

## Lesson 4-2

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# Angles of Triangles

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## Theorems & Corollaries

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**Triangle Angle Sum Theorem:** The sum of the interior angles in a triangle is  $180^\circ$ .

**Third Angle Theorem:** If two angles of one triangle are congruent to two angles of a second triangle, then the third angles of the triangles are congruent.

**Corollary 1:** Each angle in an equiangular triangle is  $60^\circ$ .

**Corollary 2:** Acute angles in a right triangle are complementary.

$$180 = 90^\circ + m\angle 1 + m\angle 2$$

**Corollary 3:** There can be at most one right or obtuse angle in a triangle.

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# Exterior Angle Theorem

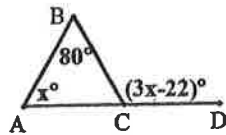
The measure of the exterior angle of a triangle is equal to the sum of the measures of the two remote interior angles.

Remote Interior Angles

Exterior Angle

$$m\angle ACD = m\angle A + m\angle B$$

**Example:** Find the  $m\angle A$ .



$$3x - 22 = x + 80$$

$$3x - x = 80 + 22$$

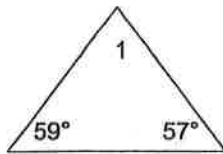
$$2x = 102$$

$$m\angle A = x = 51^\circ$$

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## Find the missing angles

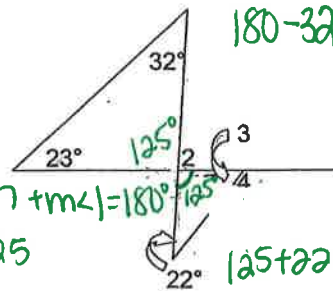


$$m\angle 1 = 64^\circ$$

$$m\angle 2 = 55^\circ$$

$$m\angle 3 = 33^\circ$$

$$m\angle 4 = 147^\circ$$



$$180 - 32 - 23 =$$

$$59 + 57 + m\angle 1 = 180^\circ$$

$$180 - 125$$

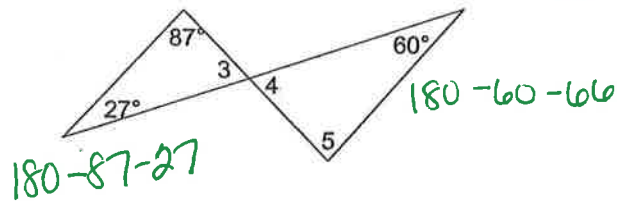
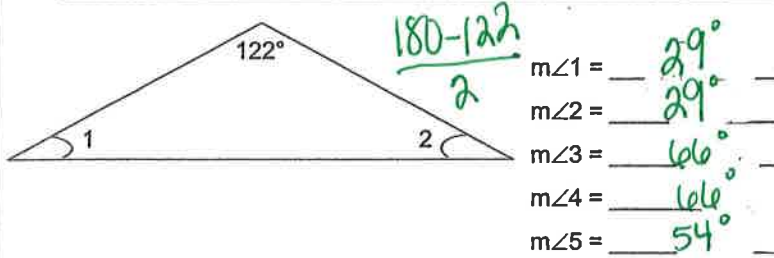
$$125 + 22 = 147^\circ$$

$$180 - 33 =$$

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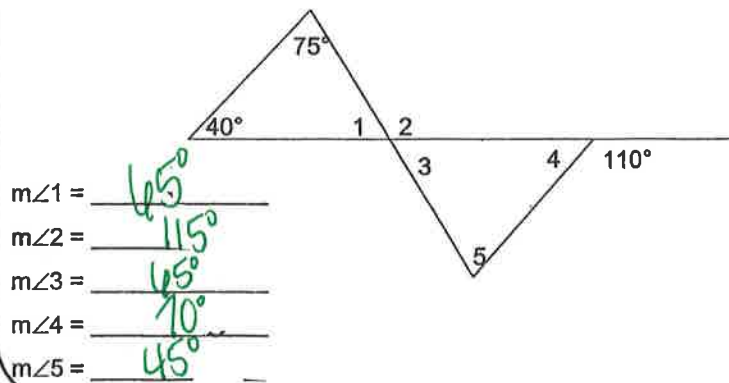
## Find the missing angles



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## Find the missing angles



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