



Work and Power Mini Lecture



Work

When a force acts on an object to cause a displacement

Is this work on this object?

Student pushes on a wall.

You push a desk across the classroom.

A rocket accelerates through space.



Work

$$W = \text{Force} \times \text{displacement}$$

Units: J (Joules)

A box is moved 20 m across a floor with a force of 100 N. What is the work done on the box?



Power

The rate at which work is done

$$\text{Power} = \text{Work}/\text{time}$$

Unit = Watt (W)

A box is moved 10 m across a floor with a force of 80 N in 10 seconds. What is the power exerted on the box?



Will lifts the 100-lb barbell over his head 10 times in one minute.

Ben lifts the 100-pound barbell over his head 10 times in 10 seconds.

- a) Which student does the most work?
b) Which student has the most power?