6-1 Word Problem Practice

Angles of Polygons

1. **ARCHITECTURE** In the Uffizi gallery in Florence, Italy, there is a room built by Buontalenti called the Tribune (La Tribuna in Italian). This room is shaped like a regular octagon.

What angle do consecutive walls of the Tribune make with each other?

2. **BOXES** Jasmine is designing boxes she will use to ship her jewelry. She wants to shape the box like a regular polygon. In order for the boxes to pack tightly, she decides to use a regular polygon that has the property that the measure of its interior angles is half the measure of its exterior angles. What regular polygon should she use?

3. **THEATER** A theater floor plan is shown in the figure. The upper five sides are part of a regular dodecagon.

Find $m\angle 1$.

4. **ARCHEOLOGY** Archeologists unearthed parts of two adjacent walls of an ancient castle.

Before it was unearthed, they knew from ancient texts that the castle was shaped like a regular polygon, but nobody knew how many sides it had. Some said 6, others 8, and some even said 100. From the information in the figure, how many sides did the castle really have?

5. **POLYGON PATH** In Ms. Rickets’ math class, students made a “polygon path” that consists of regular polygons of 3, 4, 5, and 6 sides joined together as shown.

a. Find $m\angle 2$ and $m\angle 5$.

b. Find $m\angle 3$ and $m\angle 4$.

c. What is $m\angle 1$?