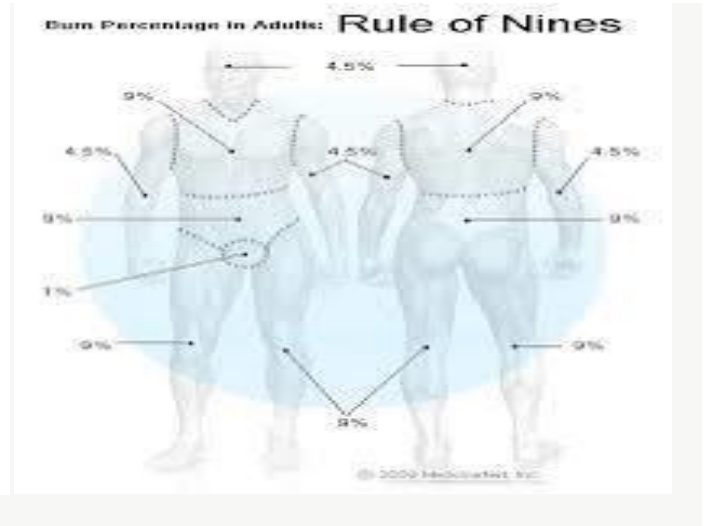
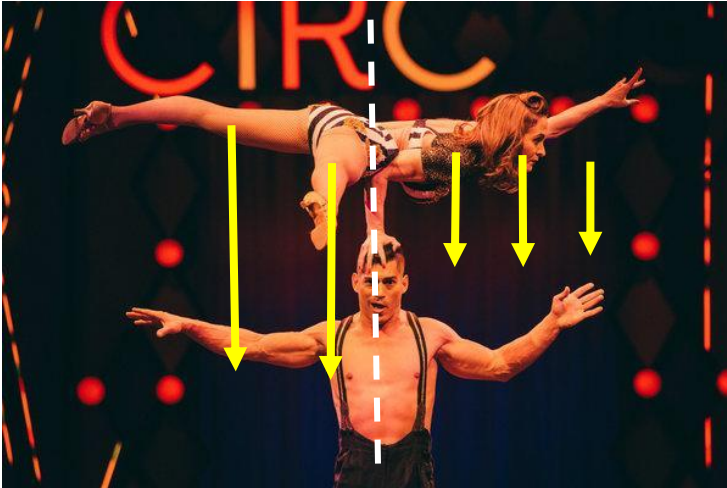


STATIC & ROTATIONAL EQUILIBRIUM Unit 15

Dr. John P. Cise, Prof. of Physics, Austin Com. College, Austin Tx. jpcise@austincc.edu & NYTimes 11/19/18

At Big Apple Circus, Discs Fly and So Do People



Virginia Tuells and Ihosvans Perez, a married couple who perform as Duo Fusion, at the Big Apple Circus at Lincoln Center in Manhattan.

NYT Critic's Pick

Off Broadway, Children, Circus, For the Family, Play

Closing Date: Jan. 27, 2019

Lincoln Center - Damrosch Park, 60 Lincoln Center Plaza

212-257-2330

By Alexis Soloski

The weather is a misery, the subways are a disaster, the news is unspeakable. But inside a tent tucked into a rear corner of Lincoln Center Plaza, a poodle is tooling around in a miniature sports car, his sequined scarf fluttering. Which is to say that the [Big Apple Circus](#) is in town and a little more joy is loosed upon the city.

INTRODUCTION: She is in rotational equilibrium. Her right hand is her axis of rotation. By the body part % chart Her chest is 4.5 % of body weight ($0.045 W$) @ 1.5' from axis. Her head is 4.5 % of body weight ($0.045W$) @ 2' from axis. Her left arm is 4.5 % of body weight ($0.045 W$) @ 3' from axis (line of action of force from axis of rotation). Her right leg is 9 % of body weight ($0.09 W$) @ 0.7' from axis of rotation. Her left leg is 9% of body weight ($0.09 W$) at a UNKNOWN distance from axis of rotation.

QUESTIONS: (a) Find distance her left legs center of mass is from axis of rotation?, (b) If her weight is 130 lbs. Find force on her right hand?

HINTS: To be in static and rotational equilibrium: $\Sigma F_x = 0$, $\Sigma \tau = 0$,

ANSWERS: (a) Lever arm of left leg = 2.55 ' , (b) 130 lb. UP.