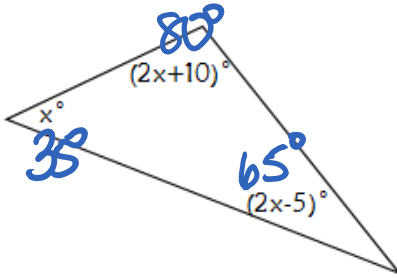


4.3: Angle Relationships in Triangles

1. Classify the triangle by angles and sides. (4.2, 4.3)



$$2x + 10 + 2x - 5 + x = 180$$

$$5x + 5 = 180$$

$$5x = 175$$

$$x = 35$$

Acute, Scalene

2. The angle measures of a triangle are in a ratio of 2:2:4. Find the measure of each angle of the triangle. (4.3)

$$2x + 2x + 4x = 180$$

$$8x = 180$$

$$x = 22.5$$

45°, 45°, 90°

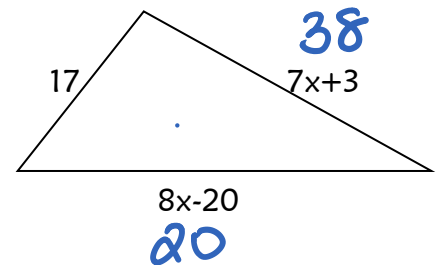
3. The perimeter of the triangle is 75. Classify the triangle by its side lengths. (4.2)

$$17 + 7x + 3 + 8x - 20 = 75$$

$$15x = 75$$

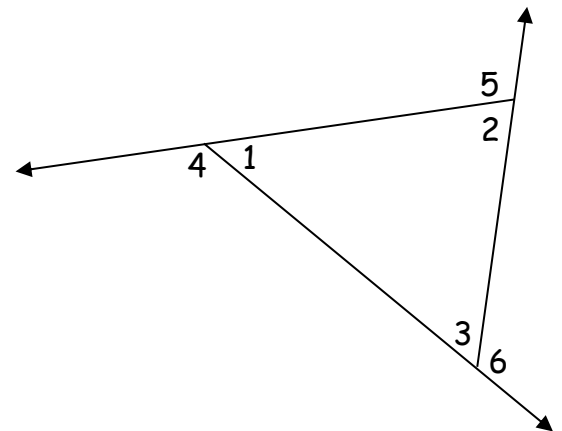
$$x = 5$$

Scalene



4. In the chart below, list the interior angles. Then match the exterior angles with their remote interior angles. (4.3)

| | | | |
|--|--|----------------------|----------------------|
| Interior Angles | $\angle 1$ | $\angle 2$ | $\angle 3$ |
| What do the interior angles of a triangle have to add up to be? | 180° | | |
| Exterior Angle | $\angle 4$ | $\angle 5$ | $\angle 6$ |
| Remote Interior Angles | $\angle 2, \angle 3$ | $\angle 1, \angle 3$ | $\angle 1, \angle 2$ |
| How are the remote interior angles related to it's exterior angle? | $Ext. \angle = \text{sum of remote int. } \angle\text{'s}$ | | |



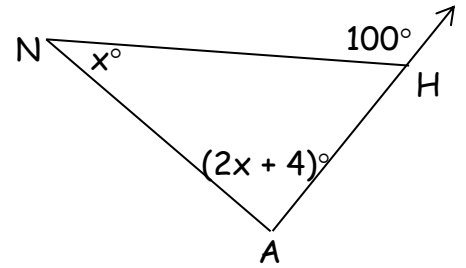
5. Use the diagram at the right to find $m\angle A$. (4.3)

$$x + 2x + 4 = 100$$

$$3x = 96$$

$$x = 32$$

$$m\angle A = 2(32) + 4 = \boxed{68^\circ}$$



6. Use the diagram at the right to find $m\angle ACD$. (4.3)

$$180 - 22 = 158$$

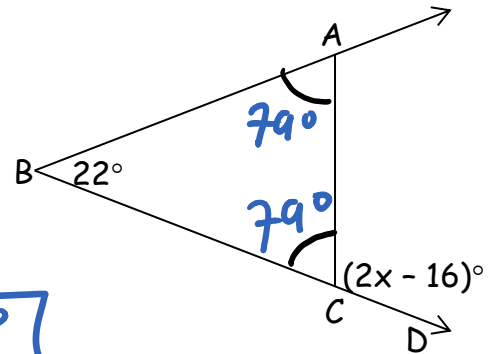
$$\frac{158}{2} = 79$$

$$2x - 16 = 22 + 79$$

$$2x = 117$$

$$x = 58.5$$

$$m\angle ACD = 2(58.5) - 16 = \boxed{101^\circ}$$

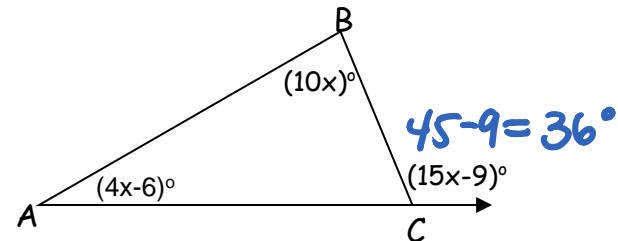


7. Use the diagram at the right to find $m\angle BCA$. (4.3)

$$15x - 9 = 4x - 6 + 10x$$

$$x = 3$$

$$m\angle BCA = 180 - 36 = \boxed{144^\circ}$$



For exercises 8 and 9, use the diagram below. (4.3)

8. What is x° , the measure of the angle that the pole makes when it first touches the ground?

$$\boxed{x = 32^\circ}$$

9. At takeoff, $a^\circ = 23^\circ$. What is c° , the measure of the angle the pole makes with the athlete's body?

$$c = 90 + 23$$

$$\boxed{c = 113^\circ}$$

