Power

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In the last segment, we learnt about the **law of conservation of energy.** In this segment, we are going to learn about power.

What is Power?

Power is the rate of doing work or rate of transfer of energy.

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

The S.I. unit of power is **Watt**.

What is One Watt?

A body is said to have the power of 1 watt if it does work at the rate of 1 joule in 1 s.

i.e. $\boldsymbol{1W} = \frac{1J}{1s}$

Let us now try to solve some numericals based on power.

Numericals - Power

1. The work done by a man on pushing a box a certain distance is 60 Joules and the time taken is 30 seconds. What is the rate of work done by the man?

Work done= 60 Joules

Time taken= 30seconds

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

$$\text{Power} = \frac{60}{30}$$

$$\boldsymbol{Power = 2\,watt\ or\ 2\,J/s}$$

2. A boy with a weight of 40N uses a jetpack to go upwards to a height of 8m to reach the second floor of a building. It takes 10 seconds to reach the floor. What is the rate of the work done by the jetpack which the boy has used?

Weight = 40N

Height = 8m

Time taken = 10seconds

Work done = F x s

Work done = 40 x 8 = 320Joules

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

$$\text{Power} = \frac{320}{10}$$

$\boldsymbol{Power = 32\ Watt}$

Summary

Power	• Power is the rate of doing work or transfer of energy. • $\text{Power} = \frac{\text{Work Done}}{\text{Time taken}}$ • The S.I. unit of power is **Watt**.

What's next?

In our next Class 9 Science segment, we shall learn about **sound.**