Kinematics cheat sheet Name _____

$$x_f = x_i + vt + \tfrac{1}{2}at^2$$

$$v_f = v_i + at$$

$$v_f^{\,2} = v_i^{\,2} + 2ad$$

vector

scalar

resultant

equilibrant

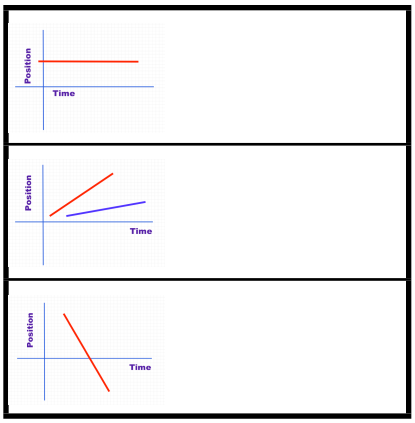
distance

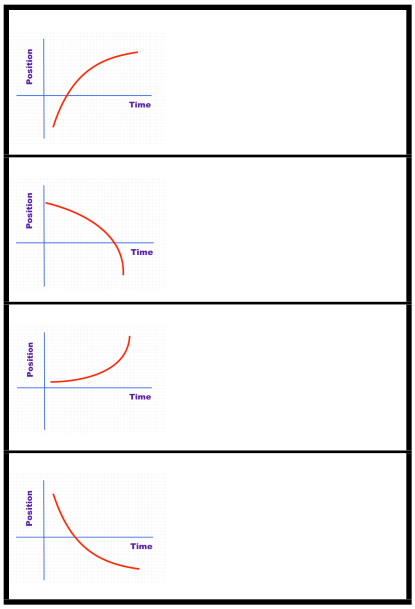
displacement

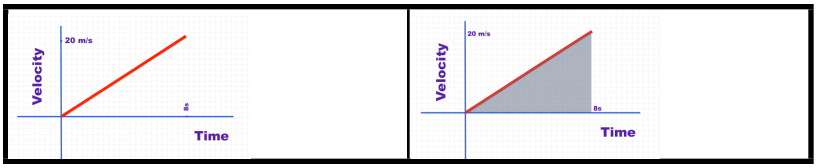
speed

velocity

acceleration







