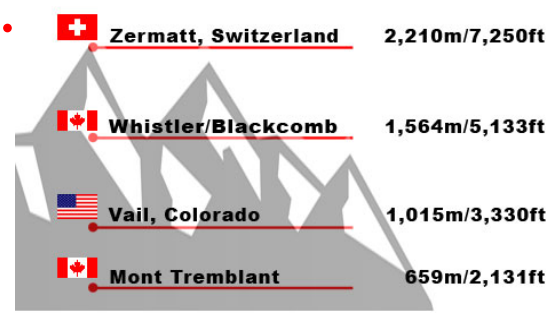
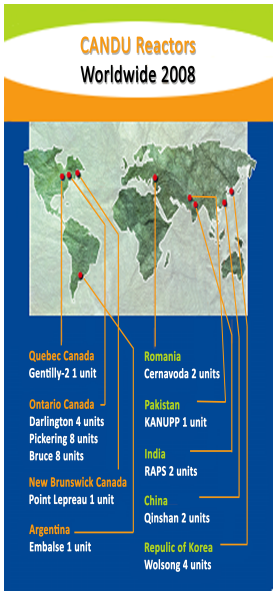
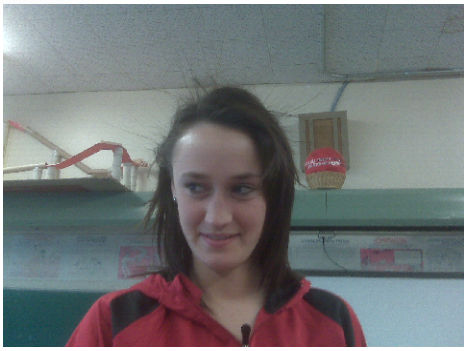
Energy.

TNT


Zermatt, Switzerland
2,210m/7,250ft
Whistler/Blackcomb
1,564m/5,133ft
Vail, Colorado
1,015m/3,330ft
Mont Tremblant
659m/2,131ft

"I told you nylon carpets were a mistake."





Unit 3: Work, Power & Energy

Work is the process of transferring energy.

Work is done when an applied force causes an object to **move** in the direction of the force.

Mathematically: $W = F\Delta d$ Where W = work done (in Joules, J)
F = applied force (N)
Δ d = change in displacement (m)

The force and the movement must be on the same direction.

Work is not a vector, however, it can be negative. *We'll see this later!

1.0 J = 1.0 N·m

A joule (J) is the energy (or work) required to exert a force of 1.0 N through a distance of 1.0 m

How much work?

Ex 1: A man pushes against a wall with a force of 300 N.

Ex 2: An asteroid floating in space covers a distance of 25.0 m.

Ex 3: A weightlifter holds the weight overhead and walks 2.0 m forward.

Ex 4: A force of 550 N [E] is applied to move a car 2.0 m [E]

Ex 5: A force of friction of 650 N [L] stops a car over a displacement of 25.0 m [R].

So what does negative work mean?

Work is not a vector, so the negative does not indicate direction.

Negative work means that energy is leaving the system.

Friction is always a negative work.

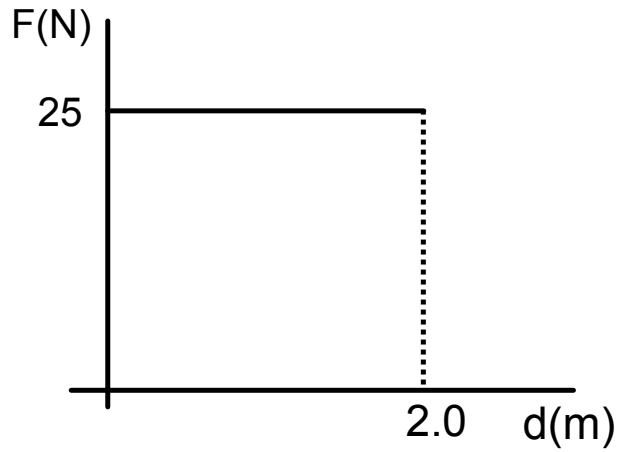
changes into another Kind of energy.

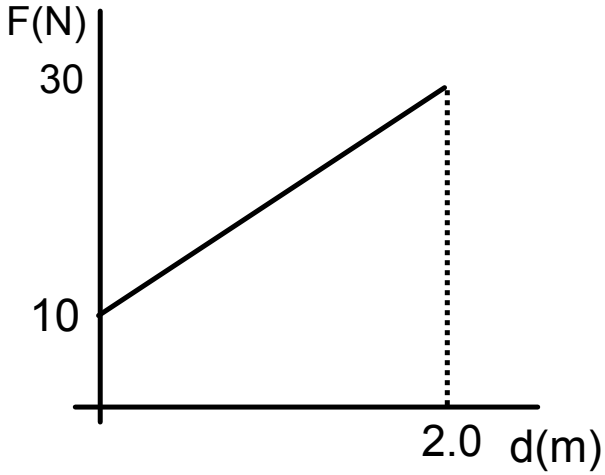
Ex 6: A force of 120 N [R40°U] is exerted on a sled over a distance of 15.0 m.

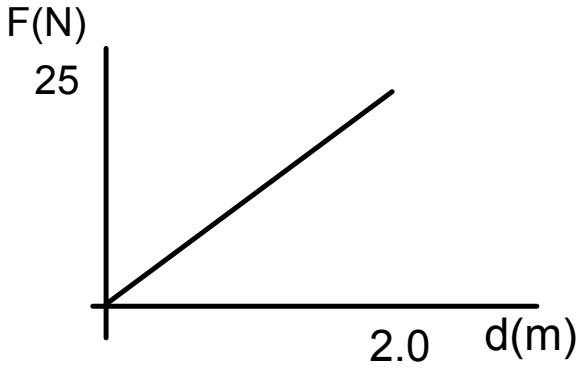
Ex 7: How much work is done to lift a 25 kg mass through a vertical distance of 2.0 m?

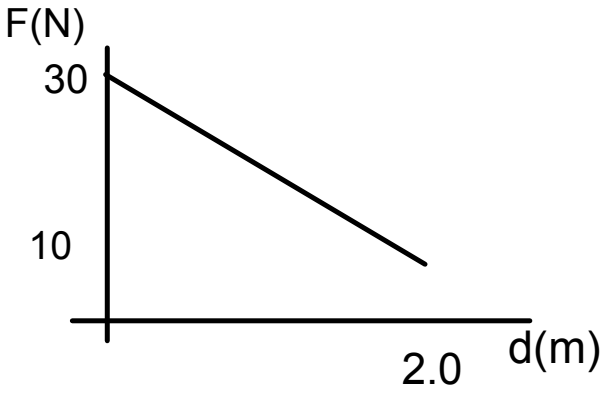
Ex. 8 A camper uses a rope and bucket to get water from a well. If the bucket full of water has a mass of 20.0 kg and is raised 3.5m, how much work did the camper do?

How can we calculate work from a graph? Don't panic its easy...!









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