4-2 Enrichment

Finding Angle Measures in Triangles

You can use algebra to solve problems involving triangles.

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

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

$$m\angle A + m\angle B + m\angle C = 180$$
$$2x + x + (x + 8) = 180$$
$$4x + 8 = 180$$
$$4x = 172$$
$$x = 43$$

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∠E* is three times *m∠D*, and *m∠F* is 9 less than *m∠E*. What is the measure of each angle?

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

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

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

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

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

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

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

9. Write your own problems about measures of triangles.