

§6-1 Work + Energy

- Work is not energy itself, but is related to the transfer of energy to an object. (no friction)
- Work is done on an object if its energy changes
- Work is done on an object if there is a force acting on the object in the direction of the displacement

$$W = F_{\parallel} \Delta d \quad (\text{scalar})$$

Where W is the work done on the object ($\text{N}\cdot\text{m}$ or J)

F_{\parallel} is the force acting in the direction of motion (N)

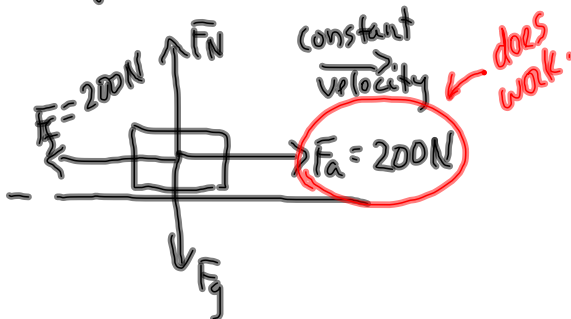
Δd is the displacement (m)

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$$\Delta d = 3.00 \text{ m}$$

$$F_a = 2.00 \times 10^2 \text{ N}$$

$$W = ??$$



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

$$W = (2.00 \times 10^2 \text{ N})(3.00 \text{ m})$$

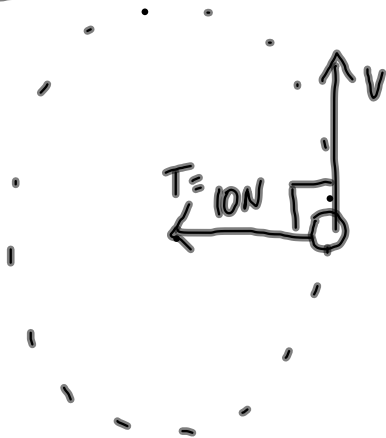
$$W = 6.00 \times 10^2 \text{ J}$$

The student did $6.00 \times 10^2 \text{ J}$ of work on the desk.

No work is done when: (see p 222)

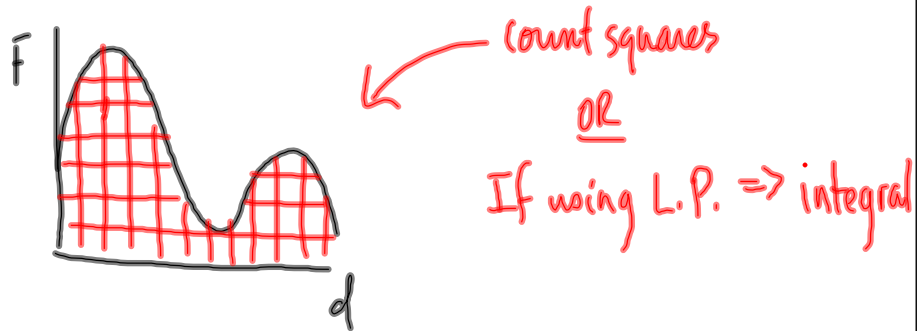
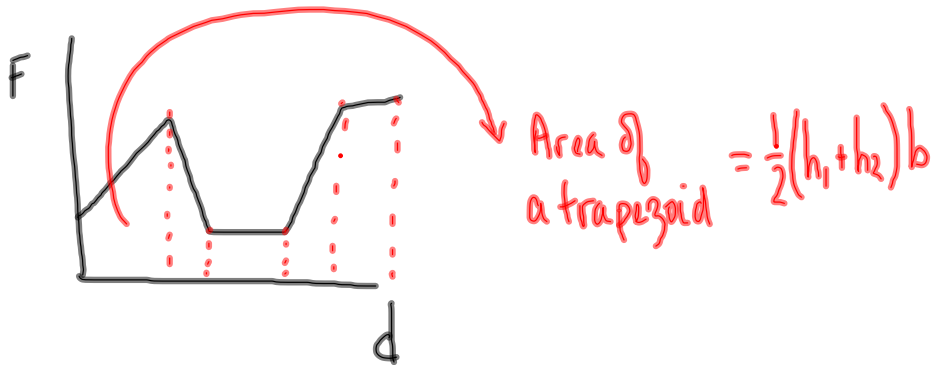
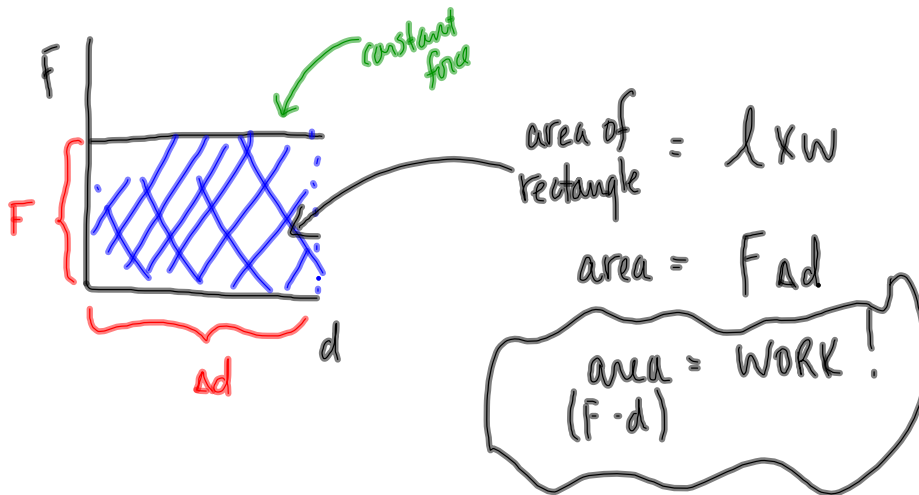
- ① There is a force, but no displacement (push on wall)
- ② There is displacement, but no force (hockey puck)
- ③ The force is acting perpendicular to the displacement (carrying a book)

mp 224



No work is done on the ball since the force (tension) is perpendicular to the direction of motion.

Consider a force-distance graph:



* Look over mp/227

To do:

- ① PP/221
- ② PP/225
- ③ PP/229 (11)