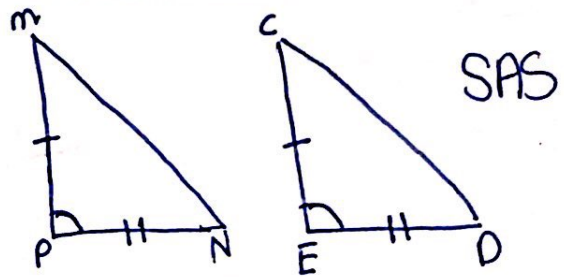
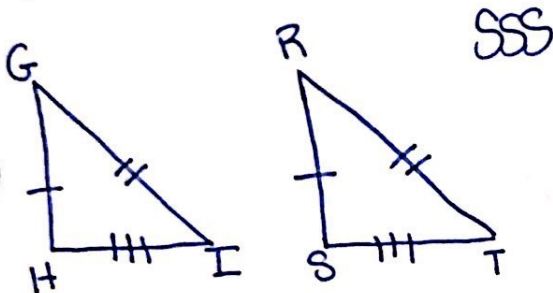
ASA: $\overline{AC} \cong \overline{MP}$

AAS: $\overline{AB} \cong \overline{MN}$ OR $\overline{BC} \cong \overline{NP}$

12. For the following information, determine if the triangles are congruent. If they are, state which theorem proves them congruent and then write a congruence statement.

a. $\overline{GH} \cong \overline{RS}$, $\overline{GI} \cong \overline{RT}$, and $\overline{HI} \cong \overline{ST}$

b. $\overline{MP} \cong \overline{CE}$, $\overline{NP} \cong \overline{DE}$, and $\angle P \cong \angle E$

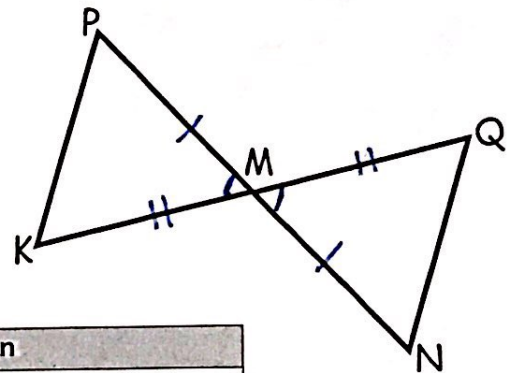


TRIANGLE PROOFS

13. Write a two column proof for the following:

Given: M is the midpoint of PN and KQ

Prove: $PK \cong NQ$

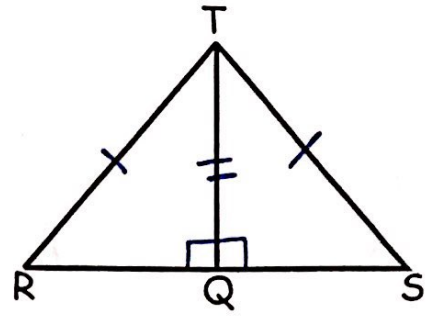


| Statement | Reason |
|---|------------------------------------|
| 1. M is midpoint of \overline{PN} & \overline{KQ} | 1. Given |
| 2. $\overline{PM} \cong \overline{NM}$ | 2. Def of midpoint |
| 3. $\overline{KM} \cong \overline{QM}$ | 3. Def of midpoint |
| 4. $\angle PMK \cong \angle NMQ$ | 4. Vertical \angle s are \cong |
| 5. $\triangle PMK \cong \triangle NMQ$ | 5. SAS |
| 6. $\overline{PK} \cong \overline{NQ}$ | 6. CPCTC |

14. Write a two column proof for the following:

Given: $RT \cong TS, TQ \perp RS$

Prove: $RQ \cong QS$



| Statement | Reason |
|--|-----------------------------|
| 1. $\overline{RT} \cong \overline{TS}$ | 1. Given |
| 2. $\overline{TQ} \perp \overline{RS}$ | 2. Given |
| 3. $\angle TQR$ & $\angle TQS$ are right \angle 's | 3. Def of perpendicular |
| 4. $\angle TQR \cong \angle TQS$ | 4. Right angles are \cong |
| 5. $\overline{TQ} \cong \overline{TQ}$ | 5. Reflexive Prop |
| 6. $\triangle TQR \cong \triangle TQS$ | 6. HL |
| 7. $\overline{RQ} \cong \overline{QS}$ | 7. CPCTC |

you could also use the Isosceles Base Angles Theorem, so the triangles would be congruent by AAS.