

CONGRUENT TRIANGLES Name _____ Date _____

Theorems to know:

- Triangle Sum Thm
- Exterior Angle Thm
- Isosceles Triangle Thm

Which methods DO NOT WORK to prove congruent triangles?

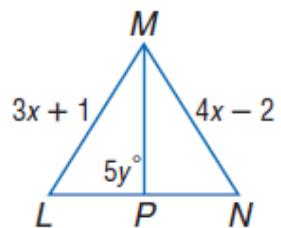
Method	Use When...
	All corresponding parts of one triangle are congruent to the corresponding parts of the other triangle
	The three sides of one triangle are congruent to the three sides of the other triangle
	Two sides and the included angle of one triangle are congruent to two sides and the included angle of the other triangle
	Two angles and the included side of one triangle are congruent to two angles and the included side of the other triangle
	Two angles and a nonincluded side of one triangle are congruent to two angles and a nonincluded side of the other triangle
	The hypotenuse and one leg in a right triangle are congruent to the hypotenuse and one leg of the other right triangle

1. Triangle LMN is equilateral and MP bisects LN. Find the value of each variable and the length of each side of the triangle. Show all work.

$$x = \underline{\hspace{2cm}} \quad y = \underline{\hspace{2cm}}$$

$$LM = \underline{\hspace{2cm}} \quad MN = \underline{\hspace{2cm}}$$

$$LN = \underline{\hspace{2cm}}$$



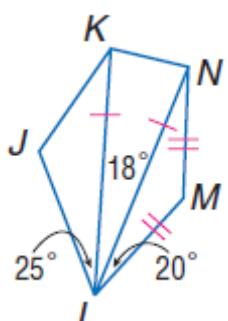
2. $\triangle KLN$ and $\triangle LMN$ are isosceles and $m\angle JKN = 130$. Find each measure. Show all work.

$$m\angle LNM = \underline{\hspace{2cm}}$$

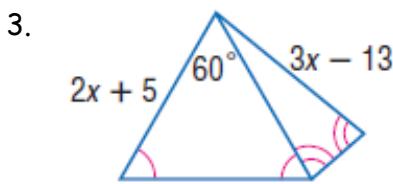
$$m\angle M = \underline{\hspace{2cm}}$$

$$m\angle LKN = \underline{\hspace{2cm}}$$

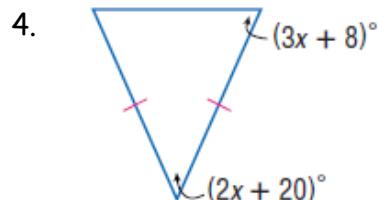
$$m\angle J = \underline{\hspace{2cm}}$$



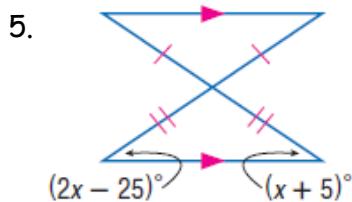
For #7-9, find x . Show all work.



$$x = \underline{\hspace{2cm}}$$



$$x = \underline{\hspace{2cm}}$$



$$x = \underline{\hspace{2cm}}$$

6. In the figure, $\triangle ABC$ is isosceles, $\triangle DCE$ is equilateral, and $\triangle FCG$ is isosceles. Label all congruent sides and angles. Find the measures of the five numbered angles at vertex C. Show all work.

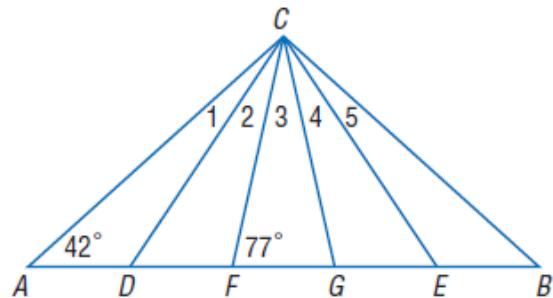
$$m\angle 1 = \underline{\hspace{2cm}}$$

$$m\angle 2 = \underline{\hspace{2cm}}$$

$$m\angle 3 = \underline{\hspace{2cm}}$$

$$m\angle 4 = \underline{\hspace{2cm}}$$

$$m\angle 5 = \underline{\hspace{2cm}}$$



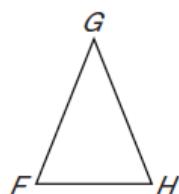
7. Triangle GHF is equiangular with $m\angle F = 3x+4$, $m\angle G = 6y$ and $m\angle H = 19z+3$.

What are the values of x , y , and z ? Show all work.

$$x = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{2cm}}$$

$$z = \underline{\hspace{2cm}}$$



8. Find x .

