Ex.

A football player and a figure skater head to the gym. The figure skater gets on the bench press and lifts a 50 *kg* (110 *lb*) bar over a distance of 0.6 *m*, at a constant velocity, in one continuous motion. The football player stands next to her holding a 200 *kg* (440 *lb*) bar stationary over his head.

** ***Which person exerted the greater force***?

Since a = 0 in both cases, $\sum F_y = F - W = 0$ ➔ F = Weight

FS: $F = mg = (50\ kg)(9.8\ m/s^2)$

$= 490$ N

FP: $F = mg = (200\ kg)(9.8\ m/s^2)$

$= 1960$ N

The <u>football player</u> has exerted the greater force.

** ***Which person did the most Work***?

FS: $W = Fd = (490\text{ N})(0.6\ m)$

$= 294$ J

FP: $W = Fd = (1960\text{ N})(0\ m)$

$= 0$ J *No Work Done !!!*

The <u>figure skater</u> did the most work.

**** If there is <u>no change in position</u> (*d* = 0) or there is <u>no net force</u> (F= 0), there is <u>no work done</u> (*W* = 0)!**

(Work is **NOT** a measure of exertion!!!)