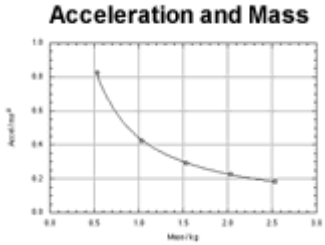
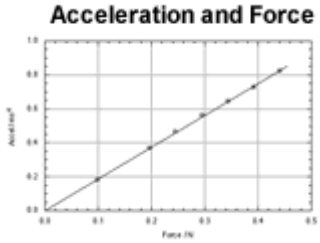
Newton's Second Law Sample Results

The New Zealand Physics Teachers' Resource Bank

* Total mass = hanger mass (converted to kg) + cart mass

** Accelerating force = hanger mass (converted to kg) x 9.8 Nkg-1 (the weight of 1 kg)





Hanger Mass	**Cart Mass**	**Total Mass***	**Total Force ****	**Measured Acceleration**					
m_1 / g	m_2 / kg	m / kg	F / N	a / ms^{-2}					
				Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Average
10	0.485	0.495	0.098	0.187	0.180	0.182	0.182	0.182	0.183
20	0.485	0.505	0.196	0.366	0.373	0.366	0.375	0.369	0.370
25	0.485	0.510	0.245	0.469	0.466	0.465	0.474	0.466	0.468
30	0.485	0.515	0.294	0.562	0.559	0.572	0.568	0.562	0.565
35	0.485	0.520	0.343	0.636	0.640	0.656	0.647	0.659	0.648
40	0.485	0.525	0.392	0.727	0.739	0.732	0.725	0.730	0.731
45	0.485	0.530	0.441	0.826	0.827	0.818	0.826	0.836	0.827
45	0.985	1.030	0.441	0.418	0.420	0.414	0.433	0.434	0.424
45	1.485	1.530	0.441	0.290	0.291	0.296	0.299	0.292	0.294
45	1.985	2.030	0.441	0.225	0.223	0.226	0.228	0.225	0.225
45	2.485	2.530	0.441	0.189	0.185	0.188	0.181	0.183	0.185