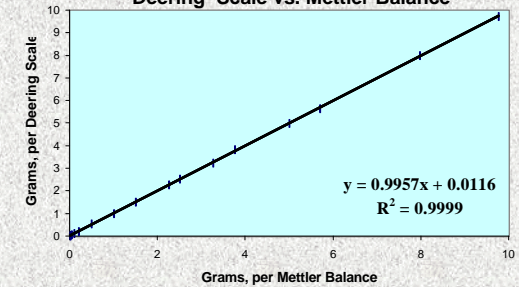
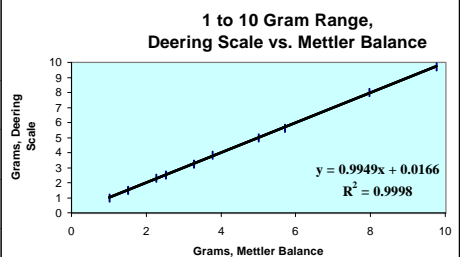
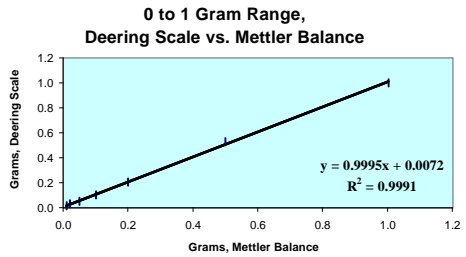


Deering 10 Gram, 50 Carat Scale 0 to 10 Grams (0 to 50 Carats)
A mechanical "pocket" balance

Full 0 to 10 Gram Range,
Deering Scale vs. Mettler Balance



Deering Weighing Results for Sixteen "Standard Masses"

Object	10 mg Ohaus Calibr. Mass	20 mg Ohaus Calibr. Mass	50 mg Ohaus Calibr. Mass	100 mg Ohaus Calibr. Mass	200 mg Ohaus Calibr. Mass	500 mg Ohaus Calibr. Mass	1,000 mg Ohaus Calibr. Mass	1,000 & 500 mg Ohaus Masses	Dime (U.S. Mint, 1992 D)	Penny (U.S. Mint, 1990 D)	Dime & 1,000 mg Ohaus Mass	Dime, 500 & 1,000 mg Ohaus Masses	Nickel (U.S. Mint, 1999 D)	Quarter (U.S. Mint, 1995 D)	Quarter & Dime	Penny, Nickel & Dime
Weighing 1, g	0.01	0.02	0.05	0.10	0.20	0.52	1.00	1.49	2.32	2.52	3.23	3.85	4.98	5.66	8.00	9.69
Weighing 2, g	0.02	0.04	0.05	0.11	0.21	0.55	1.00	1.53	2.26	2.51	3.25	3.81	4.98	5.59	7.99	9.65
Weighing 3, g	0.01	0.03	0.06	0.10	0.20	0.52	1.00	1.50	2.26	2.56	3.24	3.81	4.98	5.62	8.00	9.81
Statistics																
Mean of 3, g	0.0133	0.0300	0.0533	0.1033	0.2033	0.5300	1.0000	1.5067	2.2800	2.5300	3.2400	3.8233	4.9800	5.6233	7.9967	9.7167
Standard Deviation	0.006	0.010	0.006	0.006	0.006	0.017	0.000	0.021	0.035	0.026	0.010	0.023	0.000	0.035	0.006	0.083
Coefficient of Variation (CV)	43.301%	33.333%	10.825%	5.587%	2.839%	3.268%	0.000%	1.382%	1.519%	1.046%	0.309%	0.604%	0.000%	0.625%	0.072%	0.857%

Note: The 0 to 1 gram beam is divided into 0.1 gram markings, which are subdivided into 0.01 gram markings (1/10 of 0.1 gram). An analyst can NOT easily discern the poise arrow at the "halfway" point between these "1/10 of 0.1 gram" markings. Hence, the analyst can report readings of "1/10 of 0.1 gram" = 0.01 gram.

Regarding a 1 gram mass: BOTH beams of the Deering scale CAN take an accurate weight on a 1 gram mass.

Conclusions: The Deering Scale is highly accurate and shows excellent linearity across its entire range. Practically, it has the following accuracy limits:

Deering vs. Mettler AE 100 Summary of Weight Data,																
Object	10 mg Ohaus Calibr. Mass	20 mg Ohaus Calibr. Mass	50 mg Ohaus Calibr. Mass	100 mg Ohaus Calibr. Mass	200 mg Ohaus Calibr. Mass	500 mg Ohaus Calibr. Mass	1,000 mg Ohaus Calibr. Mass	1,000 & 500 mg Ohaus Masses	Dime (U.S. Mint, 1992 D)	Penny (U.S. Mint, 1990 D)	Dime & 1,000 mg Ohaus Mass	Dime, 500 & 1,000 mg Ohaus Masses	Nickel (U.S. Mint, 1999 D)	Quarter (U.S. Mint, 1995 D)	Quarter & Dime	Penny, Nickel & Dime
Mean Deering Weight (Y)	0.0133	0.0300	0.0533	0.1033	0.2033	0.5300	1.0000	1.5067	2.2800	2.5300	3.2400	3.8233	4.9800	5.6233	7.9967	9.7167
Mean Mettler Weight (X)	0.0099	0.0200	0.0502	0.1003	0.2000	0.4998	1.0035	1.5033	2.2634	2.5086	3.2670	3.7667	4.9947	5.7064	7.9698	9.7668
Difference from Mettler Weight (g)	0.0034	0.0100	0.0031	0.0030	0.0033	0.0302	-0.0035	0.0034	0.0166	0.0214	-0.0270	0.0566	-0.0147	-0.0831	0.0269	-0.0501
Percent of Mettler Weight	134.343%	150.000%	106.175%	102.991%	101.650%	106.042%	99.651%	100.226%	100.733%	100.853%	99.174%	101.503%	99.706%	98.544%	100.338%	99.487%

Mass Range	Accuracy
≤ 1.00 gram	± 0.01 gram
> 1.00 gram	± 1.5%

Notes:
 1. All three charts show almost perfect linearity, where the theoretical linear equation is:
 $y = 1.0000x + 0.0000$
 2. All three charts show excellent correlation coefficients (R^2 values), where a perfect value = 1.
 David W. Davenport, 07-FEB-2000, Version 1.0