### Key Equations

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| Velocity of center of mass of rolling object |  |
| Acceleration of center of mass of rolling object |  |
| Displacement of center of mass of rolling object |  |
| Acceleration of an object rolling without slipping |  |
| Angular momentum |  |
| Derivative of angular momentum equals torque |  |
| Angular momentum of a system of particles |  |
| For a system of particles, derivative of angular momentum equals torque |  |
| Angular momentum of a rotating rigid body |  |
| Conservation of angular momentum |  |
| Conservation of angular momentum |  |
| Precessional angular velocity |  |