# Reteaching 3-4

The Polygon Angle-Sum Theorems

OBJECTIVE: Finding the sum of the measures of the interior and exterior angles of polygons

MATERIALS: None

Example

A pattern of regular hexagons and regular pentagons covers a soccer ball. Find the measures of an interior and an exterior angle of the hexagon and an interior and an exterior angle of the pentagon.

- The sum of the measures of the interior angles of a hexagon equals $(n - 2)180 = (6 - 2)180 = 720$.

- $m\angle 1 = 720 \div 6 = 120$.

- The sum of the measures of the exterior angles of a hexagon equals 360.

- $m\angle 3 = 360 \div 6 = 60$.

- The sum of the measures of the interior angles of a pentagon equals $(5 - 2)180 = 540$.

- $m\angle 2 = 540 \div 5 = 108$.

- The sum of the measures of the exterior angles of a pentagon equals 360.

- $m\angle 4 = 360 \div 5 = 72$.

- An interior angle of the hexagon measures 120, and an exterior angle measures 60.

- An interior angle of the pentagon measures 108, and an exterior angle measures 72.
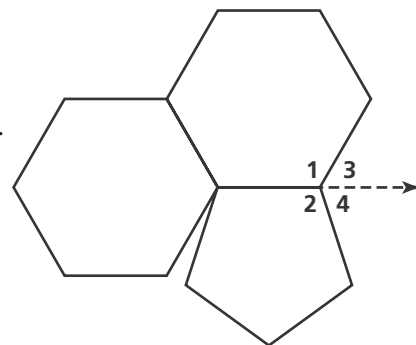
Exercises

Sometimes regular octagons are pieced around a square to form a quilt pattern.

1. Classify $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ as interior or exterior angles.

2. Find the measures of $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$.

3. Classify $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$ as interior angles, exterior angles, or neither.

4. Find the measures of $\angle 1$, $\angle 2$, $\angle 3$, and $\angle 4$.