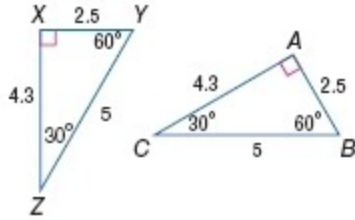


4-3 Congruent Triangles

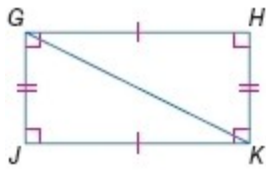
Show that polygons are congruent by identifying all congruent corresponding parts. Then write a congruence statement.



9.

ANSWER:

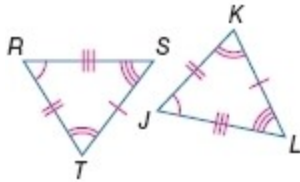
$$\angle X \cong \angle A, \angle Y \cong \angle B, \angle Z \cong \angle C, \overline{XY} \cong \overline{AB}, \overline{XZ} \cong \overline{AC}, \overline{YZ} \cong \overline{BC}; \triangle XYZ \cong \triangle ABC$$



10.

ANSWER:

$$\angle J \cong \angle H, \angle JGK \cong \angle HKG, \angle KGH \cong \angle GKJ, \overline{GJ} \cong \overline{KH}, \overline{JK} \cong \overline{HG}, \overline{GK} \cong \overline{GK}; \triangle GJK \cong \triangle KHG$$



11.

ANSWER:

$$\angle R \cong \angle J, \angle T \cong \angle K, \angle S \cong \angle L, \overline{RT} \cong \overline{JK}, \overline{TS} \cong \overline{KL}, \overline{RS} \cong \overline{JL}; \triangle RTS \cong \triangle JKL$$

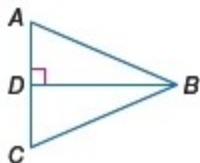
4-3 Congruent Triangles

CCSS ARGUMENTS Write a two-column proof.

23. **Given:** \overline{BD} bisects $\angle B$.

$$\overline{BD} \perp \overline{AC}$$

Prove: $\angle A \cong \angle C$



ANSWER:

Proof:

Statements (Reasons)

1. \overline{BD} bisects $\angle B$, $\overline{BD} \perp \overline{AC}$ (Given)
2. $\angle ABD \cong \angle DBC$ (Def. of angle bisector)
3. $\angle ADB$ and $\angle BDC$ are right angles. (\perp lines form rt. \angle s.)
4. $\angle ADB \cong \angle BDC$ (All rt. \angle s are \cong .)
5. $\angle A \cong \angle C$ (Third \angle s Thm.)

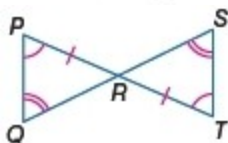
24. **Given:** $\angle P \cong \angle T$, $\angle S \cong \angle Q$

$$\overline{TR} \cong \overline{PR}, \overline{RP} \cong \overline{RQ},$$

$$\overline{RT} \cong \overline{RS}$$

$$\overline{PQ} \cong \overline{TS}$$

Prove: $\triangle PRQ \cong \triangle TRS$



ANSWER:

Proof:

Statements (Reasons)

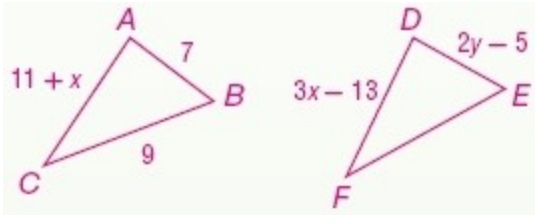
1. $\angle P \cong \angle T$, $\angle S \cong \angle Q$, $\overline{TR} \cong \overline{PR}$, $\overline{RP} \cong \overline{RQ}$, $\overline{RT} \cong \overline{RS}$, $\overline{PQ} \cong \overline{TS}$ (Given)
2. $\overline{PR} \cong \overline{QR}$, $\overline{TR} \cong \overline{SR}$ (Symm. Prop.)
3. $\overline{TR} \cong \overline{QR}$ (Trans. Prop)
4. $\overline{QR} \cong \overline{TR}$ (Symm. Prop.)
5. $\overline{QR} \cong \overline{SR}$ (Trans. Prop.)
6. $\angle PRQ \cong \angle TRS$ (Vert. \angle s are \cong .)
7. $\triangle PRQ \cong \triangle TRS$ (Def. of $\cong \Delta$ s)

4-3 Congruent Triangles

ALGEBRA Draw and label a figure to represent the congruent triangles. Then find x and y .

28. $\triangle ABC \cong \triangle DEF$, $AB = 7$, $BC = 9$, $AC = 11 + x$, $DF = 3x - 13$, and $DE = 2y - 5$

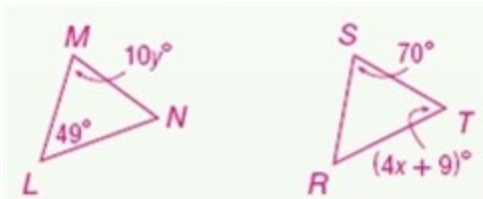
ANSWER:



$$x = 12; y = 6$$

29. $\triangle LMN \cong \triangle RST$, $m\angle L = 49$, $m\angle M = 10y$, $m\angle S = 70$, and $m\angle T = 4x + 9$

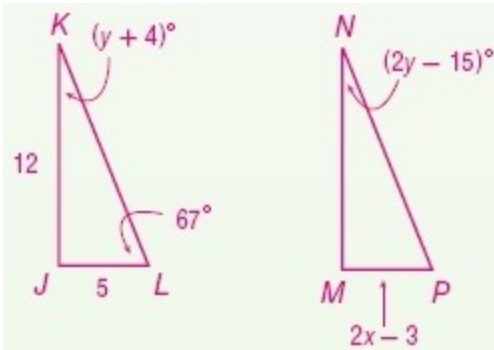
ANSWER:



$$x = 13; y = 7$$

30. $\triangle JKL \cong \triangle MNP$, $JK = 12$, $LJ = 5$, $PM = 2x - 3$, $m\angle L = 67$, $m\angle K = y + 4$ and $m\angle N = 2y - 15$

ANSWER:



$$x = 4; y = 19$$