Hsc physics notes – space assignment

The Earth has a gravitational field that exerts a force both on it and around it 1 . Define weight as the force on an object to a gravitational field Mass is the measure of how heavy an object it. Every object has a mass which is static and does not change with any force exerted on it or from it. However, weight is the force which is exerted upon an object when it comes into contact with or nearby a gravitational field of some strength. Weight is a force a vector quantity. W = MGM 2. Plain that a change in gravitational potential energy is related to work done In order to a change in an object's gravitational potential energy in a gravitational field, work must be done to achieve this. I. E. To be able to move an object within a gravitational field, work must be exerted on the object in order to make it move. Work must be done in order to transform the energy of an object into a different entity so that is can move. In this case, from gravitational potential energy to kinetic energy. G p = MGM

Gap = Gravitational Potential Energy 0) m = Mass of the object (keg) g = Acceleration due to gravity/gravitational field (m. s -2) h = Height above the Earth's surface (m) This equation is only valid when the object is close to the Earth's surface. 3. Define gravitational potential energy as the work done to move an object from a very large distance away to a point in a gravitational field The gravitational potential energy is a measure of the work done in moving an object from infinity to a point in a gravitational field.

As an object falls toward a gravitational field (such as Earth's) the object's acceleration increases and thus the velocity of the object speeds up. It is defined as: Pep = O at a distance of infinity. Ml mm r Pep = Gravitational Potential Energy 0) G = Universal Gravitation Constant = 6. Xx-11 = Mass of

first object (keg) mm = Mass of second object – often the Earth (keg) r – distance from the centre of the Earth (m) 1 . Perform an investigation and gather information to determine a value for acceleration due to gravity using pendulum action or computer-assisted technology and identify reasons for possible variations from the value 9. M. s-2 One way to determine the variations in acceleration due to gravity (g) is to use a pendulum by observing the direct falling movement of the pendulum. Using the experiment of pendulum movement: In this experiment, a string is anchored to the bottom of a surface and then a mass is attached to the other end of the string in which gravity forces the mass to hang from the string a certain distance. The mass is pulled to the side to form an angle of Has Physics Notes – Space By Championships