Power

Power is the rate at which work is done.

Mathematically, $\boxed{P = \dfrac{W}{\Delta t}}$ Where: P = Power (in watts, W)

W = Work (J)

Δt = time (s)

For example, a 60 W lightbulb uses 60 Joules of energy every second that it is on.

60 W = 60 J/s

Ex 1: A 55 kg child runs up a flight of stairs, moving a vertical displacement of 12 m in 5.0 minutes. The same 55 kg child then takes an elevator up the same 12 m, this time taking 11 seconds.

a) Find the work done in each case.
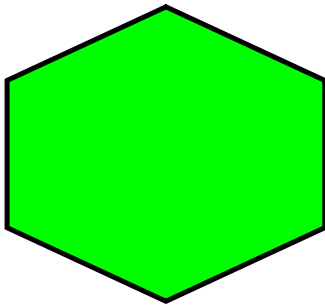b) Find the power generated in each case.

Ex 2: Running the stairs.

Ex 3: How much energy is consumed by a 1500 W hairdryer that runs for 15
       minutes?

* W done = Energy *

Ex 4: A man exerts a force of 150N to push a couch a distance of 2.0 m in 3.5s.
        How much power did he generate?

When lifting at a constant speed:

Ex 5: A crane lifts a 1200 kg load at a constant speed of 4.3 m/s. How much power is delivered?

read p. 331 - 332
p. 370 #41-45