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Properties of Planes and Solids Formulas

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List of 49 Properties of Planes and Solids Formulas

Properties of Planes and Solids

Mass Moment of Inertia

1) Mass Moment of Inertia of Circular Plate about x-axis Passing through Centroid

$$\text{fx } I_{xx} = \frac{M \cdot r^2}{4}$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

$$\text{ex } 11.72066\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (1.15\text{m})^2}{4}$$

2) Mass Moment of Inertia of Circular Plate about y-axis Passing through Centroid

$$\text{fx } I_{yy} = \frac{M \cdot r^2}{4}$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\)](#)

$$\text{ex } 11.72066\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (1.15\text{m})^2}{4}$$



3) Mass Moment of Inertia of Circular Plate about z-axis through Centroid, Perpendicular to Plate

$$\text{fx } I_{zz} = \frac{M \cdot r^2}{2}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 23.44131\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (1.15\text{m})^2}{2}$$

4) Mass Moment of Inertia of Cone about x-axis Passing through Centroid, Perpendicular to Base

$$\text{fx } I_{xx} = \frac{3}{10} \cdot M \cdot R_c^2$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 11.50282\text{kg}\cdot\text{m}^2 = \frac{3}{10} \cdot 35.45\text{kg} \cdot (1.04\text{m})^2$$

5) Mass Moment of Inertia of Cone about y-axis Perpendicular to Height, Passing through Apex Point

$$\text{fx } I_{yy} = \frac{3}{20} \cdot M \cdot (R_c^2 + 4 \cdot H_c^2)$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 11.61395\text{kg}\cdot\text{m}^2 = \frac{3}{20} \cdot 35.45\text{kg} \cdot \left((1.04\text{m})^2 + 4 \cdot (0.525\text{m})^2 \right)$$



6) Mass Moment of Inertia of Cuboid about x-axis Passing through Centroid, Parallel to Length

$$\text{fx } I_{xx} = \frac{M}{12} \cdot (w^2 + H^2)$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$\text{ex } 11.72435\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot \left((1.693\text{m})^2 + (1.05\text{m})^2 \right)$$

7) Mass Moment of Inertia of Cuboid about y-axis Passing through Centroid

$$\text{fx } I_{yy} = \frac{M}{12} \cdot (L^2 + w^2)$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$\text{ex } 11.75544\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot \left((1.055\text{m})^2 + (1.693\text{m})^2 \right)$$

8) Mass Moment of Inertia of Cuboid about z-axis Passing through Centroid

$$\text{fx } I_{zz} = \frac{M}{12} \cdot (L^2 + H^2)$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$\text{ex } 6.54503\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot \left((1.055\text{m})^2 + (1.05\text{m})^2 \right)$$



9) Mass Moment of Inertia of Rectangular Plate about x-axis through Centroid, Parallel to Length

[Open Calculator !\[\]\(bd1a142de767a21e5362c595f844a4ff_img.jpg\)](#)

$$\text{fx } I_{xx} = \frac{M \cdot B^2}{12}$$

$$\text{ex } 11.6988\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (1.99\text{m})^2}{12}$$

10) Mass Moment of Inertia of Rectangular Plate about y-axis through Centroid, Parallel to Breadth

[Open Calculator !\[\]\(830769b31eeeaca920791081939ff8ba_img.jpg\)](#)

$$\text{fx } I_{yy} = \frac{M \cdot L_{\text{rect}}^2}{12}$$

$$\text{ex } 11.93513\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (2.01\text{m})^2}{12}$$

11) Mass Moment of Inertia of Rectangular Plate about z-axis through Centroid, Perpendicular to Plate

[Open Calculator !\[\]\(47734e4656765d20df4fdbd5b7aff048_img.jpg\)](#)

$$\text{fx } I_{zz} = \frac{M}{12} \cdot (L_{\text{rect}}^2 + B^2)$$

$$\text{ex } 23.63392\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot ((2.01\text{m})^2 + (1.99\text{m})^2)$$



12) Mass Moment of Inertia of Rod about y-axis Passing through Centroid, Perpendicular to Length of Rod

$$\text{fx } I_{yy} = \frac{M \cdot L_{\text{rod}}^2}{12}$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

$$\text{ex } 11.81667\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (2\text{m})^2}{12}$$

13) Mass Moment of Inertia of Rod about z-axis Passing through Centroid, Perpendicular to Length of Rod

$$\text{fx } I_{zz} = \frac{M \cdot L_{\text{rod}}^2}{12}$$

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5_img.jpg\)](#)

$$\text{ex } 11.81667\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (2\text{m})^2}{12}$$

