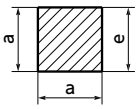
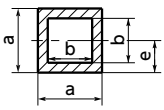
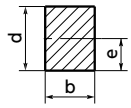
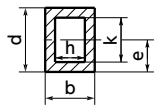
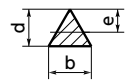
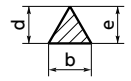
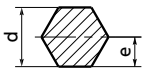
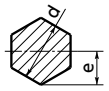
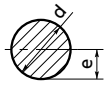
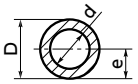
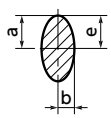
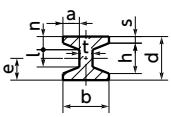
Second Moment of Area, Section Modulus, and Turning Radius of Cross Section

Shape of cross section	Cross section area A	Distance from neutral axis to farthest portion e	Second moment of area I	Section modulus $Z=\frac{I}{e}$	Rotation radius $p=\frac{\sqrt{I}}{A}$
	a^2	a	$\frac{a^4}{3}$	$\frac{a^3}{3}$	$\frac{a}{\sqrt{3}}=0.577a$
	a^2-b^2	$\frac{1}{2}a$	$\frac{a^4-b^4}{12}$	$\frac{a^4-b^4}{6a}$	$\sqrt{\frac{a^2+b^2}{12}}$ $=0.289\sqrt{a^2+b^2}$
	bd	$\frac{1}{2}d$	$\frac{bd^3}{12}$	$\frac{bd^2}{6}$	$\frac{d}{\sqrt{12}}=0.289d$
	bd−hk	$\frac{1}{2}d$	$\frac{bd^3-hk^3}{12}$	$\frac{bd^3-hk^3}{6d}$	$\sqrt{\frac{bd^3-hk^3}{12(bd-hk)}}$ $=0.289\sqrt{\frac{bd^3-hk^3}{bd-hk}}$
	$\frac{1}{2}bd$	$\frac{2}{3}d$	$\frac{bd^3}{36}$	$\frac{bd^2}{24}$	$\frac{d}{\sqrt{18}}=0.236d$
	$\frac{1}{2}bd$	d	$\frac{bd^3}{12}$	$\frac{bd^2}{12}$	$\frac{a}{\sqrt{6}}=0.408d$
	$\frac{3d^2\tan30^\circ}{2}=0.866d^2$	$\frac{d}{2}$	$\frac{A}{12}\left[\frac{d^2(1+2\cos^2 30^\circ)}{4\cos^2 30^\circ}\right]$ $=0.6d^4$		$\sqrt{\frac{d^2(1+2\cos^2 30^\circ)}{48\cos^2 30^\circ}}$ $=0.264d$
	$\frac{3d^2\tan30^\circ}{2}=0.866d^2$	$\frac{d}{2\cos30^\circ}=0.577d$	$\frac{A}{12}\left[\frac{d^2(1+2\cos^2 30^\circ)}{4\cos^2 30^\circ}\right]$ $=0.6d^4$	$\frac{A}{6}\left[\frac{d(1+2\cos^2 30^\circ)}{4\cos^2 30^\circ}\right]$ $=0.104d3$	$\sqrt{\frac{d^2(1+2\cos^2 30^\circ)}{48\cos^2 30^\circ}}$ $=0.264d$
	$\frac{\pi d^2}{4}=0.7854d^2$	$\frac{d}{2}$	$\frac{\pi d^4}{64}=0.049d^4$	$\frac{\pi d^3}{32}=0.098d^3$	$\frac{d}{4}$
	$\frac{\pi(D^2-d^2)}{4}$ $=0.7854(D^2-d^2)$	$\frac{d}{2}$	$\frac{\pi(D^4-d^4)}{64}$ $=0.049(D^4-d^4)$	$\frac{\pi(D^4-d^4)}{32D}$ $=0.098\frac{D^4-d^4}{D}$	$\frac{\sqrt{D^4-d^4}}{4}$
	$\pi ab=3.1416ab$	a	$\frac{\pi a^3 b}{4}=0.7854a^3b$	$\frac{\pi a^2 b}{4}=0.7854a^2b$	$\frac{a}{2}$
	$dt+2a(s+n)$	$\frac{d}{2}$	where $g=\frac{\text{inclination}}{\text{of flange}}$	$\frac{1}{6d}\left[bd^3-\frac{1}{4g}(h^4-l^4)\right]$	$\frac{\sqrt{\frac{1}{12}\left[bd^3-\frac{1}{4g}(h^4-l^4)\right]}}{dt+2a(s+n)}$