Area of a circle:

The area of a circle is: $A = \pi r^2$

A large pizza is 16 inches in diameter. If Joe eats a large pizza, how many square inches of pizza did he eat?
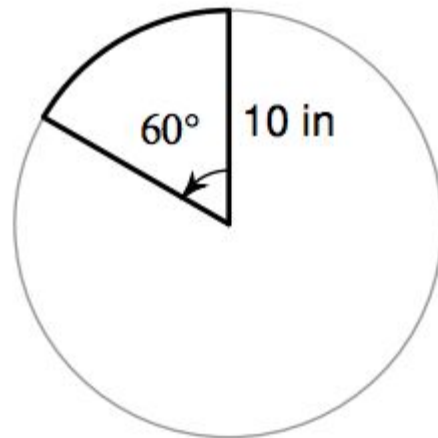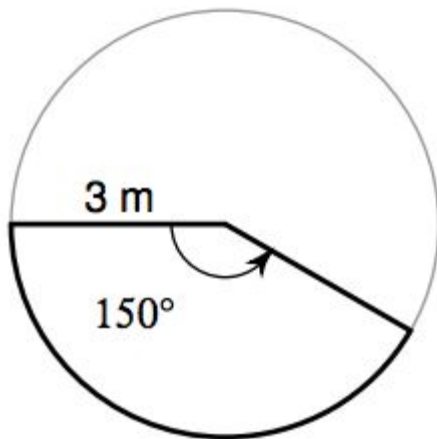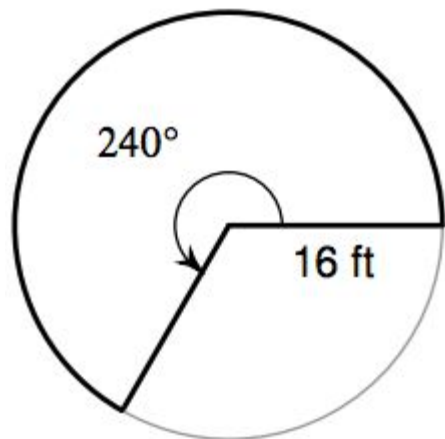
Area of a sector

The ratio of the area of a sector of a circle to the ratio of the whole circle is equal to the ratio of the angle of the sector to 360°

$$\frac{\textit{Area of the Sector}}{\textit{Area of the circle}} = \frac{\textit{measure of the sector}}{360°}$$
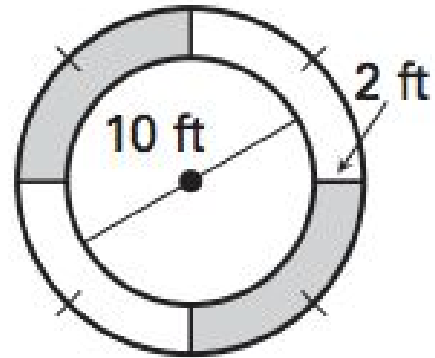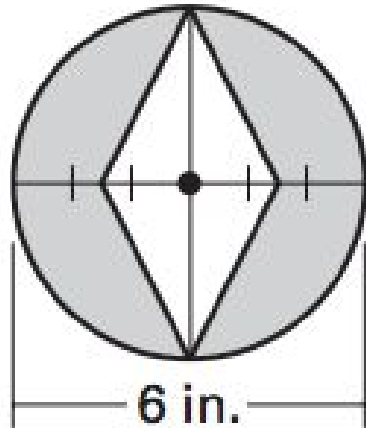
If Jill eats 3 slices of a large pizza, how many square inches of pizza did she eat?
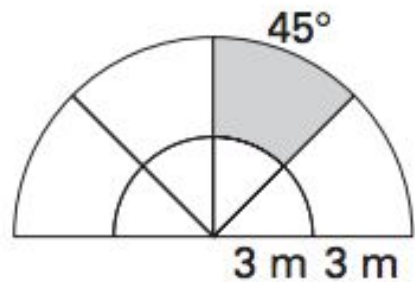
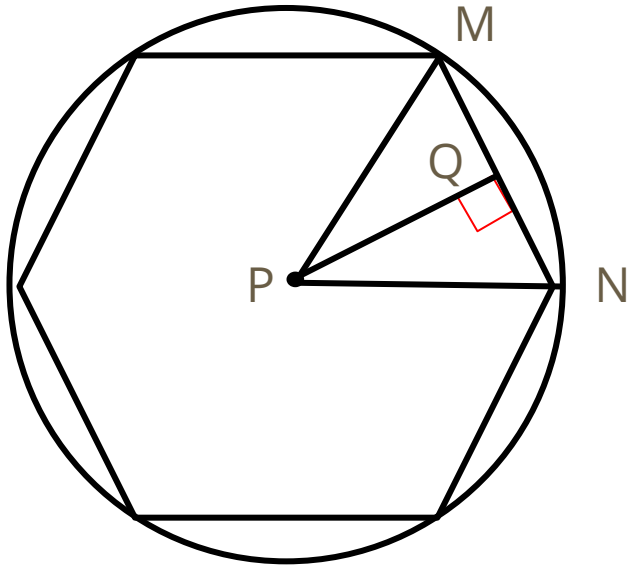Find the area of the sectors:

