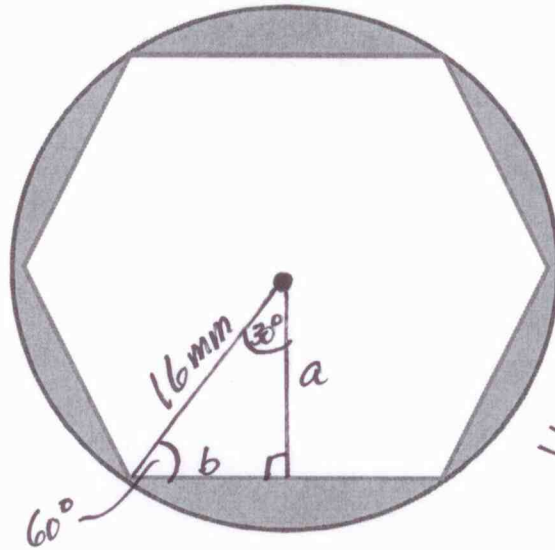


A computer manufacturing company puts small plastic washers on all of the bolts that are used to construct their computer parts. The plastic washer is a circle with an inscribed hexagon shaped hole that is cut out of the center. If the radius of the circle is 16 millimeters, what is the area of the plastic washer?



$\frac{360^\circ}{6 \text{ triangles with a central angle}} = 60^\circ$ for each Central Angle

$$\cos 30 = \frac{a}{16}$$

$$16 \cdot \cos 30 = a$$

$$13.856 \approx a$$

$$\sin 30 = \frac{b}{16}$$

$$16 \cdot \sin 30 = b$$

$$8 = b$$

Therefore the side length of the hexagon is 16mm.

$$P = 16(6) = 96\text{mm}$$

Plan: Total Area of Washer = Area of Circle - Area of Hexagon
 $(A = \pi r^2) - (A = \frac{1}{2} a P)$

$$T_A = (\pi r^2) - \left(\frac{1}{2} a P\right)$$

$$= (\pi (16^2)) - \left(\frac{1}{2} (13.856)(96)\right)$$

$$= (804.248) - (665.088)$$

$$T_A = 139.16 \text{ mm}^2$$

of Washer