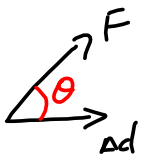
Work

$W = F_{\parallel} \Delta d$

$W = F \Delta d \cos\theta$



W = area under a F-d graph

$W = \Delta E$ (work-energy theorem)

3 situations where no work is done

① apply a Force but no displacement (pushing the wall)

② object moving but no $F_{\parallel}$ (hockey puck sliding across ice)

③ force is perpendicular to the displacement (carrying a suitcase)

* Note: If you lift a suitcase, then you are doing work.

Types of Energy

$E_k = \frac{1}{2} m v^2$

$E_g = mgh$

$E_e = \frac{1}{2} k x^2 \longrightarrow F_a = kx$ (Hooke's Law)

* Note: If you are trying to find the work to stretch/compress a spring you cannot use: $W = F_{\parallel} \Delta d$ because the force is not constant. You MUST use $W = \Delta E_e$!!