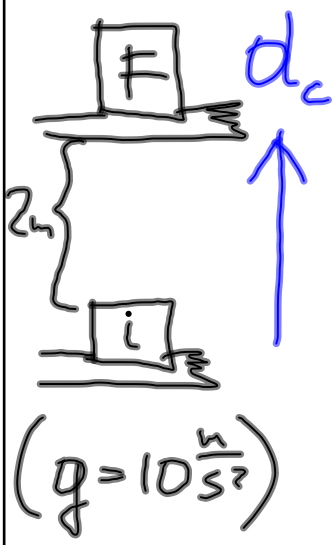
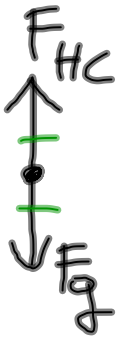
1. Calculate work done by the force of the hand on 1 kg cylinder (F_{HC}) lifting it straight ***up*** 2 meters with constant velocity.



$(g = 10 \frac{m}{s^2})$



$\Rightarrow a_y = 0$

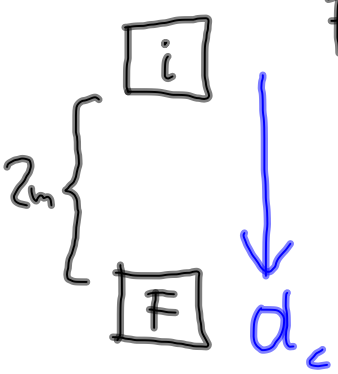
$W_{up} = F_{Hc} \cdot d_c \cdot \cos\theta$

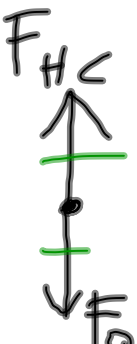
$W_{up} = (10)(2)\cos(0°)$

$W_{up} = 20\ J$

Dec 19-10:14 AM

2. Calculate work done by the force of the hand on 1 kg cylinder (F_{HC}) lowering it straight ***down*** 2 meters with constant velocity.





$W_{DOWN} = F_{Hc} \cdot d_c \cdot \cos\theta$

$a_y = 0$

$W_{DOWN} = (10)(2)\cos(180°)$

$W_{DOWN} = -20\ J$

Dec 19-10:17 AM

Calculate the total work done in cases 1 and 2 (when you return to the initial position).

$W_{TOTAL} = 20 + (-20)$

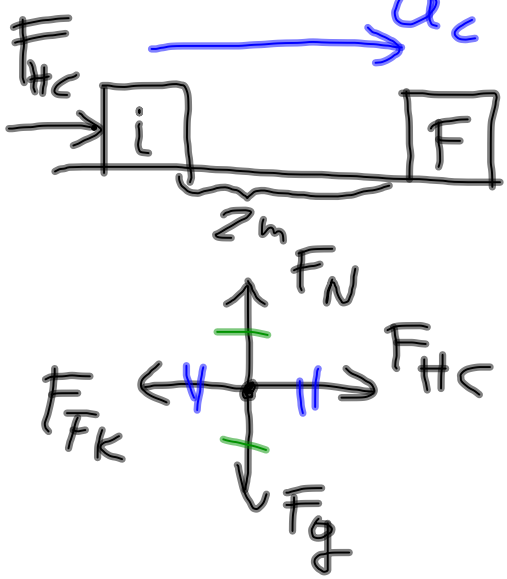
(HP + DOWN)

$W_{TOTAL} = 0$

Dec 19-10:26 AM

3. Calculate work done by the force of kinetic friction (F_{FK}) on a 1 kg cylinder being pushed from ***left to right*** 2 meters with constant velocity. $a_x = 0!$

$F_{HC} = 10N$



$W_{L-R} = F_{FK} \cdot d_c \cdot \cos\theta$

$W_{L-R} = (10)(2)\cos(180°)$

$W_{L-R} = -20\,J$

Dec 19-10:19 AM

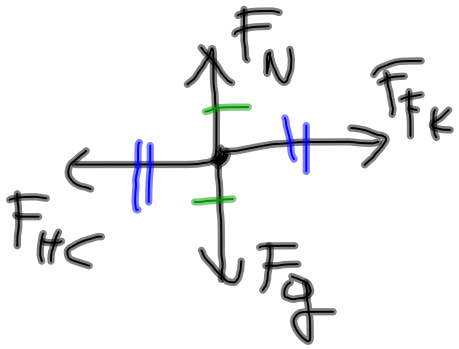
4. Calculate work done by the force of kinetic friction (F_{FK}) on a 1 kg cylinder being pushed from ***right to left*** 2 meters with constant velocity.

$\Rightarrow a_x = 0$

d_c

$W_{R-L} = F_{FK} \cdot d_c \cdot \cos\theta$

$W_{R-L} = (10)(2)\cos(180°)$



$W_{R-L} = -20\,J$

Dec 19-10:21 AM

Calculate the total work done in cases 3 and 4 (when you return to the initial position).

$W_{TOTAL} = W_{L-R} + W_{R-L}$

(L-R & R-L)

$W_{TOTAL} = -20 - 20$

$W_{TOTAL} = -40\,J$

HW due Monday p.221 #77, 79, 80, 81.

Dec 19-10:27 AM