

What is Work?

Table of Contents

- Formula: Work Done
- What is S.I. Unit of Work?
- Is Work a Scalar quantity or a Vector quantity?
- Positive and Negative Work
- Summary
- Did You Know?
- What's Next?

In the last segment, we learnt about some basic concepts of **work**. In this segment, we are going to learn about the formula, S.I. unit and other things related to work.

Formula: Work Done

It can be defined as the work done when the force is applied on the object and the object is displaced in the direction of the application of force. Mathematically, Work done is the product of force and displacement.

$$W = F \times S$$

where **F=constant force**

S = displacement in the direction of the force

What is the SI unit of work?

The S.I unit of work is **newton meter** or **Joule**. One Joule is the same as the work done by one newton of force that displaces the object by one meter.

Is Work a scalar quantity or a vector quantity?

Work is a physical quantity that has magnitude but no direction. Thus, work is a scalar quantity.

Positive and Negative Work

Work done can be of two types- positive and negative.

- 1. Positive Work:** when the displacement of an object is in the direction of applied force then the work done is positive.

2. **Negative Work:** when the displacement of an object is in the opposite direction of applied force then the work done is negative.

Summary

Work	<ul style="list-style-type: none"> • Work = Force x Displacement • S.I. unit of work is Joule. • Work is a Scalar quantity.
Positive Work	When the displacement of an object is in the direction of applied force then the work done is positive.
Negative Work	When the displacement of an object is in the opposite direction of applied force then the work done is negative.

Did you know?

According to Google, the energy it takes to conduct 100 searches on its site is equivalent to a 60-watt light bulb burning for 28 minutes. Google uses about 0.0003 kWh of energy to answer the average search query, which translates into about 0.2 g of carbon dioxide released.

What's next?

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