How attractive are you?

Some people consider themselves to be a very attractive person. This assignment is to determine how 'physically' attractive you are by calculating your personal gravity acceleration constant.

a) Find your mass (*m*) (**Note**: you will need your weight to determine this – *Be mindful of units*)

b) Calculate your personal value of g. (**Note**: *assume a person's average radius is* 0.3 *m*)

c) Determine how long (*in hours*) it will take an object 50 *ft* away to reach you if it starts from rest using your personal value of g (*assuming it is constant over this distance*).

d) Compare your time from part (*c*) to the time (*in hours*) it would take for an object starting at rest to cover the same distance with an acceleration of 9.8 m/s^2?

The Affect of Gravity on You

Astrology believes that the planets influence a baby when they are born which in turn affects their personality, attitude… Use the astronomical data below and Newton's Law of Gravitation to determine just how much influence the stars and planets really exert on a newborn baby.

$m_{baby} = 3.18\ kg$ **(7 *lbs*)**

$m_{doctor} = 70.1\ kg$ **(200 *lbs*)**

$m_{sun} = 1.99 \times 10^{30}\ kg$

$m_{jupiter} = 1.9 \times 10^{27}\ kg$

$m_{moon} = 7.35 \times 10^{22}\ kg$

$m_{nearest\ star} = 2.188 \times 10^{30}\ kg$

Distance (*r*) from the baby to the:

Doctor = $0.0001\ m$ (*holding the baby*)

Sun = $1.5 \times 10^{11}\ m$

Jupiter = $6.28 \times 10^{11}\ m$

Moon = $3.84 \times 10^{8}\ m$

Nearest Star = $4.13 \times 10^{16}\ m$ (4.365 *ly*)

Note: *The name of the nearest star is Alpha Centauri*

Who or what exerts the greatest force on the baby?

Do the answers surprise you?