Physics pendulum prac

Using a Pendulum to Determine g Aim: To determine the rate of acceleration due to gravity using the motion of a pendulum. Hypothesis: The numerical g value measured on earth is estimated to be 9. 8 ms-2 Apparatus: * Retort Stand * Boss head and clamp * Approximately 1 metre of string * 50g mass carrier or pendulum bob * Stopwatch * Metre ruler Theory: When a simple pendulum swings with a small angle, the mass on the end performs a good approximation of the back-and-forth motion called simple harmonic motion.

The period of the pendulum, that is, the time taken to complete a single full back back-and-forth swing, depends upon just two variables: the length of the string and the rate of acceleration due to gravity. The formula for the period is: T= 2? lg Where T = period of the pendulum (s) l = length of the pendulum (m) g = rate of acceleration due to gravity (ms-2) Method: 1. Set up the retort stand and clamp on the edge of a desk as shown in figure 1. 7.

Tie on the string and adjust its length to about 90cm before attaching the 50g mass carrier or pendulum bob to its end. 2. Using the metre ruler, carefully measure the length of the pendulum from the knot at its top to the base of the mass carrier. Enter this length in your results table. 3. Set the pendulum swimming gently (deviation of 10? from vertical) and use the stopwatch to time 10 complete back and forth swings. Be sure to start and stop the stopwatch at an extreme of the motion rather than somewhere in the middle.

Enter your time for 10 swings in the results table. 4. Repeat steps 2 and 3 at least five times, after shortening the string by 5cm each time. Results: Test| Time for 10 Oscillations (s)| Period T (s)| Period Squared T2 (s2)| Length of

pendulum (m)| 1| 19. 14| 1. 914| 3. 663| 0. 900| 2| 18. 52| 1. 852| 3. 430| 0. 850| 3| 17. 65| 1. 756| 3. 084| 0. 800| 4| 17. 04| 1. 704| 2. 904| 0. 750| 5| 16. 93| 1. 693| 2. 866| 0. 700|