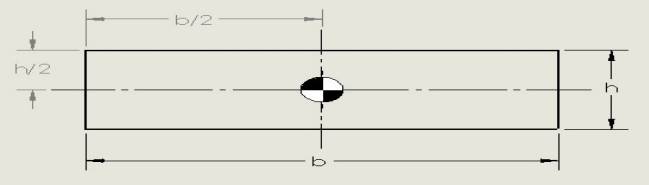
Covalo
The Mark of Change

Geometric Properties

ρ = Mass Density
A = Area
I = Moment of Inertia
J = Polar Moments of

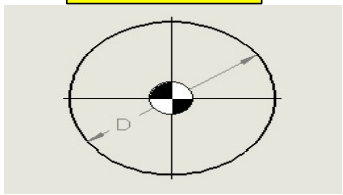
Rectangle



Area
$A = bh$

Moment of Inertia
$I_x = \frac{bh^3}{12}$; $I_y = \frac{b^3h}{12}$;
$I_{xy} = 0$

Circle

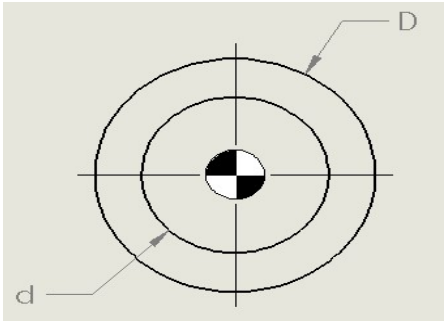


Area
$A = \frac{\pi D^2}{4}$

Moment of Inertia
$I_x = I_y = \frac{\pi D^4}{64}$;
$I_{xy} = 0$

Polar Moment of Inertia
$J_G = \frac{\pi D^4}{32}$

Hollow Circle

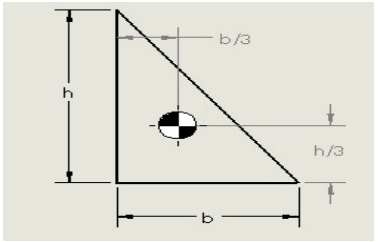


Area
$A = \frac{\pi}{4}(D^2 - d^2)$

Area
$I_x = I_y = \frac{\pi}{64}(D^4 - d^4)$; $I_{xy} = 0$

Polar Moment of Inertia
$J_G = \frac{\pi}{32}(D^4 - d^4)$

Triangle



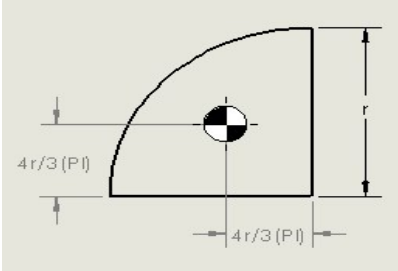
Area
$A = \frac{bh}{2}$

Moment of Inertia
$I_x = \frac{bh^3}{36}$; $I_y = \frac{hb^3}{36}$;
$I_{xy} = \frac{b^2h^2}{72}$

Covalo
The Mark of Change

ρ = Mass Density
A = Area
I = Moment of Inertia
J = Polar Moments of Inertia
m = Mass

Semi-Circle



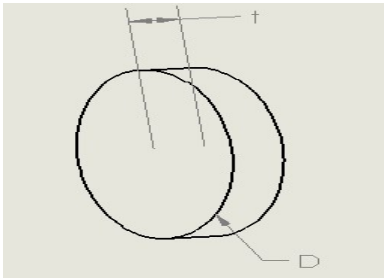
Area

$$A = \frac{\pi R^2}{4}$$

Moment of Inertia

$$I_x = I_y = r^4\left(\frac{\pi}{16} - \frac{4}{9\pi}\right);$$
$$I_{xy} = r^4\left(\frac{1}{8} - \frac{4}{9\pi}\right)$$

Round Disk



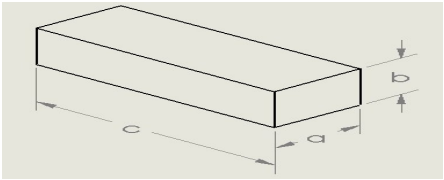
Mass

$$m = \frac{\pi d^2 t\rho}{4}$$

Moment of Inertia

$$I_x = \frac{md^2}{8};\ I_y = I_z = \frac{md^2}{16}$$

Rectangular Prism



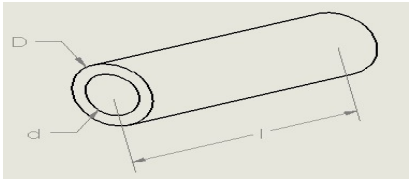
Moment of Inertia

$$I_x = \frac{m}{12}(a^2 + b^2);\ I_y = \frac{m}{12}(a^2 + c^2);$$
$$I_z = \frac{m}{12}(b^2 + c^2)$$

Mass

$$m = abc\rho$$

Hollow Cylinder



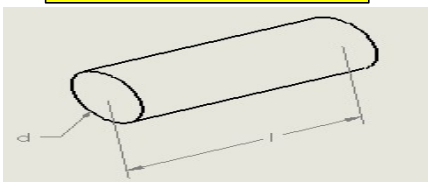
Moment of Inertia

$$I_x = \frac{m}{8}(D^2 + d^2);\ I_y = I_z$$
$$= \frac{m}{48}(3D^2 + 3d^2 + 4l^2);$$

Mass

$$m = \frac{\pi(D^2 - d^2)l\rho}{4}$$

Cylinder



Moment of Inertia

$$I_x = \frac{md^2}{8};\ I_y = I_z = \frac{m}{48}(3d^2 + 4l^2);$$

Mass

$$m = \frac{\pi d^2 l\rho}{4}$$