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| PHYSICS 201 Equations Sheet | Translational Motion | Rotational Motion |
| LINEAR | ANGULAR |
| Time |  t  |  t |
| Displacement |  x; (x = rθ) |  θ |
| Velocity | v = Δx/Δt; (v = rω)  |  ω = Δθ/Δt |
| Acceleration | a = Δv/Δt; (a = rα) |  α = Δω/Δt  |
| Kinematic Equations | v = v0 + at | ω = ω0 + αt |
| x = ½(v + v0)t | θ = ½(ω + ω0)t |
| x = v0t + ½ at2 | θ = ω0t + ½ αt2 |
| v2 = v02 + 2ax | ω2 = ω02 + 2αθ |
| Inertia | *m* = mass | *I* = Rotational inertia; |
| To create | force = F | torque = τ = LA·F |
| Newton's 2nd law of motion   | Σ**F** = m**a** | Σ**τ** = I**α** |
| Work | *F·x* | *τ·θ* |
| Kinetic Energy | Translational Kinetic Energy = TKE = ½ mv2 | Rotational Kinetic Energy = RKE = ½ Iω2 |
| Momentum | **p** = m·**V** |  **L** = I·**ω** |
| Conservation of momentum | Σmivi = Σmfvf | ΣIiωi = ΣIfωf |