

CLASSICAL MECHANICS - FORMULA SHEET

1. Basic Motion:

- Speed: $\text{speed} = \text{distance} / \text{time}$
- Velocity: $v = s / t$
- Acceleration: $a = (v - u) / t$

2. Newton's Laws:

- Second Law: $F = ma$

3. Equations of Motion (constant acceleration):

- $v = u + at$
- $s = ut + \frac{1}{2} at^2$
- $v^2 = u^2 + 2as$

4. Projectile Motion:

- Time of Flight: $T = (2u \sin \theta) / g$
- Maximum Height: $H = (u^2 \sin^2 \theta) / (2g)$
- Horizontal Range: $R = (u^2 \sin 2\theta) / g$

5. Circular Motion:

- Centripetal Force: $F_c = mv^2 / r$

6. Work, Power, Energy:

- Work: $W = F d \cos \theta$
- Power: $P = W / t$
- Kinetic Energy: $KE = \frac{1}{2} mv^2$

- Potential Energy: $PE = mgh$

7. Friction:

- Frictional Force: $f = N$