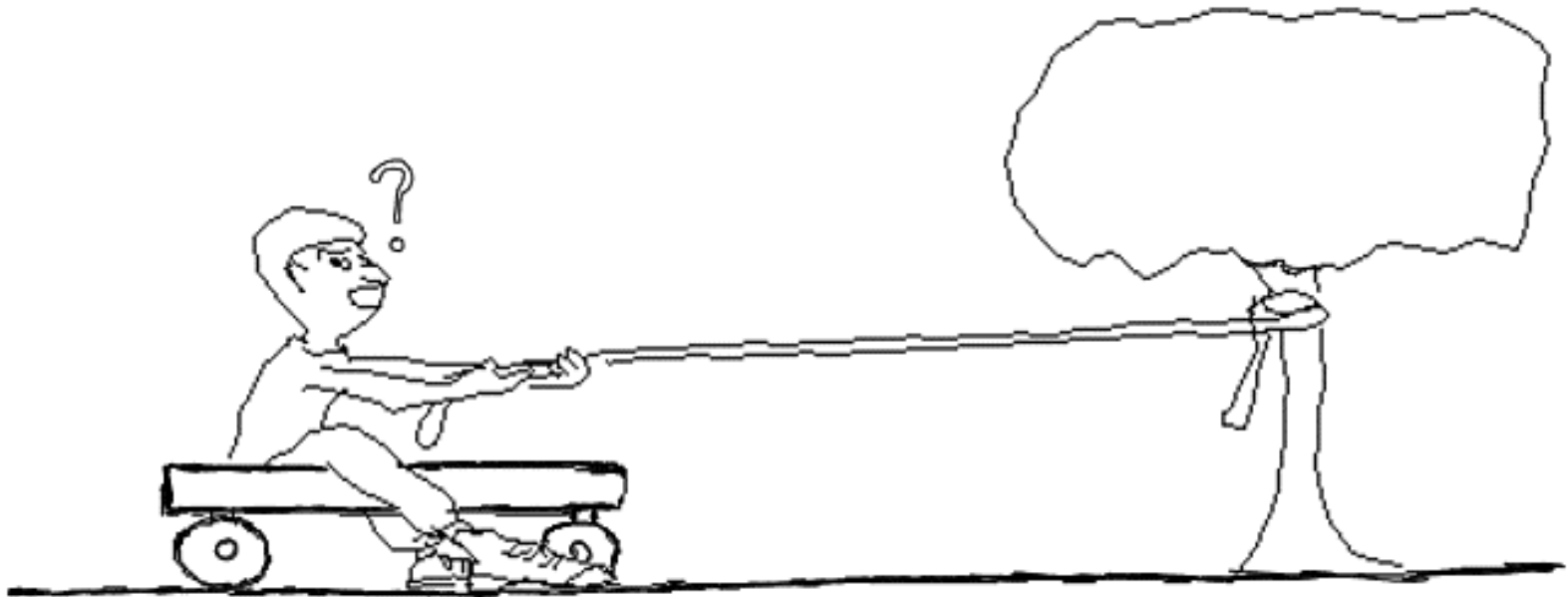


Do Now:

Write a definition of what it means to you
to do WORK.

Work and Power

When he pulls on the tree, does the tree pull back? Does the tree do any work?



If he stands still, does he do any work?

We will soon see that the tree does work on the boy/wagon but the boy does no work on the tree.

What is Work?

In science work is done when a force acts on an object in the direction that the object is moving. No movement **MEANS** no work is done.



There are many situations in which you exert a force but don't do any work.

- Suppose, for example, you are pushing a car that is stuck in the snow.
- You certainly exert a force on the car, but if the force you exert does not make the car move, you are not doing any work on it.

If you do work on something, doing it quickly requires more effort than doing it slowly. This concept leads us to a new word...



What is Power?

Power is the amount of work done in a certain amount of time (the **rate** at which work is done). If a task can be completed in less time with the help of a machine, then it must require more power.



Calculating work and power

$$\text{Work} = \text{Force} \times \text{Distance} \quad (\text{SI unit is JOULE})$$

(N) (M)

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

$$= \frac{\text{Work done}}{\text{(Time it takes to do the work)}} \quad (\text{SI unit is WATT})$$

OR...

For vehicles, we talk of Power in terms of Horsepower. 1 horsepower = 746 Watts

Complete your information table

Is work being done on the barbell when it is lifted from the floor, to this position, and back to the floor? What is doing the work in each instance?

