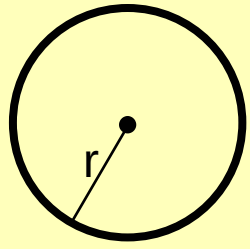
Area of Sectors

Lesson 16

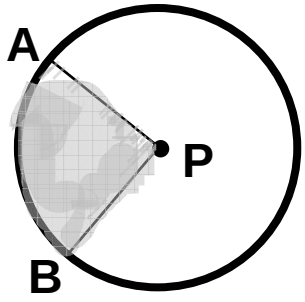
Area of a Circle

The area of a circle is π times the square of the radius, or $A = \pi r^2$.



Area of a Sector of a Circle

A *sector of a circle* is the region bounded by two radii and their intercepted arc.



Sector APB is shaded in circle P.

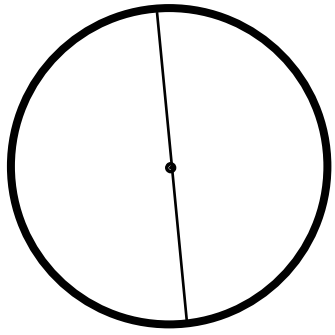
The unshaded region is also a sector.

The ratio of the *area A of a sector of a circle* to the area of the circle is equal to the ratio of the measure of the intercepted arc to 360°.

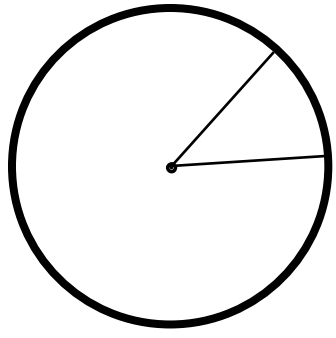
That means...

$$\frac{A}{\pi r^2} = \frac{m\overset{\frown}{AB}}{360^\circ}, \text{ or } A = \frac{m\overset{\frown}{AB}}{360^\circ} \cdot \pi r^2$$

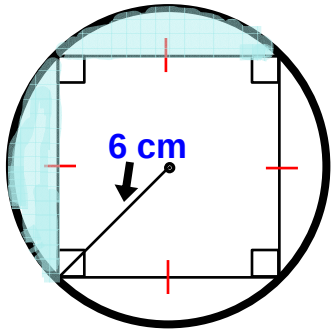
1. Find the area of a circle with diameter 8.4 cm.



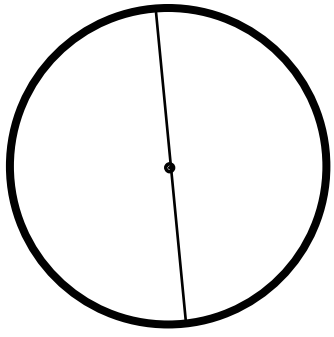
2. S and R are two points on circle W with radius 5 m and $m<SWR = 45^\circ$. Find the areas of the sectors formed by $<SWR$.



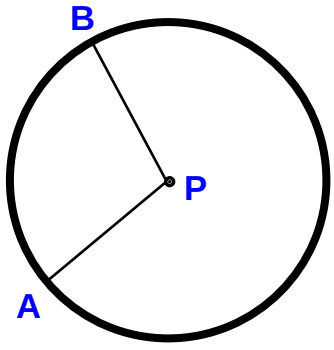
3. Find the area of the shaded region.



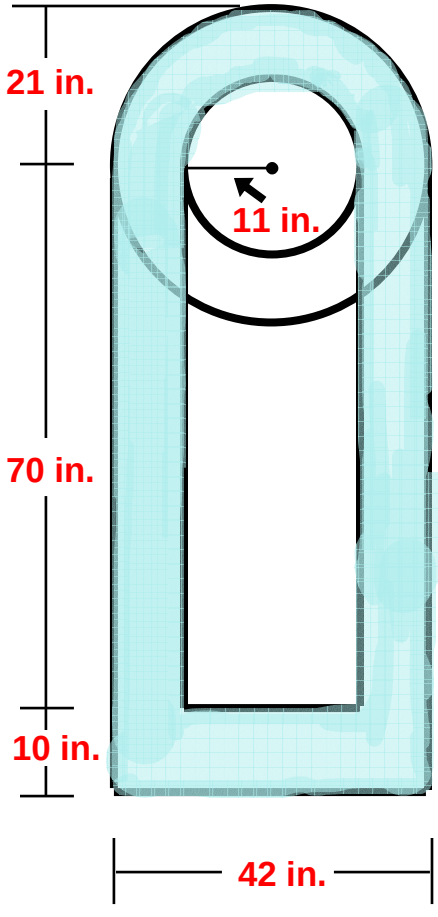
4. What is the diameter of a circle with area 18 square meters?



5. Find the radius of circle P if the area of sector APB is 129 square feet.



6. You are cutting the front face of a grandfather clock out of wood, as shown in the diagram. What is the area of the front of the case (the shaded area)?



Page 230 -235 (evens)