

Uniformly Accelerated Linear Motion

Name _____ ID _____ TA _____

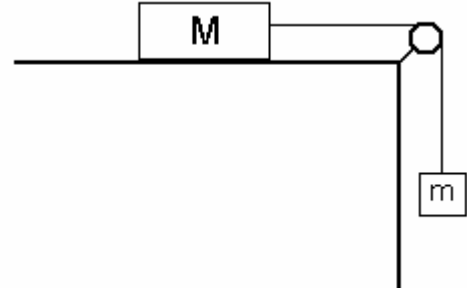
Partners _____

Date _____ Section _____

1. Measurements of acceleration

a. Mass of large glider: _____ (kg)

b. Mass of small glider: _____ (kg)



Please use SI units. (m , kg , sec , etc.)

	s distance between photogates	t time obtained by photogates	m hanging mass	M glider or cart mass	$\frac{m}{m+M}$	a ($= \frac{2s}{t^2}$)
Case 1			0.05 kg	Large glider		
Case 2			0.10 kg	Large glider		
Case 3			0.15 kg	Large glider		
Case 4			0.10 kg	Small glider		
Case 5			0.15 kg	Small glider		
Case 6			0.10 kg	Small + large		
Case 7			0.15 kg	Small + large		

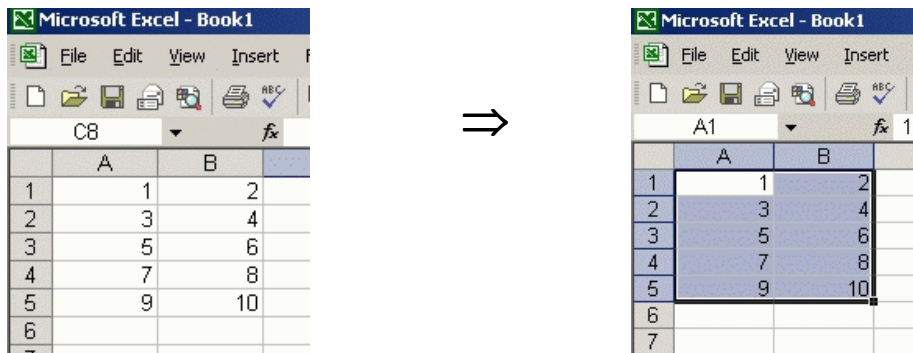
- Plot a vs. $\frac{m}{m+M}$ using Excel spread sheet. (Note that a is y-axis and $\frac{m}{m+M}$ is x-axis.) Then, obtain the linear fit line.

Slope _____

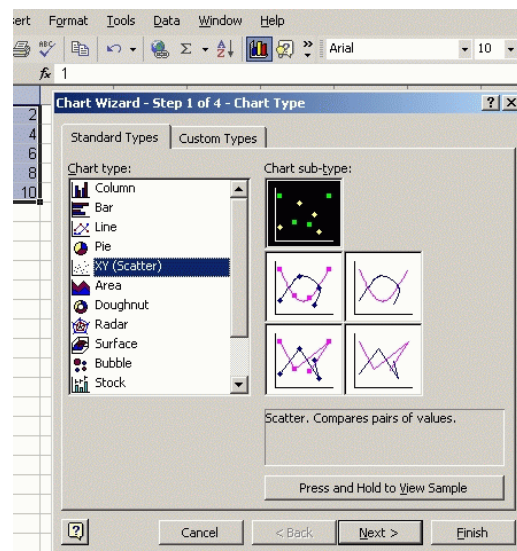
Discussion: Compare the result (slope) with the expected value of $g = 9.8 \text{ m/s}^2$.

How to obtain a linear fit line by Excel

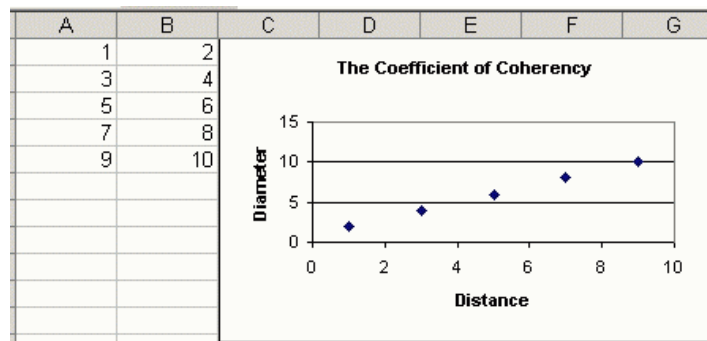
1. Type the obtained values for x- and y-axes. Columns A and B are x and y respectively. Then select only the numbers.