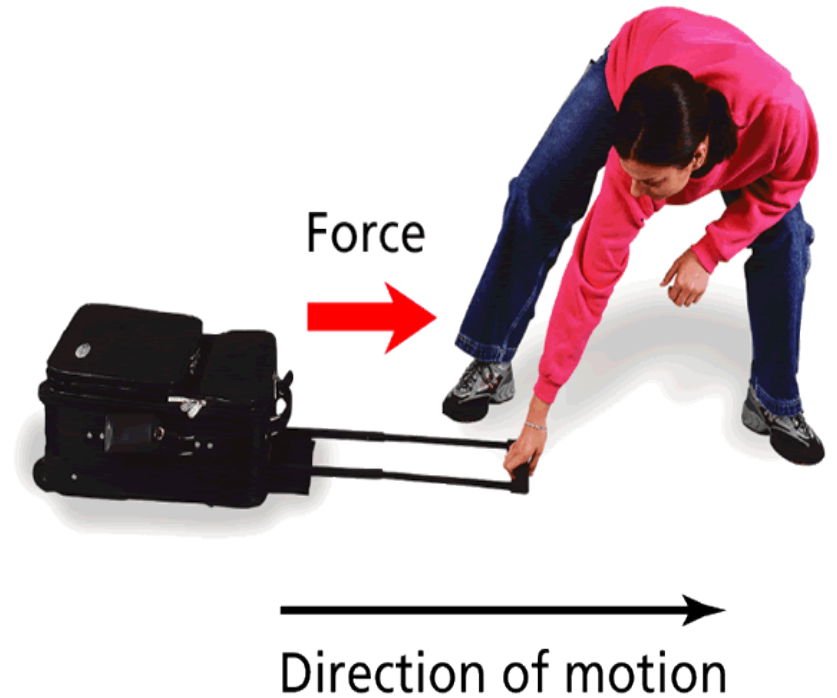




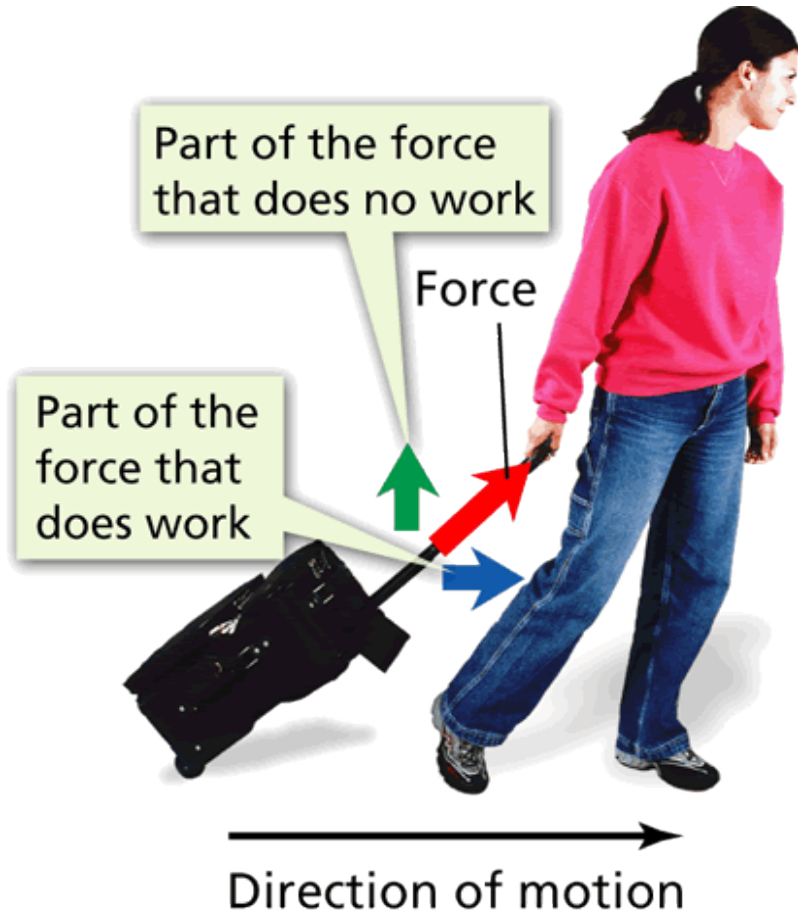
Is work being done on the luggage bag? If so, what is doing the work?

A

Is work being done on the luggage bag?
If so, what is doing the work?



B



Can you explain what work is being done?

C

Closure:

Where is work being done? On the shovel or the snow? Who or what is doing the work?

