

**P3.6d Calculate force, masses, or distance, given any three of these quantities, by applying the Law of Universal Gravitation, given the value of G**

Mass1 is 10Kg and mass2 is 10Kg. They are separated by 10 meters. What is the attractive force between them due to gravity?

I have a mass of 85Kg and my weight (provided by gravity) is 833 Newtons. I stand on Planet X, which has a mass of  $7 \times 10^{24}$  Kg. How far am I from the center of this planet?

The force of gravity between two objects is  $5 \times 10^{-5}$  Newtons. They are separated by .1 meter. the two masses are identical. What is each mass?

How much does the force of gravity decrease between two objects if they become separated by double the distance?

How much does the force of gravity between two objects increase if one of the objects becomes twice as massive?

How much does the force of gravity between two objects increase if both objects becomes twice as massive?

The "G" in the equation is called the "gravitational constant". This constant was arrived at in the laboratory after painstaking research. Using the correct value of "G" in the equation makes your answers realistic. If you remove the "G" from the equation, what happens to the sorts of answers you get from it?

What does this suggest about the strength of the force of gravity?