From HW

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6. $m = 487\,kg$

$W = 5.20 \times 10^8\,J$

$\Delta d = ?$

constant velocity $\Rightarrow F_a = F_g$

$F_a = mg$

$F_a = (487\,kg)(9.81\,m/s^2)$

$F_a = 4777.47\,N$

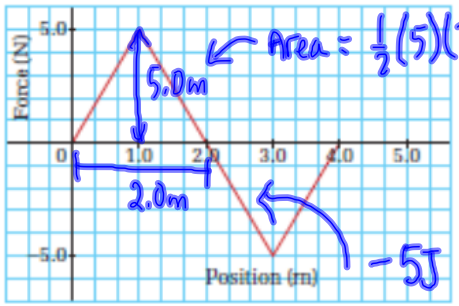
$W = F_{||}\Delta d$

$\Delta d = \frac{W}{F_{||}}$

$\Delta d = \frac{5.20 \times 10^8\,J}{4777.47\,N}$ → $\frac{N \cdot m}{N}$

$\Delta d = 10.9\,m$

C

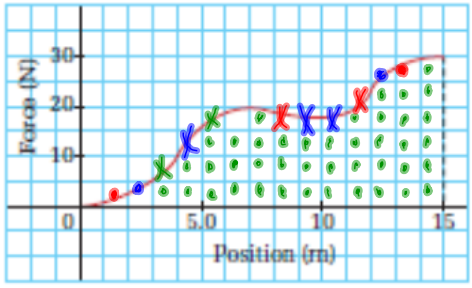


Area $= \frac{1}{2}(5)(2) = 5\,J$

$-5\,J$

Total Area = 0 J

D



42 full squares

about 47 full squares

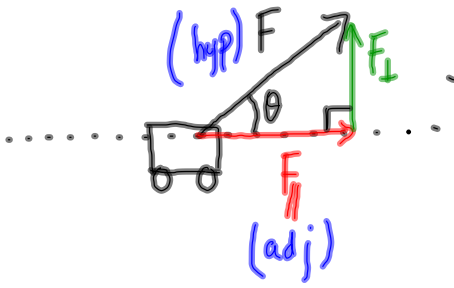
so $47 \times 5\,J = 235\,J$

5N × 1m = 5 J

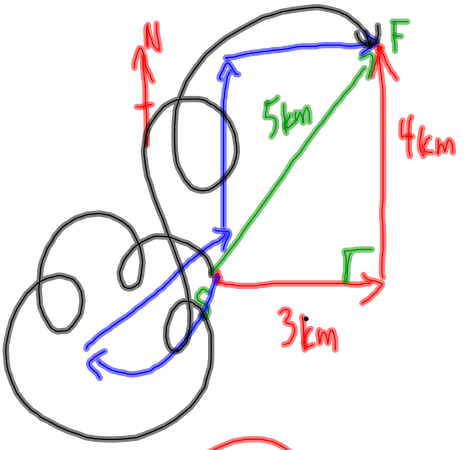
Nov 18-11:57 AM

What happens when F is not in the direction of motion?

Consider pulling on the handle of a wagon with a force, F, at an angle, θ, to the horizontal:



Think about going 3km [E] and then 4km [N]



$\cos\theta = \frac{adj}{hyp}$

$\cos\theta = \frac{F_{||}}{F}$

$F_{||} = F\cos\theta$

Recall: $W = F_{||}\Delta d$

$W = (F\cos\theta)\Delta d$

$\boxed{W = F\Delta d\cos\theta}$

If $\theta = 0°$, $\cos\theta = 1$

and $W = F\Delta d$

(this is the maximum work)

If $\theta = 90°$, $\cos\theta = 0$

and $W = 0$! (there is NO WORK)

If $\theta = 180°$, $\cos\theta = -1$

and the work will be NEGATIVE!

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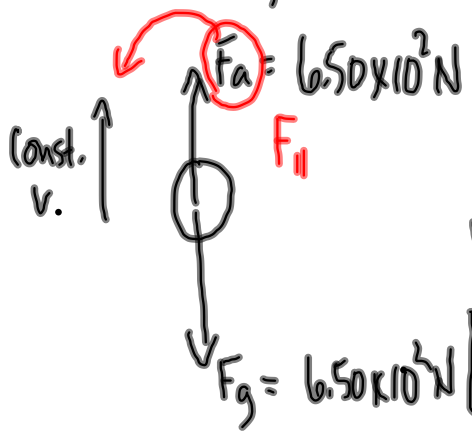
$F_g = 6.50 \times 10^2 N$

$h = 0.55 m$

a) $W = ?$ (lifting)

b) $W = ?$ (lowering)

a) Lifting:

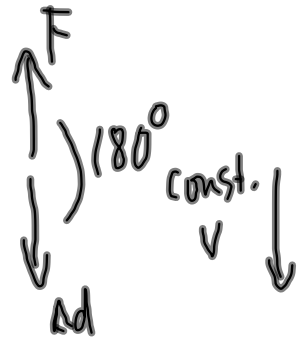


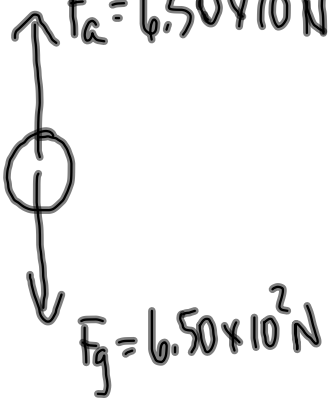
$W = F_{||} \Delta d$

$W = (6.50 \times 10^2 N)(0.55 m)$

$\boxed{W = 3.7 \times 10^2 J}$

b) Lowering





$W = F \Delta d \cos\theta$

$W = (6.50 \times 10^2 N)(0.55 m)(\cos 180)$

$\boxed{W = -3.7 \times 10^2 J}$

TO DO

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