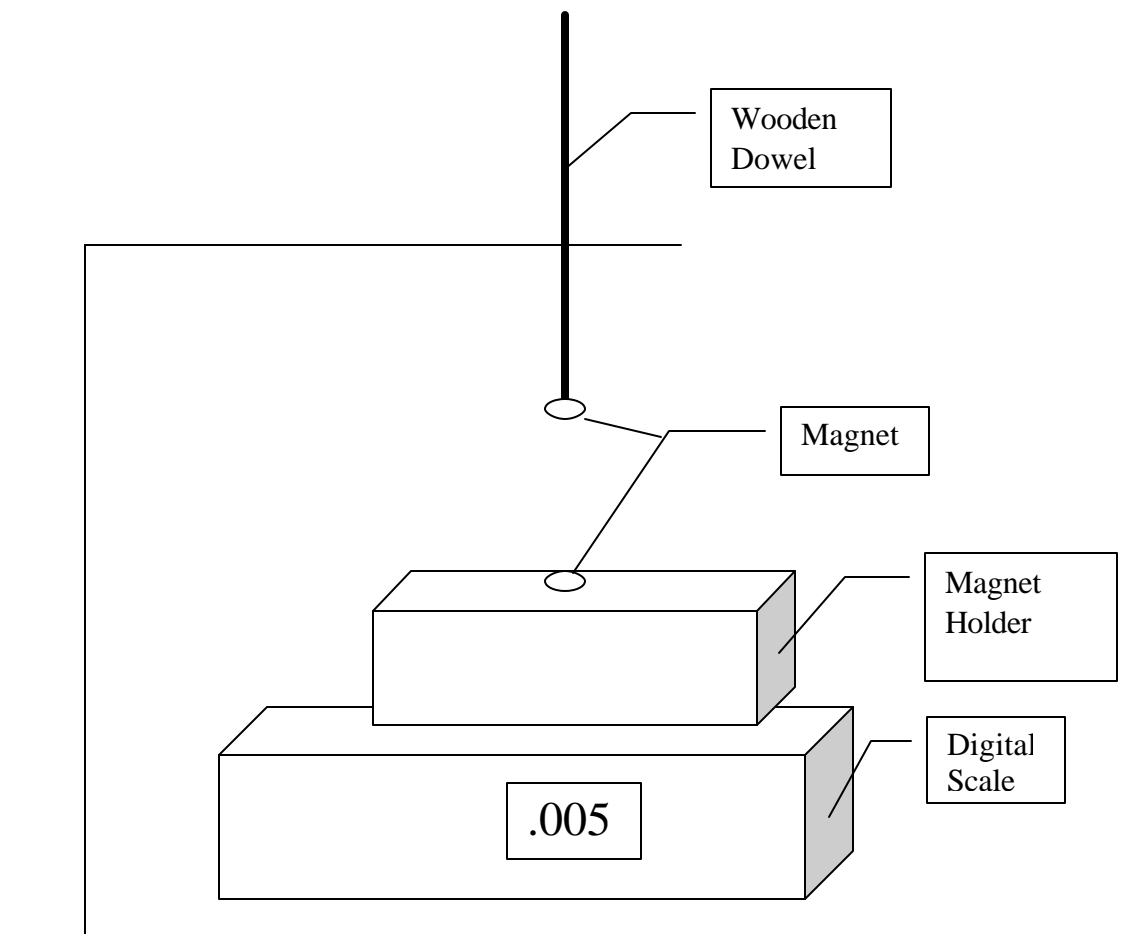


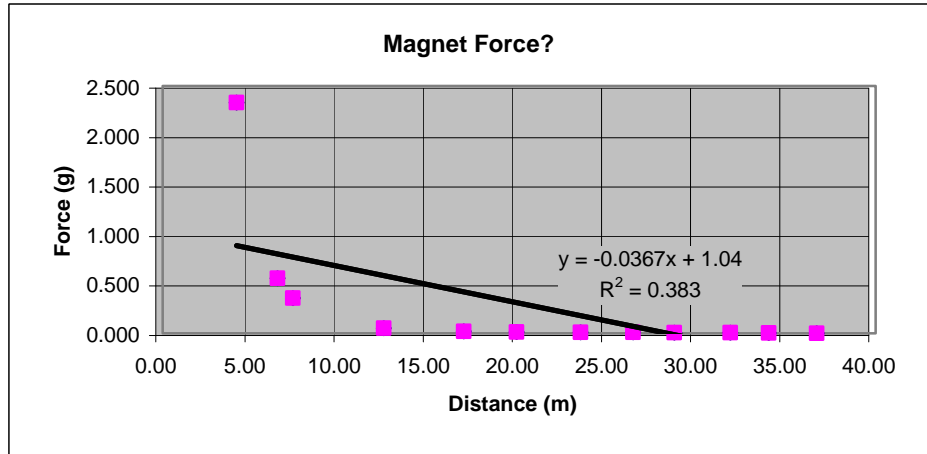
Scott Greenberg

A MAGNET LAB

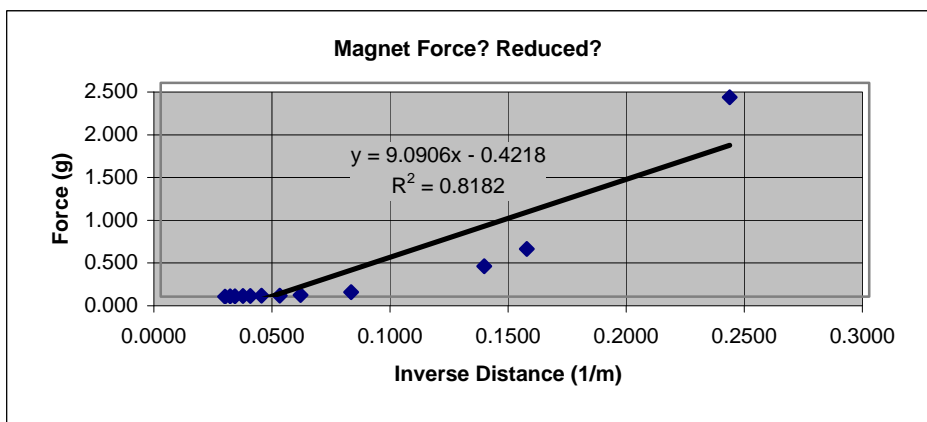
Thursday, November 2, 2000



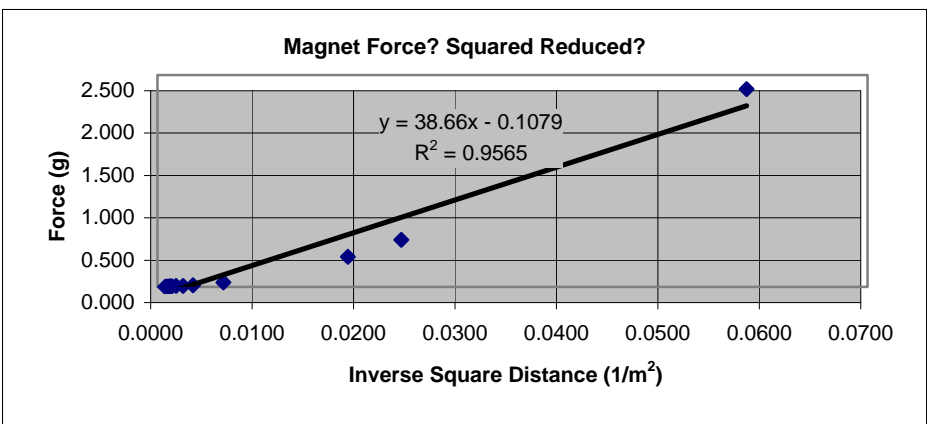
	Distance (cm)	Force (g)
+/-	0.2	0.003
	36.70	0.000
	34.00	0.004
	31.85	0.005
	28.70	0.006
	26.40	0.009
	23.45	0.011
	19.85	0.012
	16.90	0.018
	12.40	0.052
	7.30	0.355
	6.45	0.557
	4.15	2.333



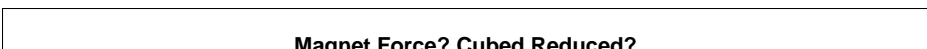
1 / Dis (1/cm)	Force (g)
0.0272	0.000
0.0294	0.004
0.0314	0.005
0.0348	0.006
0.0379	0.009
0.0426	0.011
0.0504	0.012
0.0592	0.018
0.0806	0.052
0.1370	0.355
0.1550	0.557
0.2410	2.333



1 / Dis ² (1/cm ²)	Force (g)
0.0007	0.000
0.0009	0.004
0.0010	0.005
0.0012	0.006
0.0014	0.009
0.0018	0.011
0.0025	0.012
0.0035	0.018
0.0065	0.052
0.0188	0.355
0.0240	0.557
0.0581	2.333



1 / Dis ³ (1/cm ³)	Force (g)
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We use two small magnets at a set distance, such that the repelling force of the magnets is exchanged to a digital scale. We will then measure the distance between the two magnets, d . We then read the display on the digital scale to determine the force in grams, F . From the results, we plot "Magnet Force?" From this plot, we do not get a convincing straight line. We then plot "Magnet Force? Reduced?" We then plot four more graphs, where we raise distance to a power, starting at two. For all plots we use the EXCEL function: Trend-line. This function will give us the linear interpolation of all our points and a R^2 . We know the closer our R^2 value is, the more linear our points are. From these five plots, we can see that "Magnet Force? Cubed Reduced?" is in the closest proximity to a straight line. What this means is that when we take distance to the third power, we get the best relationship. The empirical equation for the linear graph is $y = mx + b$, this compared to the theoretical equation is $F = m/d^3$.