you can't know where you are going if you don't remember where you started

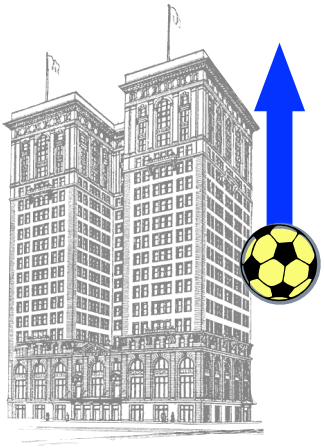
Projectiles Cheat Sheet

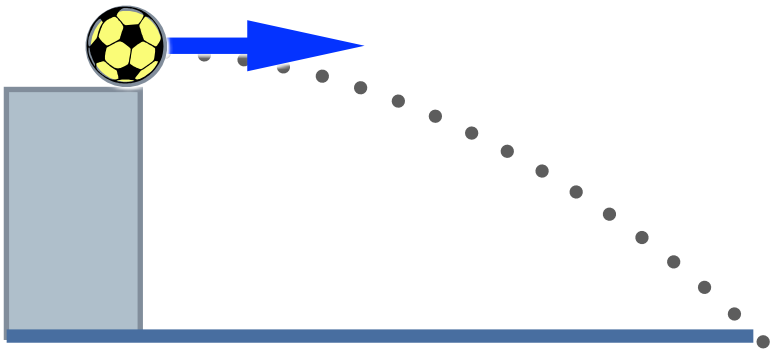
Name _____

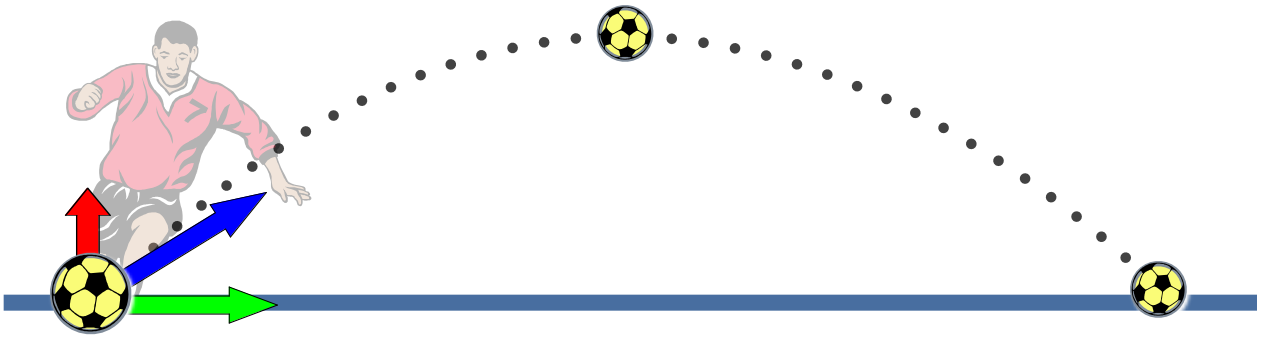
$$x_f = x_i + vt + \tfrac{1}{2}at^2$$

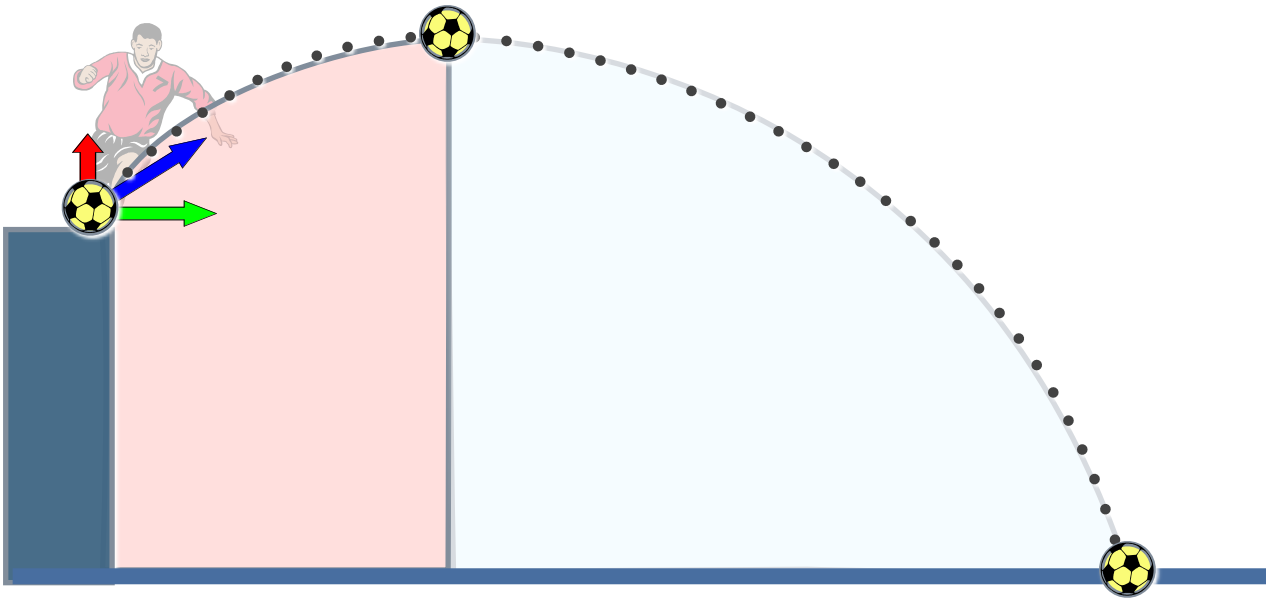
$$v_f = v_i + at$$

$$v_f^{\,2} = v_i^{\,2} + 2ad$$









safe landing!