14) Mass Moment of Inertia of Solid Cylinder about x-axis through Centroid, Perpendicular to Length

$$\text{fx } I_{xx} = \frac{M}{12} \cdot (3 \cdot R_{\text{cyl}}^2 + H_{\text{cyl}}^2)$$

[Open Calculator !\[\]\(ab4e2b3fc7e7887b7a72f548aa6f5e60_img.jpg\)](#)

$$\text{ex } 11.85854\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot (3 \cdot (1.155\text{m})^2 + (0.11\text{m})^2)$$



15) Mass Moment of Inertia of Solid Cylinder about y-axis through Centroid, Parallel to Length

$$\text{fx } I_{yy} = \frac{M \cdot R_{\text{cyl}}^2}{2}$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

$$\text{ex } 23.64559\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (1.155\text{m})^2}{2}$$

16) Mass Moment of Inertia of Solid Cylinder about z-axis through Centroid, Perpendicular to Length

$$\text{fx } I_{zz} = \frac{M}{12} \cdot (3 \cdot R_{\text{cyl}}^2 + H_{\text{cyl}}^2)$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5_img.jpg\)](#)

$$\text{ex } 11.85854\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{12} \cdot (3 \cdot (1.155\text{m})^2 + (0.11\text{m})^2)$$

17) Mass Moment of Inertia of Solid Sphere about x-axis Passing through Centroid

$$\text{fx } I_{xx} = \frac{2}{5} \cdot M \cdot R_s^2$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2_img.jpg\)](#)

$$\text{ex } 11.74246\text{kg}\cdot\text{m}^2 = \frac{2}{5} \cdot 35.45\text{kg} \cdot (0.91\text{m})^2$$



18) Mass Moment of Inertia of Solid Sphere about y-axis Passing through Centroid

$$\text{fx } I_{yy} = \frac{2}{5} \cdot M \cdot R_s^2$$

[Open Calculator !\[\]\(6605b201d6f14d9b3bcb8ab5f274d107_img.jpg\)](#)

$$\text{ex } 11.74246\text{kg}\cdot\text{m}^2 = \frac{2}{5} \cdot 35.45\text{kg} \cdot (0.91\text{m})^2$$

19) Mass Moment of Inertia of Solid Sphere about z-axis Passing through Centroid

$$\text{fx } I_{zz} = \frac{2}{5} \cdot M \cdot R_s^2$$

[Open Calculator !\[\]\(e8fb589d58dad1692debababa5e928b6_img.jpg\)](#)

$$\text{ex } 11.74246\text{kg}\cdot\text{m}^2 = \frac{2}{5} \cdot 35.45\text{kg} \cdot (0.91\text{m})^2$$

20) Mass Moment of Inertia of Triangular Plate about x-axis Passing through Centroid, Parallel to Base

$$\text{fx } I_{xx} = \frac{M \cdot H_{\text{tri}}^2}{18}$$

[Open Calculator !\[\]\(4688aadfd656ded00cd6bdfae55089a9_img.jpg\)](#)

$$\text{ex } 11.62937\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (2.43\text{m})^2}{18}$$



21) Mass Moment of Inertia of Triangular Plate about y-axis Passing through Centroid, Parallel to Height

$$\text{fx } I_{yy} = \frac{M \cdot b_{\text{tri}}^2}{24}$$

[Open Calculator !\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\)](#)

$$\text{ex } 11.74636\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg} \cdot (2.82\text{m})^2}{24}$$

22) Mass Moment of Inertia of Triangular Plate about z-axis through Centroid, Perpendicular to Plate

$$\text{fx } I_{zz} = \frac{M}{72} \cdot (3 \cdot b_{\text{tri}}^2 + 4 \cdot H_{\text{tri}}^2)$$

[Open Calculator !\[\]\(17413706fd4997a1a4bdf85c6864eee1_img.jpg\)](#)

$$\text{ex } 23.37573\text{kg}\cdot\text{m}^2 = \frac{35.45\text{kg}}{72} \cdot (3 \cdot (2.82\text{m})^2 + 4 \cdot (2.43\text{m})^2)$$

Mass of Solids

23) Mass of Cone

$$\text{fx } M_{\text{co}} = \frac{1}{3} \cdot \pi \cdot \rho \cdot H_c \cdot R_c^2$$

