The Practise Ground

Class 11 Physics

Work, Energy & Power

The three ideas behind every mechanics problem

1

$$W = F\,d\cos\theta$$

Work done by a force

θ is the angle between the force and the displacement

2

$$KE = \tfrac{1}{2}mv^2$$

Kinetic energy

Energy of a body because of its motion

3

$$PE = mgh$$

Gravitational potential energy

Energy of a body because of its height

4

$$P = W / t$$

Power

Rate of doing work (watt, W = J/s)

W	m	v	h	P
work	**mass**	**speed**	**height**	**power**
joule (J)	kg	m/s	metre (m)	watt (W)

Key ideas

Work-energy theorem: net work done equals the change in kinetic energy.

With only gravity acting, KE + PE stays constant.

Quick example

A 2 kg ball is lifted 5 m ($g = 10\ m/s^2$).

PE = mgh = 2 × 10 × 5 = 100 J

Think you've got it? Test yourself.

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