Dynamics Study Guide

Name _____

$$x_f = x_i + v_i + \tfrac{1}{2}at^2$$

$$v_f = v_i + at$$

$$v_f^{\,2} = v_i^{\,2} + 2ad$$

$$F = ma$$

$$F = \mu N$$

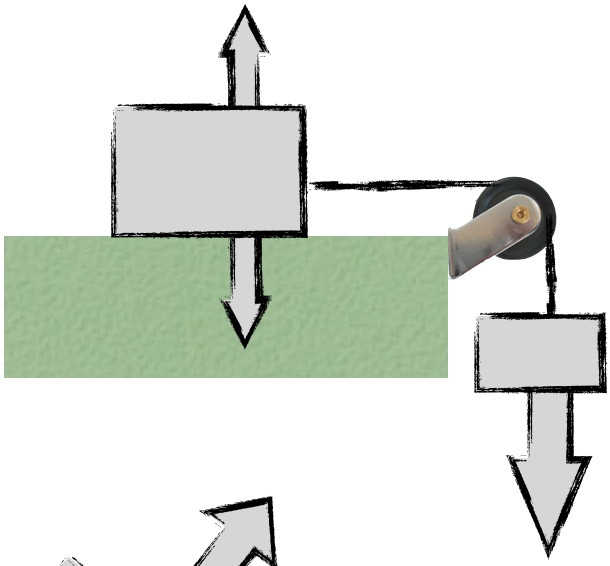
$$\bar{w}_{\parallel} = \bar{w}sin\theta$$