[Open Calculator !\[\]\(95b425611cbd2b8716a140cf67c81822_img.jpg\)](#)

$$\text{ex } 593.4514\text{kg} = \frac{1}{3} \cdot \pi \cdot 998\text{kg}/\text{m}^3 \cdot 0.525\text{m} \cdot (1.04\text{m})^2$$




24) Mass of Cuboid 

$$fx \quad M_{cu} = \rho \cdot L \cdot H \cdot w$$

[Open Calculator !\[\]\(0f848bbd71cef6b345273b16f905912a_img.jpg\)](#)


$$ex \quad 1871.67kg = 998kg/m^3 \cdot 1.055m \cdot 1.05m \cdot 1.693m$$

25) Mass of Rectangular Plate 

$$fx \quad M_{rp} = \rho \cdot B \cdot t \cdot L_{rect}$$

[Open Calculator !\[\]\(3211b5d1d968fc1665909b34f9f16010_img.jpg\)](#)


$$ex \quad 4790.28kg = 998kg/m^3 \cdot 1.99m \cdot 1.2m \cdot 2.01m$$

26) Mass of Solid Cylinder 

$$fx \quad M_{sc} = \pi \cdot \rho \cdot H \cdot R_{cyl}^2$$

[Open Calculator !\[\]\(9c2e8d1b5bd77cb5c9f83b7a9cff79fd_img.jpg\)](#)

$$ex \quad 4391.71kg = \pi \cdot 998kg/m^3 \cdot 1.05m \cdot (1.155m)^2$$

27) Mass of Solid Sphere 

$$fx \quad M_{ss} = \frac{4}{3} \cdot \pi \cdot \rho \cdot R_s^3$$

[Open Calculator !\[\]\(235bfe13ebf007ce2eea9e689707fac7_img.jpg\)](#)

$$ex \quad 3150.238kg = \frac{4}{3} \cdot \pi \cdot 998kg/m^3 \cdot (0.91m)^3$$

28) Mass of Triangular Plate 

$$fx \quad M_{tp} = \frac{1}{2} \cdot \rho \cdot b_{tri} \cdot H_{tri} \cdot t$$

[Open Calculator !\[\]\(291e070cef6c4d5e78fefe4696ef53be_img.jpg\)](#)

$$ex \quad 4103.337kg = \frac{1}{2} \cdot 998kg/m^3 \cdot 2.82m \cdot 2.43m \cdot 1.2m$$



Mechanics and Statistics of Materials

29) Inclination of Resultant of Two Forces Acting on Particle

$$\text{fx } \alpha = a \tan \left(\frac{F_2 \cdot \sin(\theta)}{F_1 + F_2 \cdot \cos(\theta)} \right)$$

[Open Calculator !\[\]\(a03a7eb2f4046e1d3c76772003e549ea_img.jpg\)](#)

$$\text{ex } 2.647362^\circ = a \tan \left(\frac{12\text{N} \cdot \sin(16^\circ)}{60\text{N} + 12\text{N} \cdot \cos(16^\circ)} \right)$$

30) Moment of Couple

$$\text{fx } M_c = F \cdot r_{F-F}$$

[Open Calculator !\[\]\(5361750c22c4e047a52f4eac1ec2d4cc_img.jpg\)](#)

$$\text{ex } 12.5\text{N} \cdot \text{m} = 2.5\text{N} \cdot 5\text{m}$$

31) Moment of Force

$$\text{fx } M_f = F \cdot r_{FP}$$

[Open Calculator !\[\]\(b792654f2cef9719eabeb6c5be00811e_img.jpg\)](#)

$$\text{ex } 10\text{N} \cdot \text{m} = 2.5\text{N} \cdot 4\text{m}$$

32) Moment of inertia given radius of gyration

$$\text{fx } I_r = A \cdot k_G^2$$

[Open Calculator !\[\]\(84f47badaad7772cd95667a7c387a639_img.jpg\)](#)

$$\text{ex } 981.245\text{m}^4 = 50\text{m}^2 \cdot (4.43\text{m})^2$$



33) Moment of inertia of circle about diametrical axis

$$\text{fx } I_r = \frac{\pi \cdot d^4}{64}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$\text{ex } 981.0639\text{m}^4 = \frac{\pi \cdot (11.89\text{m})^4}{64}$$

34) Radius of gyration given moment of inertia and area

$$\text{fx } k_G = \sqrt{\frac{I_r}{A}}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$\text{ex } 4.429447\text{m} = \sqrt{\frac{981\text{m}^4}{50\text{m}^2}}$$

