# 3.18 Regular Polygon

Side: a
Number of sides: n
Internal angle: $\alpha$
Slant height: m
Radius of inscribed circle: r
Radius of circumscribed circle: R
Perimeter: L
Semiperimeter: p
Area: S

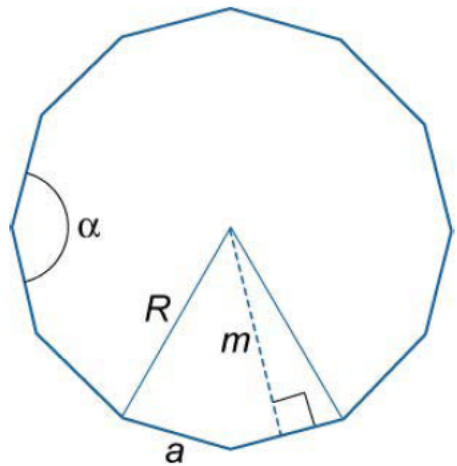


**Figure 29.**

**254.** $\alpha = \frac{n-2}{2} \cdot 180^\circ$

**255.** $\alpha = \frac{n-2}{2} \cdot 180^\circ$

**256.** $R = \frac{a}{2\sin\frac{\pi}{n}}$

**257.** $r = m = \frac{a}{2\tan\frac{\pi}{n}} = \sqrt{R^2 - \frac{a^2}{4}}$

**258.** $L = na$

**259.** $S = \frac{nR^2}{2}\sin\frac{2\pi}{n}$,

$S = pr = p\sqrt{R^2 - \frac{a^2}{4}}$,

where $p = \frac{L}{2}$.