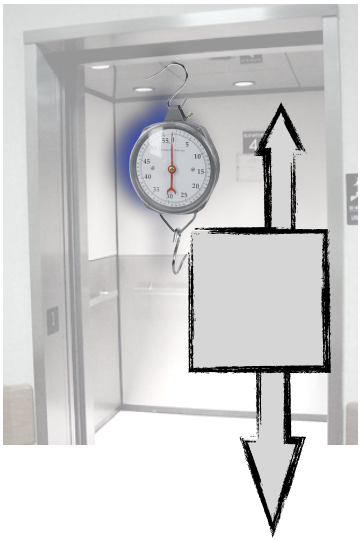
$$\bar{w}_{\perp} = \bar{w}cos\theta$$

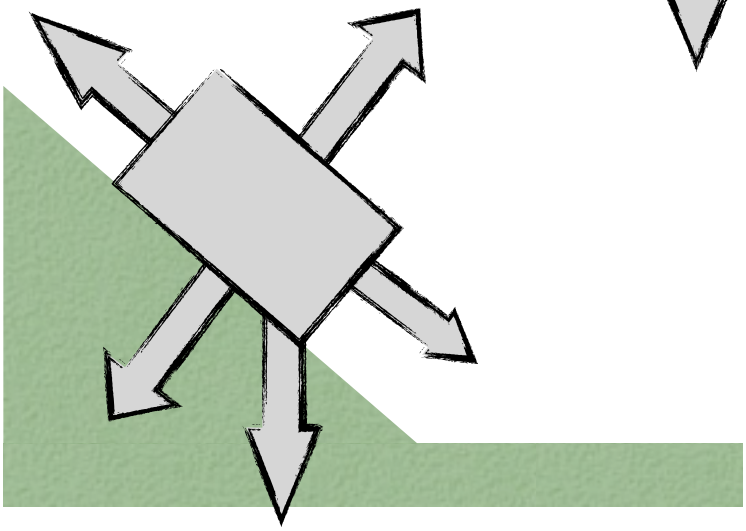
1st

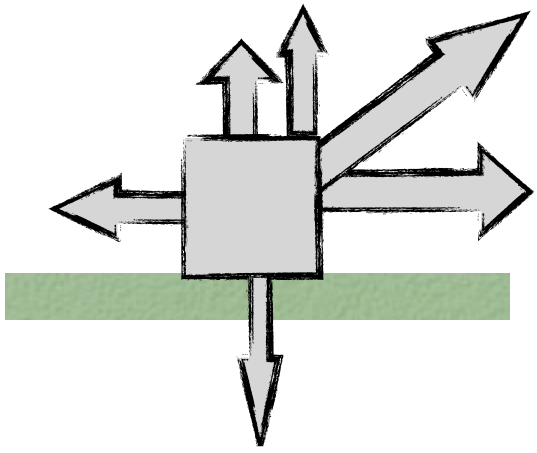
2nd

3rd









Name _____

Forces and Newton's Laws

$$x_f = x_i + v_i t + \tfrac{1}{2}at^2$$
$$v_f = v_i + at$$
$$v_f^{\,2} = v_i^{\,2} + 2ad$$

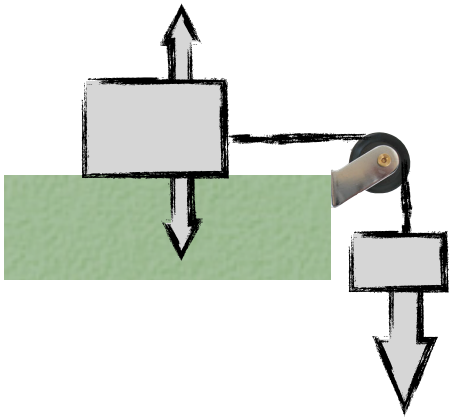
$$\bar{F} = \mu \bar{N}$$

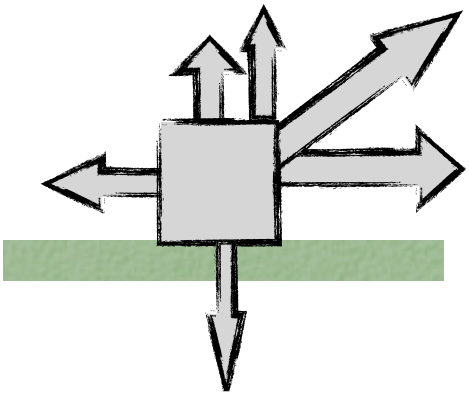
What does each part of this equation mean? What units?