35) Resolution of Force with Angle along Horizontal Direction

$$\text{fx } F_H = F_\theta \cdot \cos(\theta)$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$\text{ex } 11.55437\text{N} = 12.02\text{N} \cdot \cos(16^\circ)$$

36) Resolution of Force with Angle along Vertical Direction

$$\text{fx } F_v = F_\theta \cdot \sin(\theta)$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$\text{ex } 3.313161\text{N} = 12.02\text{N} \cdot \sin(16^\circ)$$




37) Resultant of Two Forces Acting on Particle at 0 Degrees 

$$fx \quad R_{\text{par}} = F_1 + F_2$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)


$$ex \quad 72\text{N} = 60\text{N} + 12\text{N}$$

38) Resultant of Two Forces Acting on Particle at 180 Degrees 

$$fx \quad R = F_1 - F_2$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$ex \quad 48\text{N} = 60\text{N} - 12\text{N}$$

39) Resultant of Two Forces Acting on Particle at 90 Degrees 

$$fx \quad R = \sqrt{F_1^2 + F_2^2}$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$ex \quad 61.18823\text{N} = \sqrt{(60\text{N})^2 + (12\text{N})^2}$$

40) Resultant of Two Forces acting on Particle with Angle 

$$fx \quad R_{\text{par}} = \sqrt{F_1^2 + 2 \cdot F_1 \cdot F_2 \cdot \cos(\theta) + F_2^2}$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

$$ex \quad 71.61157\text{N} = \sqrt{(60\text{N})^2 + 2 \cdot 60\text{N} \cdot 12\text{N} \cdot \cos(16^\circ) + (12\text{N})^2}$$

41) Resultant of Two like Parallel Forces 

$$fx \quad R_{\text{par}} = F_1 + F_2$$

[Open Calculator !\[\]\(4a7b4ce770af8456e11a71f9565c8c2b_img.jpg\)](#)

$$ex \quad 72\text{N} = 60\text{N} + 12\text{N}$$



42) Resultant of Two Unlike Parallel Forces Unequal in Magnitude

$$fx \quad R = F_1 - F_2$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

$$ex \quad 48N = 60N - 12N$$

Moment of Inertia in Solids

43) Moment of inertia of hollow circle about diametrical axis

$$fx \quad I_s = \left(\frac{\pi}{64} \right) \cdot (d_c^4 - d_i^4)$$

[Open Calculator !\[\]\(73002692dd5e7a64e60946be3158e719_img.jpg\)](#)

$$ex \quad 9.536623m^4 = \left(\frac{\pi}{64} \right) \cdot ((3.999m)^4 - (2.8m)^4)$$

44) Moment of Inertia of Hollow Rectangle about Centroidal Axis x-x Parallel to Breadth

$$fx \quad J_{xx} = \frac{(B \cdot L_{rect}^3) - (B_i \cdot L_i^3)}{12}$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$ex \quad 1.224596m^4 = \frac{(1.99m \cdot (2.01m)^3) - (0.75m \cdot (1.25m)^3)}{12}$$



45) Moment of inertia of rectangle about centroidal axis along x-x parallel to breadth

$$\text{fx } J_{xx} = B \cdot \left(\frac{L_{\text{rect}}^3}{12} \right)$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5_img.jpg\)](#)

$$\text{ex } 1.346666\text{m}^4 = 1.99\text{m} \cdot \left(\frac{(2.01\text{m})^3}{12} \right)$$

46) Moment of inertia of rectangle about centroidal axis along y-y parallel to length

$$\text{fx } J_{yy} = L_{\text{rect}} \cdot \frac{B^3}{12}$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5_img.jpg\)](#)

$$\text{ex } 1.32\text{m}^4 = 2.01\text{m} \cdot \frac{(1.99\text{m})^3}{12}$$

47) Moment of inertia of semicircular section about its base

$$\text{fx } I_s = 0.393 \cdot r_{\text{sc}}^4$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2_img.jpg\)](#)

$$\text{ex } 9.206261\text{m}^4 = 0.393 \cdot (2.2\text{m})^4$$

48) Moment of inertia of semicircular section through center of gravity, parallel to base

$$\text{fx } I_s = 0.11 \cdot r_{\text{sc}}^4$$

[Open Calculator !\[\]\(06a315363e7801bba8c7489a6694af19_img.jpg\)](#)

