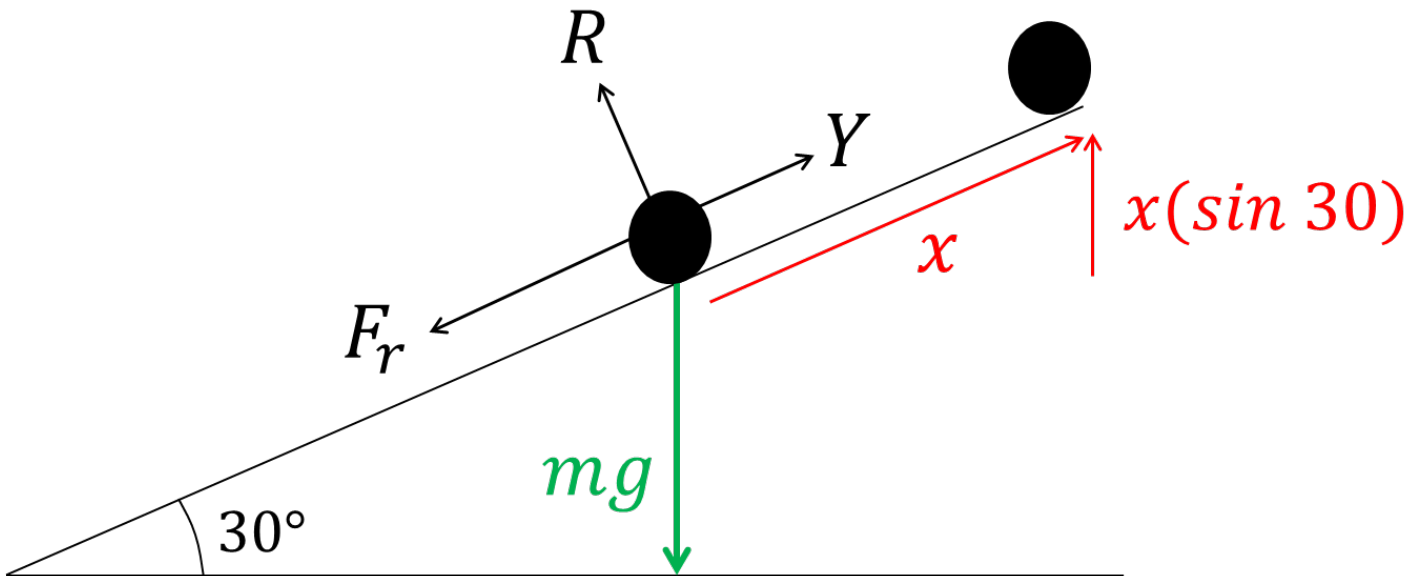


WORK (Units: Joules)

$$\text{Work} = \text{Force} \times \text{Distance}$$

Note: The force must be in the same direction as the force



$$\text{Work done against friction} = F_r \times x$$

$$\text{Work done against gravity} = F_r \times x \sin 30$$

POWER (Units: Watts)

$$\text{Power} = \text{Driving Force} \times \text{velocity}$$

Note: Force and Velocity directions must be consistent.

ENERGY (Units: Joules)

$$\text{Kinetic Energy} = \frac{1}{2}mv^2$$

$$\text{Potential Energy} = mgh$$

h = vertical height

CONSERVATION OF ENERGY (Work Energy Principle)

$$\text{Initial Energy} = \text{Final Energy}$$

$$\text{Work in} + \text{Initial K.E.} + \text{Initial P.E.}$$

=

$$\text{Final K.E.} + \text{Final P.E.} + \text{Work out}$$

$$\text{Work Out} = \text{Resistance Force} \times \text{Distance}$$

$$\text{Work In} = \text{Engine Force} \times \text{Distance}$$