Find the area of the shaded regions:

Window Design The window shown is in the shape of a semicircle. Find the area of the glass in the shaded region.

45°

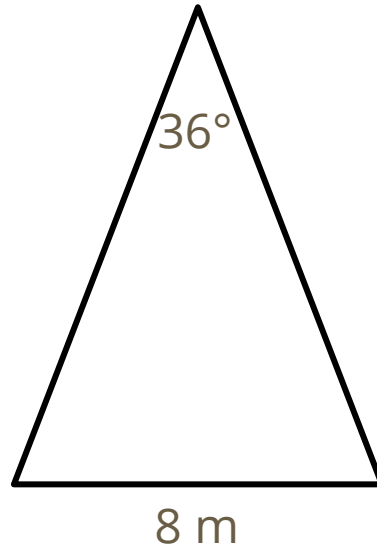3 m 3 m

Regular Polygons

PMN is an isosceles triangle with legs that are the length of the radius of circle P.
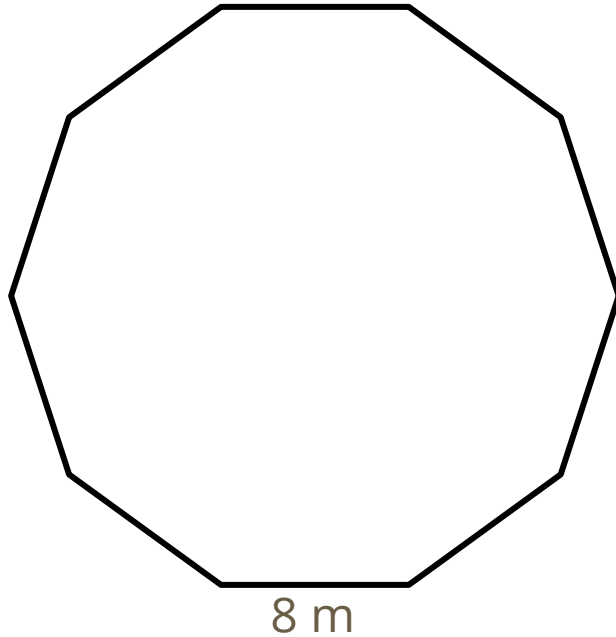
PQ is called the apothem.

The apothem is the distance between the center of a regular polygon and any one of the sides.

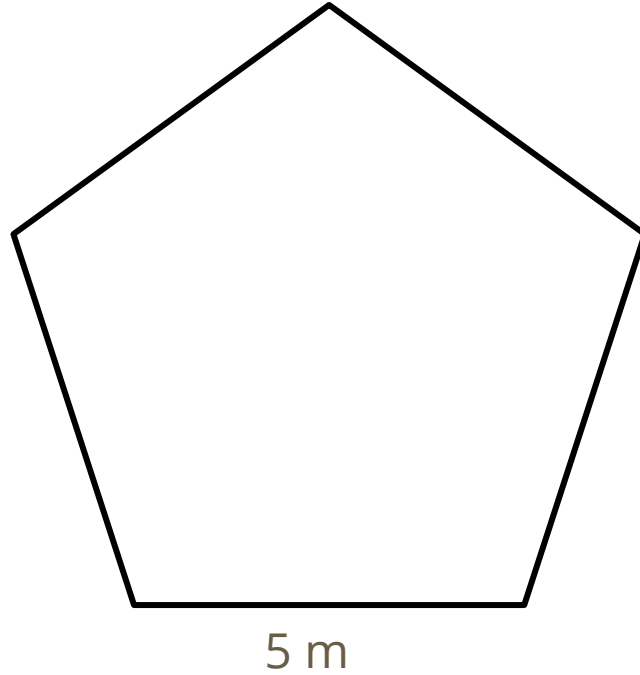Find the height of this triangle:

36°

8 m

Find the length of an apothem for this decagon:
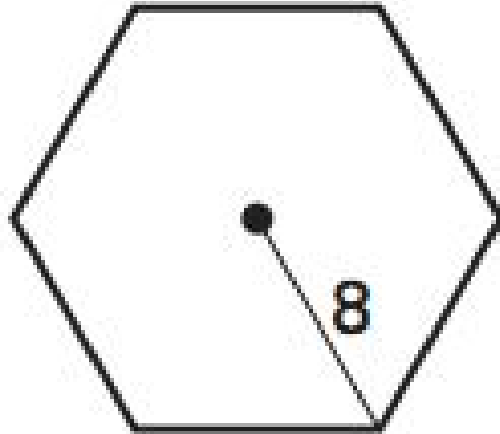
8 m

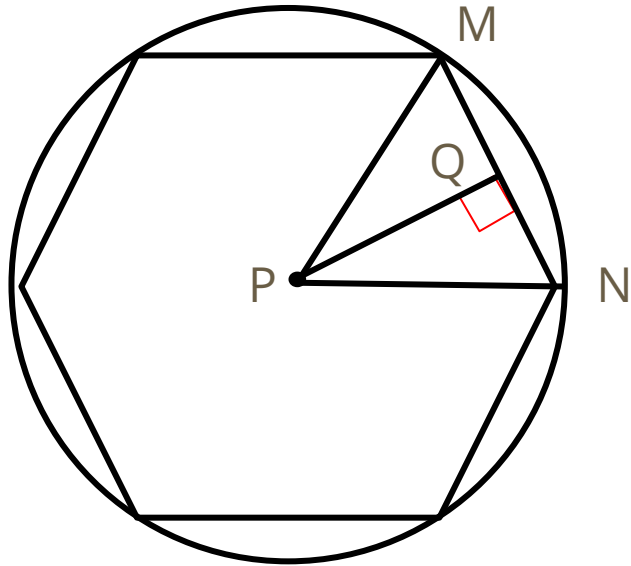Find the length of an apothem for this Pentagon:

5 m

How might we find the area of this hexagon?

Area of Regular Polygons

The area of a regular *n*-gon is:

$$A = \text{Area of One Triangle} \cdot \text{Number of Triangles}$$

$$A = \text{Area of One Triangle} \cdot \text{Number of Sides}$$
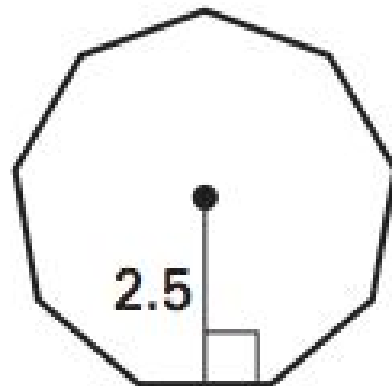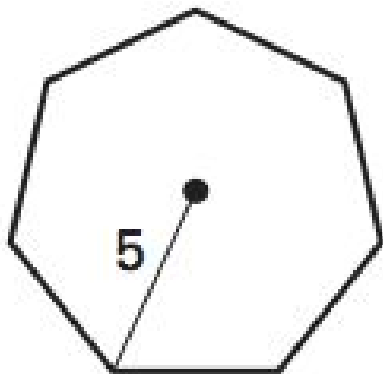
$$A = \left(\frac{1}{2} \cdot s \cdot a\right) \cdot n$$

$$A = \left(\frac{1}{2} \cdot a\right) \cdot s \cdot n$$

$$A = \frac{1}{2} \text{ length of the apothem} \cdot \text{Perimeter}$$

$$A = \frac{1}{2} a \cdot P$$

Find the areas:

5

2.5

You are constructing a table with an octagon top. You'd like to cover the table with ceramic tiles. If the table is 6 feet across, and each side is 18 inches. How many square feet of tiles do you need?