$$\text{ex } 2.576816\text{m}^4 = 0.11 \cdot (2.2\text{m})^4$$



49) Moment of inertia of triangle about centroidal axis x-x parallel to base



fx

$$J_{xx} = \frac{b_{\text{tri}} \cdot H_{\text{tri}}^3}{36}$$

Open Calculator

ex

$$1.123998\text{m}^4 = \frac{2.82\text{m} \cdot (2.43\text{m})^3}{36}$$



Variables Used

- **A** Area of Cross-Section (Square Meter)
- **B** Breadth of Rectangular Section (Meter)
- **B_i** Inner Breadth of Hollow Rectangular Section (Meter)
- **b_{tri}** Base of Triangle (Meter)
- **d** Diameter of Circle (Meter)
- **d_c** Outer Diameter of Hollow Circular Section (Meter)
- **d_i** Inner Diameter of Hollow Circular Section (Meter)
- **F** Force (Newton)
- **F₁** First Force (Newton)
- **F₂** Second Force (Newton)
- **F_H** Horizontal Component of Force (Newton)
- **F_V** Vertical component of force (Newton)
- **F_θ** Force at Angle (Newton)
- **H** Height (Meter)
- **H_c** Height of Cone (Meter)
- **H_{cyl}** Cylinder Height (Meter)
- **H_{tri}** Height of Triangle (Meter)
- **I_r** Rotational Inertia (Meter⁴)
- **I_s** Moment of Inertia for Solids (Meter⁴)
- **I_{xx}** Mass Moment of Inertia about X-axis (Kilogram Square Meter)
- **I_{yy}** Mass Moment of Inertia about Y-axis (Kilogram Square Meter)







- I_{zz} Mass Moment of Inertia about Z-axis (Kilogram Square Meter)
- J_{xx} Moment of Inertia about x-x axis (Meter⁴)
- J_{yy} Moment of Inertia about y-y axis (Meter⁴)
- k_G Radius of Gyration (Meter)
- L Length (Meter)
- L_i Inner Length of Hollow Rectangle (Meter)
- L_{rect} Length of Rectangular Section (Meter)
- L_{rod} Length of Rod (Meter)
- M Mass (Kilogram)
- M_C Moment of Couple (Newton Meter)
- M_{co} Mass of Cone (Kilogram)
- M_{cu} Mass of Cuboid (Kilogram)
- M_f Moment of force (Newton Meter)
- M_{rp} Mass of Rectangular Plate (Kilogram)
- M_{sc} Mass of Solid Cylinder (Kilogram)
- M_{ss} Mass of Solid Sphere (Kilogram)
- M_{tp} Mass of Triangle Plate (Kilogram)
- r Radius (Meter)
- R Resultant force (Newton)
- R_C Radius of Cone (Meter)
- R_{cyl} Cylinder Radius (Meter)
- r_{F-F} Perpendicular Distance between Two Forces (Meter)
- r_{FP} Perpendicular Distance between Force and Point (Meter)








- **R_{par}** Parallel Resultant Force (Newton)
- **R_{s}** Radius of Sphere (Meter)
- **r_{sc}** Radius of semi circle (Meter)
- **t** Thickness (Meter)
- **w** Width (Meter)
- **α** Inclination of Resultant forces (Degree)
- **θ** Angle (Degree)
- **ρ** Density (Kilogram per Cubic Meter)



Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288
Archimedes' constant
- **Function:** **atan**, atan(Number)
Inverse tan is used to calculate the angle by applying the tangent ratio of the angle, which is the opposite side divided by the adjacent side of the right triangle.
- **Function:** **cos**, cos(Angle)
Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- **Function:** **sin**, sin(Angle)
Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.
- **Function:** **sqrt**, sqrt(Number)
A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- **Function:** **tan**, tan(Angle)
The tangent of an angle is a trigonometric ratio of the length of the side opposite an angle to the length of the side adjacent to an angle in a right triangle.
- **Measurement:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Weight** in Kilogram (kg)
Weight Unit Conversion 
- **Measurement:** **Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement:** **Force** in Newton (N)
Force Unit Conversion 



- **Measurement: Angle** in Degree ($^{\circ}$)
Angle Unit Conversion 
- **Measurement: Density** in Kilogram per Cubic Meter (kg/m^3)
Density Unit Conversion 
- **Measurement: Torque** in Newton Meter ($\text{N}\cdot\text{m}$)
Torque Unit Conversion 
- **Measurement: Moment of Inertia** in Kilogram Square Meter ($\text{kg}\cdot\text{m}^2$)
Moment of Inertia Unit Conversion 
- **Measurement: Second Moment of Area** in Meter⁴ (m^4)
Second Moment of Area Unit Conversion 



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