

CP - Nov 29

C.L.T Practice work problems
and introduce the idea
of Power

How much work to get to the 5 kg cat?

$$W = F \times d$$

$$F = ma$$

$$W = mg$$

$$= 60\text{kg} \times 9.8 \frac{\text{m}}{\text{s}^2}$$

$$= 588\text{N}$$

8 m


$$= 588\text{N} \times 8\text{m}$$

$$= 4704\text{N}\cdot\text{m}$$

With the 5 kg cat
How much work is done to get back down?

$W = Mg$
 $= 8\text{kg} \left(\frac{9.8\text{m}}{\text{s}^2} \right)$
 $= 78.6\text{N}$

$20 \times 78.6\text{N} =$
 weight of 20 boxes
 1568N



How much work needs to be done?
 $W = F \times d = 1568\text{N} \cdot 1\text{m}$
 $= 1568\text{Nm}$

Ben does this work in 120 sec	Keith does this work in 200 sec
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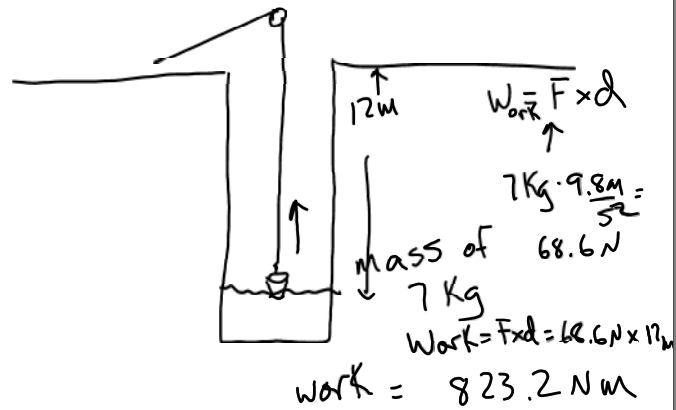
work is the same
 but Power is different

Power is the rate
 at which work is done.

$P = \frac{\text{Work}}{\text{time}}$

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

$1 \frac{\text{Joules}}{\text{sec}} =$
 1 watt



$P = \frac{W}{t}$
 $\text{Power} = 2000 \text{ W}$
 $\frac{t}{P} = \frac{W}{P}$
 $t = \frac{W}{P} = \frac{823.2 \text{ Nm}}{2000 \text{ J}}$
 $.4 \text{ sec}$