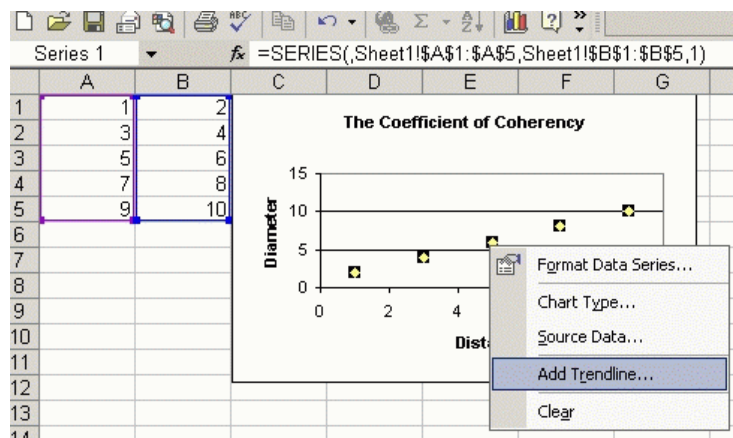
2. Click Chart Wizard from the tool bar. Select XY (Scatter) as follows.



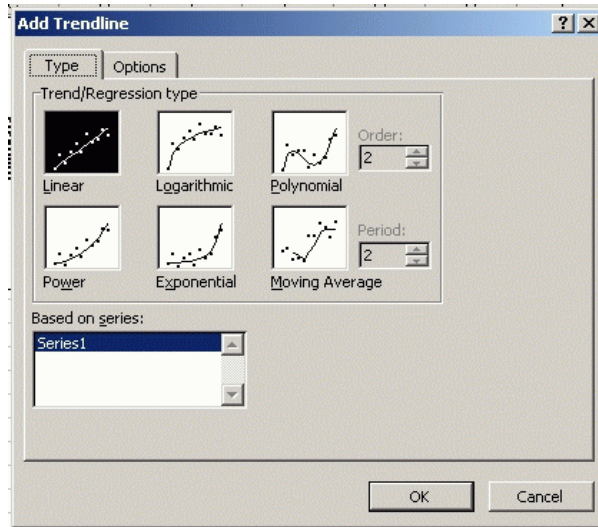
3. With going through the Chart Wizard, name the graph title, x- and y-axes. After clicking "Finish", you will have the following.



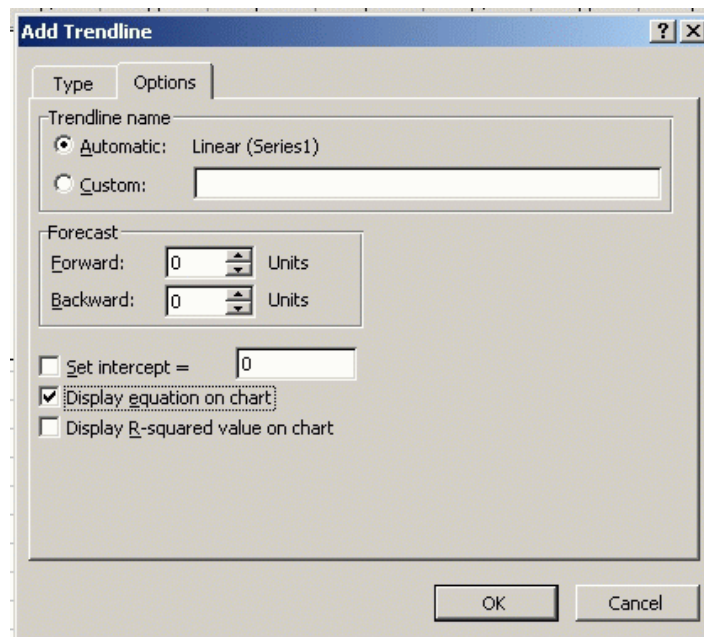
4. Right click one of dots on the graph. Then select "Add Trendline."



5. You will see the following, but you do not have to change anything for that. Then click “Options.”



6. Check the box, “Display equation on chart.” Then click “OK.”



7. You will have the line equation on the chart.

