Physics 122   Finding Gravity Activity

Purpose: To use the gravity in the room to check an estimated length of a given string.

Materials:

Procedure:

1. Setup apparatus as instructed.
2. Pull golf ball back to a pre-determined height. When the timer is ready, release the golf ball and record the time for one period.
3. Repeat this step 29 more times for a total of 30 trials. Take an average of the period.
4. Using the average period value, calculate the gravity in the room.
5. Change the string length to a different height, but do not measure the new string length.
6. Repeat step 2 and find the adjusted period. Complete 15 trials with this new length.
7. Find the new average period with the adjusted string.
8. Use the recently calculated period from step 7 and the gravity found from step 4 to calculate what the length of the string should be.
9. Measure the actual length of the string.
10. Find the range, absolute error, and relative error of the experiment.

Data Table(s):

Trial	Period (seconds)	Average Period (sec)	String Length (m)	Calculated Gravity (m/s^2)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Trial	Period (seconds)	Average Period (sec)	Calculated String Length (m)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Actual String Length: _____

Calculations:

Work for the calculated gravity from the first table –

Work for the calculated string length for the second table –

Range = A ± 5%

Absolute Error (E_A) = $|O - A|$

Relative Error (E_R) = $\frac{E_A}{A}$ x 100%

Conclusion: Discuss your relative error. What were some factors in the experiment that you could not control? What were some factors that you could control?

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