Dr. Duick

211 LAB NOTEBOOK

Title: Acceleration Lab: Using a ticker tape timer to determine the acceleration of a

falling object

Overview: 211 How to determine the acceleration rate using a paper timer:

Overview: 212 Acceleration Lab TI84

TABLE 1:   Data from equation method to determine acceleration

Trial	Total Dots[A]	Time Transpired[B]	Distance last two dots[C]	Final Velocity[D]	Acceleration[E]	Percent Error[F]
1						
2						
3						

A= Measure from ticker timer

B= Dots / 60

C= measured in meters

D= Distance last two dots ÷ 0.0167

E= (Final velocity ÷ Total time)

F= (|derived acceleration – 9.81|) ÷ 9.81

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TABLE 2:   Trial 1 Distance traveled from start (meters) to determine acceleration via graphing

Dot Position	Distance traveled from start in meters[A]	Time transpired in seconds[B]	Falling Average velocity[C]	Falling Final Velocity[D]
5				
10				
15				
20				

A= measured from the start to the dot position 5, 10, 15, and 20. (L1 on Ti84)

B= dots/60   (L1/60 on Ti-84)

C= distance traveled from start ÷ time transpired   (L1/L2 on a Ti-84)

D= falling average velocity * 2   (L3*2 on Ti-84)

Equation for a Line =

% error based on 9.81m/s^2 =

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TABLE 3:   Trial 2 Distance traveled from start (meters) to determine acceleration via graphing

Dot Position	Distance traveled from start in meters[A]	Time transpired in seconds[B]	Falling Average velocity[C]	Falling Final Velocity[D]
5				
10				
15				
20				

A= measured from the start to the dot position 5, 10, 15, and 20. (L1 on Ti84)

B= dots/60   (L1/60 on Ti-84)

C= distance traveled from start ÷ time transpired   (L1/L2 on a Ti-84)

D= falling average velocity * 2   (L3*2 on Ti-84)

Equation for a Line =

% error based on 9.81m/s^2 =

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TABLE 4: Trial 3 Distance traveled from start (meters) to determine acceleration via graphing

Dot Position	Distance traveled from start in meters[A]	Time transpired in seconds[B]	Falling Average velocity[C]	Falling Final Velocity[D]
5				
10				
15				
20				

A= measured from the start to the dot position 5, 10, 15, and 20. (L1 on Ti84)

B= dots/60   (L1/60 on Ti-84)

C= distance traveled from start ÷ time transpired   (L1/L2 on a Ti-84)

D= falling average velocity * 2   (L3*2 on Ti-84)

Equation for a Line =

% error based on $9.81 m/s^2$ =