NAME _____ DATE _____ PERIOD _____

4.2A CLASSWORK

Finding Angle Measures in Triangles

You can use algebra to solve problems involving triangles.

Example: In triangle *ABC*, $m\angle A$ is twice $m\angle B$, and $m\angle C$ is 8 more than $m\angle B$. What is the measure of each angle?

Write and solve an equation. Let $x = m\angle B$.

$$\begin{aligned} m\angle A + m\angle B + m\angle C &= 180 \\ 2x + x + (x + 8) &= 180 \\ 4x + 8 &= 180 \\ 4x &= 172 \\ x &= 43 \end{aligned}$$

So, $m\angle A = 2(43)$ or 86, $m\angle B = 43$, and $m\angle C = 43 + 8$ or 51.

Solve each problem.

1. In triangle *DEF*, $m\angle E$ is three times $m\angle D$, and $m\angle F$ is 9 less than $m\angle E$.What is the measure of each angle?

2. In triangle *RST*, $m\angle T$ is 5 more than $m\angle R$, and $m\angle S$ is 10 less than $m\angle T$. What is the measure of each angle?

3. In triangle *JKL*, $m\angle K$ is four times $m\angle J$, and $m\angle L$ is five times $m\angle J$. What is the measure of each angle?

4. In triangle *XYZ*, $m\angle Z$ is 2 more than twice $m\angle X$, and $m\angle Y$ is 7 less than twice $m\angle X$. What is the measure of each angle?

5. In triangle *GHI*, $m\angle H$ is 20 more than $m\angle G$, and $m\angle G$ is 8 more than $m\angle I$. What is the measure of each angle?

6. In triangle *MNO*, $m\angle M$ is equal to $m\angle N$, and $m\angle O$ is 5 more than three times $m\angle N$. What is the measure of each angle?

7. In triangle *STU*, $m\angle U$ is half $m\angle T$, and $m\angle S$ is 30 more than $m\angle T$. What is the measure of each angle?

8. In triangle *PQR*, $m\angle P$ is equal to $m\angle Q$, and $m\angle R$ is 24 less than $m\angle P$. What is the measure of each angle?

9. Write your own problems about measures of triangles.