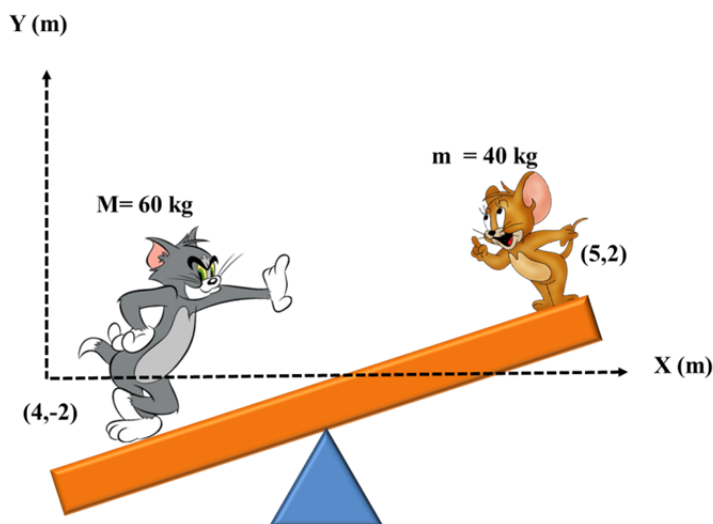


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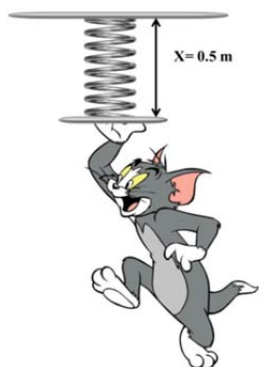
**Chapter -12, Serway; *ABSOLUTELY NO CHEATING!***

*Please write down the answers on the blank space or on the back of this paper. Answer should be in english. [ ] indicates the question points.*

**Q1.** Suppose two kids are plying as show in figure bellow. The positions of them are given with respect to XY coordinate. (a) Find out the center of gravity of them (two object system). (b) According to your first result, if the center of gravity needs to move at 4cm in X direction to balance them what will be new positions of M. Let the position of m is constant. [30+30 = 60]



**Q2.** (a) What do you mean by stress and strain? (b) Now suppose Tom is pulling a metal spring to do exercise. If the spring length becomes 1m after his hanging, calculate the Young's modulus of the spring. Let the mass of Tom is 100 kg and initial spring length = 0.5m and cross sectional area  $A = 0.5 \times 10^{-4} \text{ m}^2$ . ( $g = 10 \text{ m/s}^2$ ) [10+30 = 40]



You may use the backside of the paper