

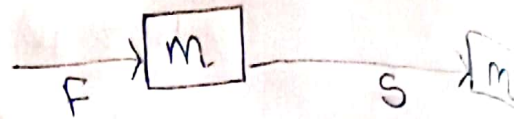
11.06.20

Work, and Energy

Work:

is said to be done ~~not~~ on an object when a force displaces some object by distance S .

1 case



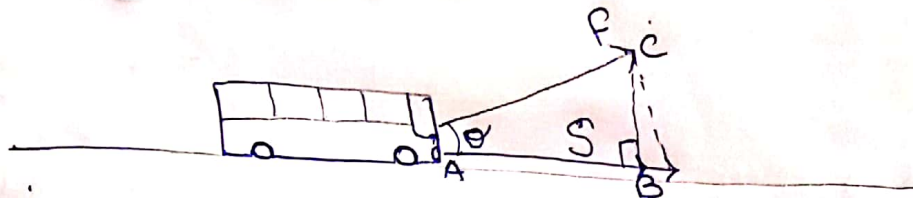
Frictionless

$$W = FS$$

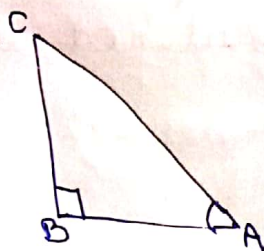
Unit of work = $Nm = J$

$$= kg\ m/s^2 \cdot m = kg\ m^2/s^2$$

2nd case



(S = displacement in the direction of force)



$$\sin A = \frac{BC}{AC}$$

$$\cos A = \frac{AB}{AC}$$

$$\tan A = \frac{BC}{AB}$$

$$\tan A = \frac{\sin A}{\cos A}$$

$$= \frac{\frac{BC}{AC}}{\frac{AB}{AC}} = \frac{BC}{AC} \times \frac{AC}{AB} = \frac{BC}{AB}$$

Case - 2

$$\cos \theta = \frac{AB}{AC} = \frac{AB}{F}$$

~~Proof~~

$$\cos \theta = \frac{AB}{AC} = \frac{AB}{F}$$

$$\Rightarrow AB = F \cos \theta$$

$$W = (F \cos \theta) \cdot S$$

$$= FS \cdot \cos \theta$$