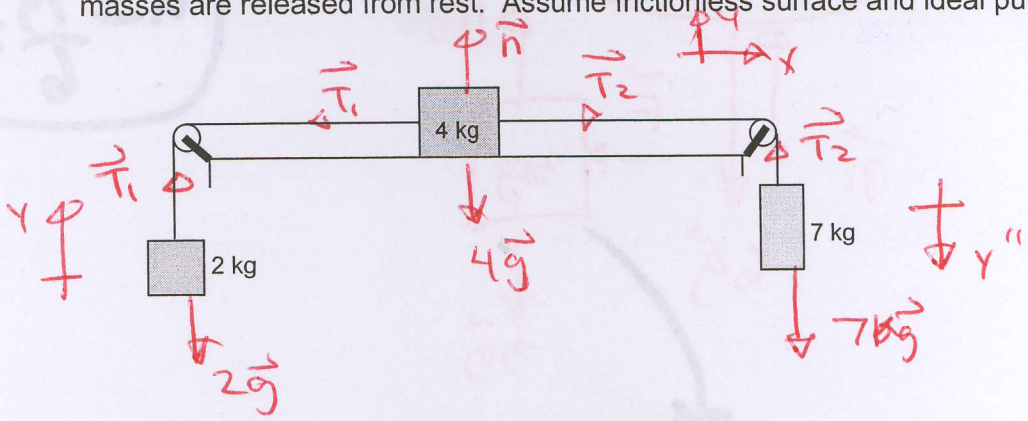
Name: KEY
Physics 2A/Winter 2011
Quiz 6

Make sure to show all work in complete detail. NO CREDIT will be given if no work is shown!!!

1. For the system shown below, calculate the tension on the rope on the left side after masses are released from rest. Assume frictionless surface and ideal pulley.



2kg: $\Sigma F_y = T_1 - 2g = 2a$

4kg: $\Sigma F_x = T_2 - T_1 = 4a$

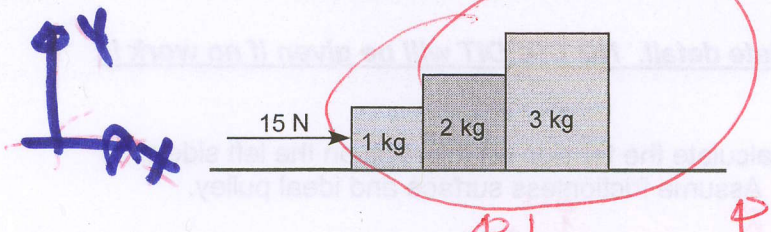
7kg: $\Sigma F_y = 7g - T_2 = 7a$

$5g = 13a$

$4g = 13a$

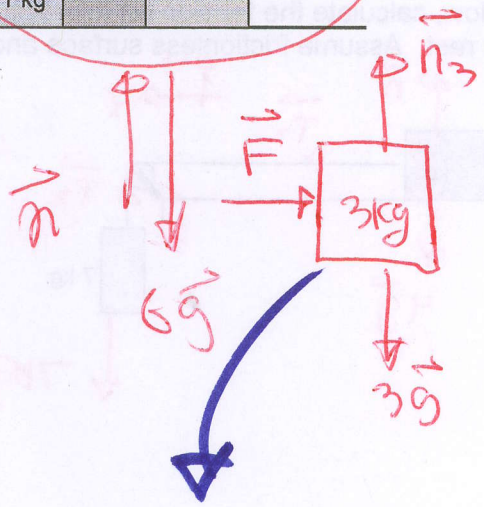
$a = \frac{4g}{13}\ m/s^2 = 3.77\ m/s^2$

2. For the system shown below, calculate the force the 3-kg block exerts on the 2-kg block. Assume masses move on a frictionless surface.



$\Sigma F_x = 15 = 6a$

$a = \frac{15}{6} = 2.5 \frac{m}{s^2}$



$\Sigma F_x = F = 3(2.5)$

$F = 7.5\,N$