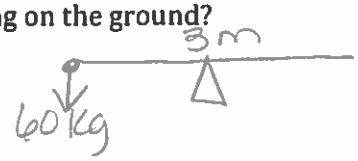
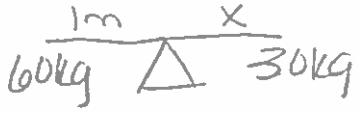
11. Nancy, whose mass is 60 kg, is working at a construction site and she sits down for a bite to eat at noon. If Nancy sits on the very end of a 3 m long plank pivoted in the middle on a saw horse, how much torque must her co-worker provide on the other end of the plank in order to keep Nancy from falling on the ground?



$T_1 = (60)(3) = 180 \cdot m$

T_2 must also $= 180\ N \cdot m$

12. A 60 kg boy sites on a seesaw 1.0 m from the fulcrum. What distance from the fulcrum should a 30 kg girl sit in order the balance the seesaw?

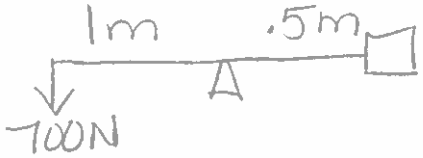


$60(9.8)(r) - 30(9.8)(x) = 0$

$(588)(1) - (294x) = 0$

$\boxed{x = 2m}$

13. The weight of a box placed 0.5 meters from the axis of rotation of a lever is perfectly balanced when a force of 700 N is applied 1.0 meter from the axis on the opposite side. What is the mass of the box?



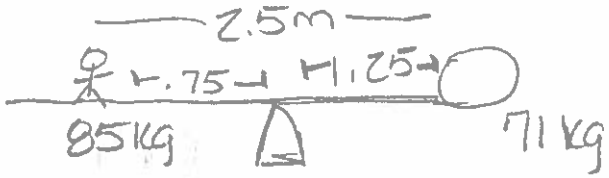
$(700)(1) - (x)(.5) = 0$

$x = 1400\ N$

$\frac{1400}{9.8}$

$\boxed{x = 142.85}$

14. A 71.0 kg boulder is placed on a 2.50 m long board at the right end with a pivot point placed in the middle. Cliff has a mass of 85 kg and is standing 0.75 meters to the left of the pivot. How far from the pivot and on what side must Wendy stand if she has a mass of 52 kg?



$(71)(1.25) = 88.75$

$(85)(.75) = 63.75$

$(85)(.75) + (52)(x) = 88.75$

$52x = 25$

$\boxed{x = .48m}$