5/13/14

Energy & Power

Energy = The Ability To Do Work.

Energy Either A

Transfer Work

Storing It

Grav. Potential Energy

Kinetic Energy

Power

- Power is associated with the time it takes to transfer some amount of energy (to do work)

- Power can also be used to describe how quickly energy can be stored.

$$\text{Power} = \frac{\text{Work}}{\text{Time}}$$

$$P_{(\text{Watt, W})} = \frac{W}{t} \quad \begin{matrix}(\text{Joules, J}) \\ (\text{seconds, s})\end{matrix}$$

Be Careful: Small p = momentum

Capital P = Power

- Power is NOT a vector → No direction needed.

A Boy Pushes A Box Forward For 15 meters With A Force Of 35 Newtons In 20 Seconds. What Was The Boy's Power?

$P = \frac{W}{T}$ → Find W First

(1a) $T = 20$ sec, $D = 15$ m Forward, $F = 35$ N Forward

(1b) $W = ?$

(2) $W = F \times D$

(3) $W = (35) \times (15)$

(4) $W =$ **525 Joules**

(5) $525 = 35 \times D$

$\frac{525}{35} = 15$ ✓

(1a) $W = 525$ J, $T = 20$ sec

(1b) $P = ?$

(2) $P = \frac{W}{T}$

(3) $P = \frac{525}{20}$

(4) $P =$ **26.25 W**

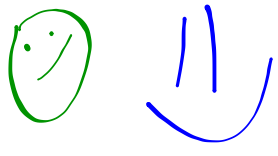
(5) $26.25 = \frac{W}{20}$

$(26.25 \times 20) = \frac{W \times \cancel{20}}{\cancel{20}}$

525 J ✓

$\frac{26.25}{1} = \frac{W}{20}$

✓ Time
✓ Distance
✓ Force



For Today: Make Up a Problem Requiring You To Find The Power For A situation. You Will Need Distance, Time, & Force. Include A Worked Solution That Is Completed Exactly Like The Example Problem.

Turn in When Done.