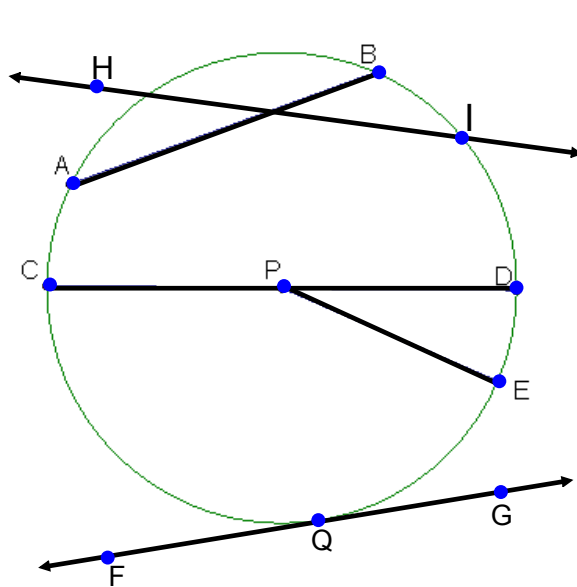


## 9.1 Exploring Circles

### 9.1 Exploring Circles

A **circle** is the set of all points in a plane that are a given distance from a given point in the plane called the center. Various parts of a circle are labeled in the figure below. **P is the center.**



PD is a **radius** - From center to outside

AB is a **chord** - from side to side

CD is a **diameter** - a chord through the center

HI is a **secant** - a line that intersects a circle at 2 points.

FG is a **tangent** - a line or segment that touches the outside of a circle at one point.

Q is the **point of tangency.**

The distance around a circle is called the circumference.  
If a circle has circumference of  $C$  units and a radius of  $r$  units, then  $C = 2 \pi r$  or  $\pi d$ .

The surface of a circle is called the Area.

You find it with a radius of  $r$  units,  $A = \pi r^2$

## Example 1

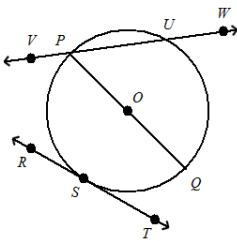
The size of a bicycle is determined by the diameter of the wheel. So, a 26-inch bicycle has a wheel with a 26-inch diameter. What is the length of a spoke of a 26-inch bicycle?

The spoke is half the diameter. The Spoke is 13 inches

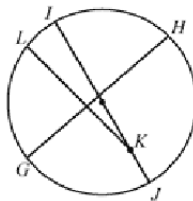


## Example 2

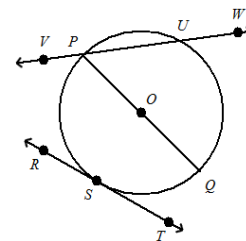
1. Identify all tangents for circle  $O$ .



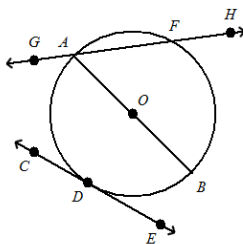
2. Identify two chords.



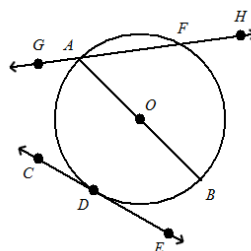
3. Identify all secants for circle  $O$ .



4. Identify all radii for circle  $O$ .

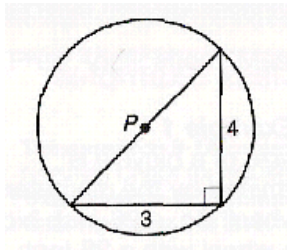


5. Identify the diameter for circle  $O$ .



## Example 4

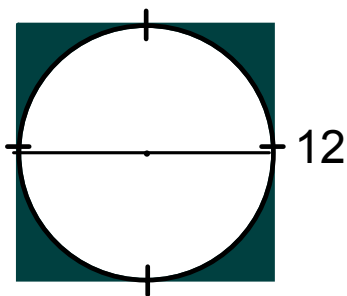
Find the exact circumference and area of circle P.



First find the radius.

Remember the radius is half the diameter which is the hypotenuse of a right triangle.

## Example 5



1. First find the area of the square.  $s = 12$
2. Then find the area of the circle.  $D = 12$
3. Now take the difference of the two areas.

## Example 5 (Part 2)

