5.4

Power

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Objectives

- **Relate** the concepts of energy, time, and power.

- **Calculate** power in two different ways.

- **Explain** the effect of machines on work and power.

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Rate of NRG Transfer

- The rate at which work is done (or NRG is transferred) is called **power**.

$$P = \frac{W}{\Delta t}$$

- Power is measured in watts (W)
- 1 horsepower is = to 746 W
  - Careful not to confuse W (watts) with W (work)

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Manipulations

$$W = Fd$$

So........

$$P = \frac{Fd}{t}$$

$$P = F\frac{d}{t} \quad v = \frac{d}{t}$$

So..........

$$P = Fv$$

A 193 kg box is raised 7.5 meters, at a constant speed, in 5 seconds. How much power did this take?

How many years would it take a 2 kW pump to raise 2660000 kg the of water to an altitude of 2 km?

Assignment

- Q: 1,2,4
- Pack 5.4
- Work day on Monday for
  - SP - E

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