1st

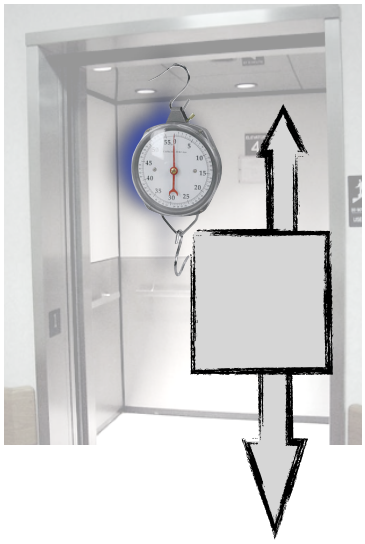
2nd

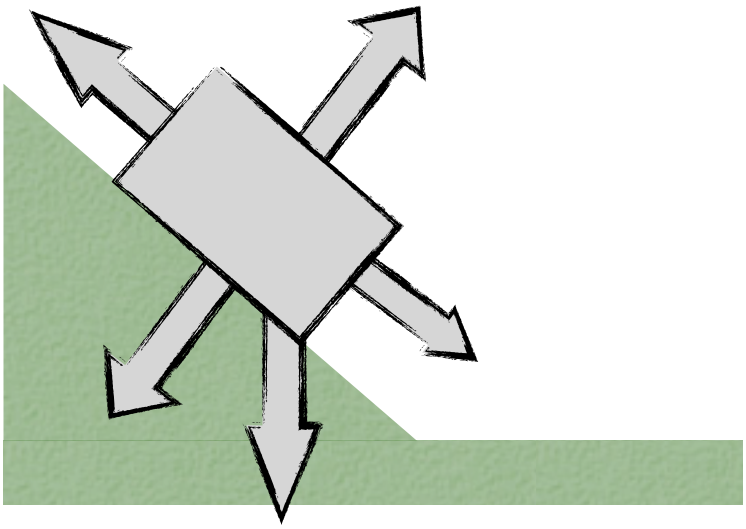
3rd





$$\bar{w}_{\parallel} = \bar{w} sin\theta$$
$$\bar{w}_{\perp} = \bar{w} cos\theta$$





 Name _____

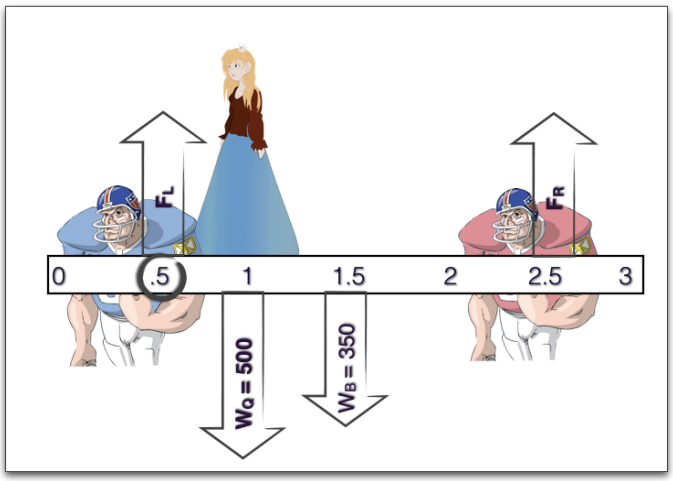
Torque

$\tau = F\ d \sin\theta$

What does each part of this equation mean?
What units?

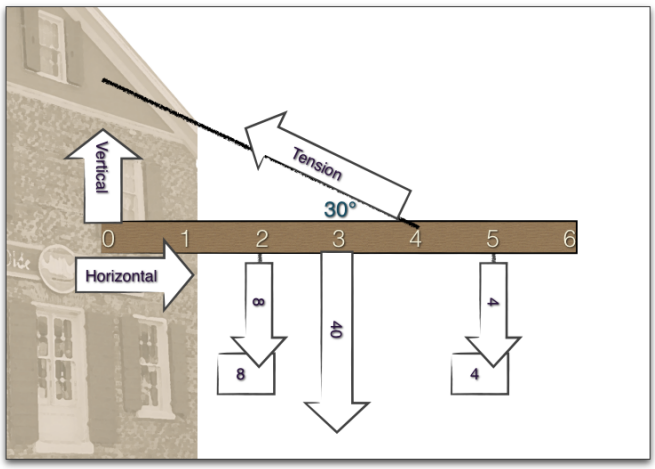
Left = clockwise =

up =



-what equations can be used to solve this type of example?

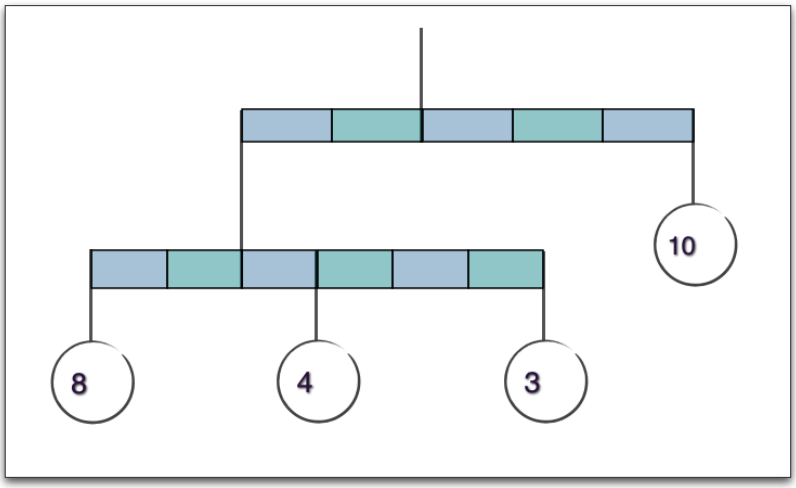
-why is there a circle under the one player?



