Parallel axis theorem

If the moment of inertia of a body of mass *m* about an axis through its centre of mass, G, is *IG* then the MI about any axis parallel to the original axis and distant *d* from it is

***IG + md2***

Examples:-

1. Find MI of uniform hoop, radius *a*, mass *m* about axis through A perpendicular to plane of hoop.
2. Equilateral lamina, mass *m*, sides *l* . Given MI about axis through A perpendicular to plane = 5/12 *ml2* . Calculate MI of lamina about parallel axis through D.

Standard formulae for common shapes

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| Object | Axis | MI |
| Circular hoop, mass m radius r | Through center, perpendicular to plane of hoop/ring | mr2 |
| Uniform rod, mass m, length 2*l* | Through center, perpendicular to rod | ml2  (given) |
| Uniform circular disc, mass m and radius r | Through center, perpendicular to disc | ½mr2 (given) |
| Uniform **solid** sphere, mass m radius r | About diameter | (given) |
| Uniform spherical **shell**, mass m and radius r | About diameter | (given) |
| Uniform rectangular lamina, mass m , sides 2a and 2b | Through center, perpendicular to lamina | ) (given) |
| Uniform solid circular cylinder, mass m and radius r | About its axis | ½mr2 (given) |