-what equations can be used to solve this type of example?

-why is this one different from the above example?

Stay balanced, there's no turning around now.



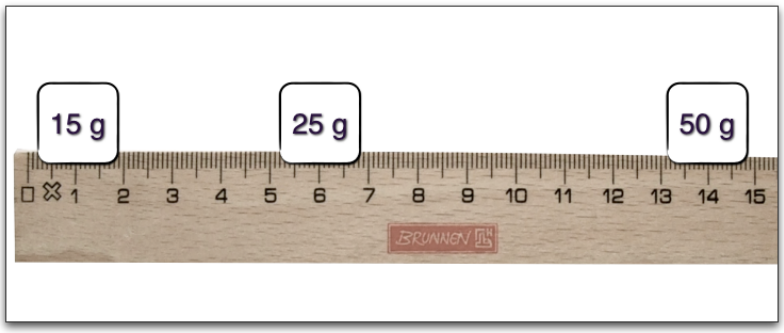
-what method can be used to solve this type of example?

-why were some more challenging than others?

Center Of Mass

$$x_{cm} = \frac{x_1 m_1 + x_2 m_2 + x_3 m_3}{m_{total}}$$

What does each part of this equation mean? What units?



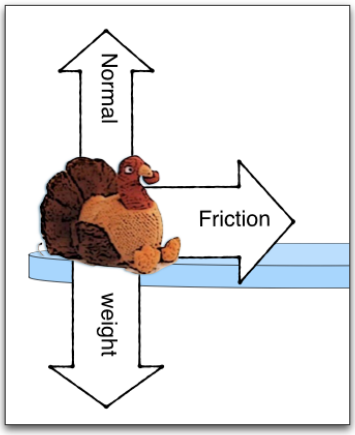
-describe what you are finding in this example

-what if things aren't all in one line?

Stay balanced, there's no turning around now.

Centripetal Force

$$F_c = \frac{mv^2}{r}$$

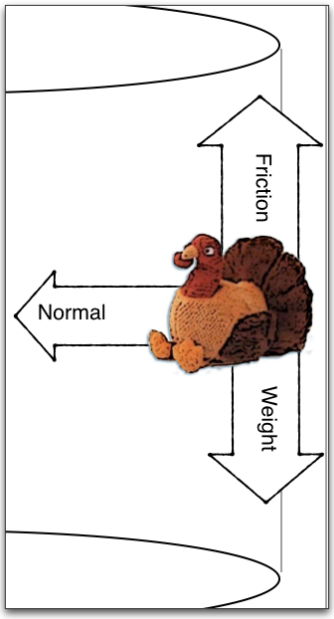


-what equations can be used to solve this type of example?

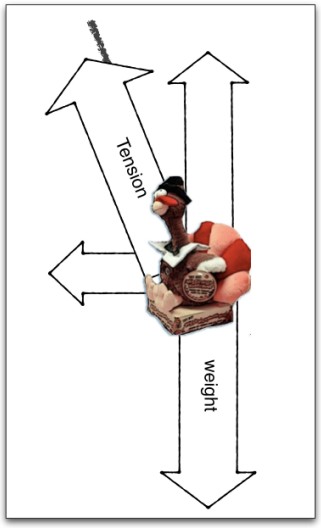
What does each part of this equation mean? What units?

$$a_c = \frac{v^2}{r}$$

-what equations can be used to solve this type of example?



What does each part of this equation mean? What units?

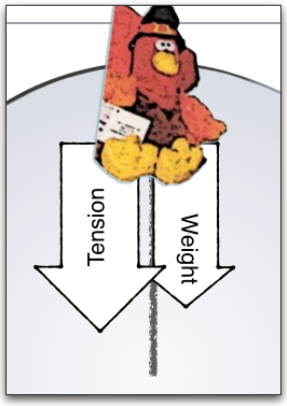


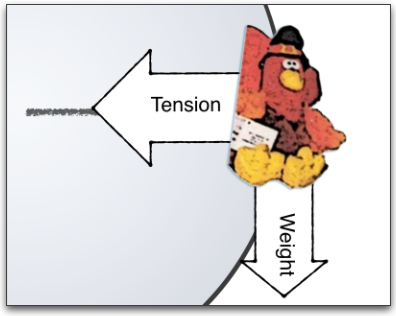
-what equations can be used to solve this type of example?

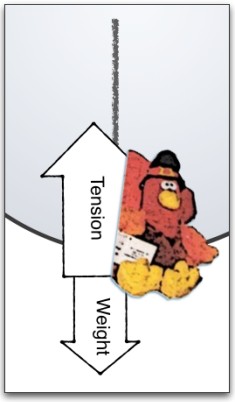
-what is the difference between centripetal and centrifugal?

Stay balanced, there's no turning around now.

equilibrium Study Guide Name _____





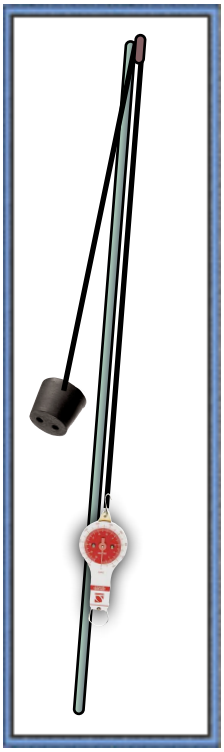


-what equations can be used to solve these 3 examples?

what is the minimum speed if the radius is 1 meter?

Radius (in m)	**Force (in N)**	**Time (20 rev)**	**Period (1 rev)**	**velocity (m/s)**	**v^2 (m^2/s^2)**

How did you get each value for this table during your lab experiment?



Stay balanced, there's no turning around now.

Universal Gravity

$$F_g = \frac{GMm}{r^2} \qquad G = 6.67x10^{-11}\, Nm^2/kg^2$$

What does each part of this equation mean? What units?

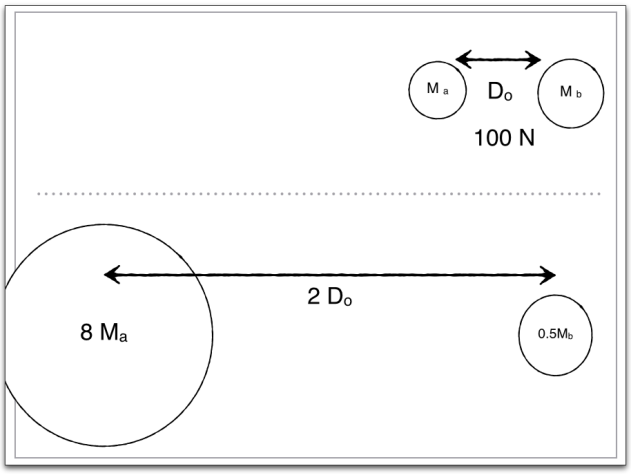
$5.97x10^{24}$ kg *Mass of the Earth*

$7.24x10^{22}$ kg *Mass of the Moon*

$3.84x10^{8}$ m *radius of lunar orbit*

$6.371x10^{6}$ m *radius of the Earth*

What does Gm/r^2 equal if you use the mass and radius for the earth?



-what method can be used to solve this type of example?

what would be the result of making the distance 5 times smaller?

Stay balanced, there's no turning around now.