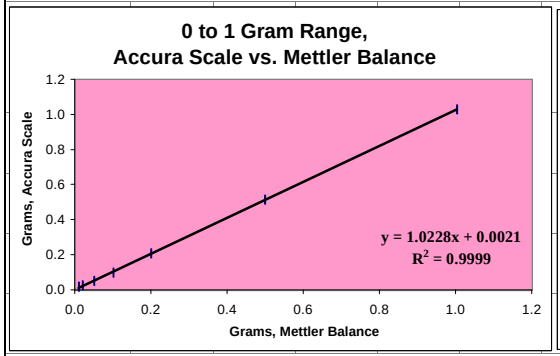
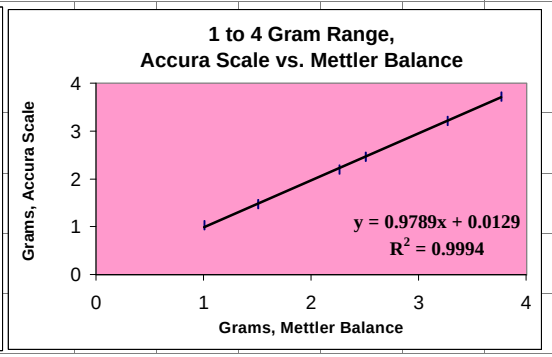
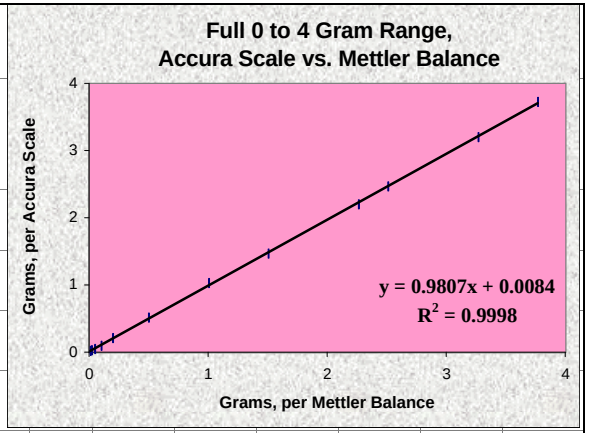
Accura Twin Beam Gram/Carat Scale 0 to 4 Grams (0 to 20 Carats)
A mechanical "pocket" balance







Accura Weighing Results for Twelve "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
Weighing 1, g	0.0125	0.0250	0.0500	0.1000	0.2000	0.5125	1.0250	1.4750	2.2000	2.4625	3.2000	3.7250
Weighing 2, g	0.0125	0.0250	0.0500	0.1000	0.2000	0.5250	1.0250	1.4500	2.2000	2.4750	3.2000	3.7250
Weighing 3, g	0.0250	0.0250	0.0500	0.1000	0.2250	0.5000	1.0375	1.4750	2.2000	2.4500	3.2125	3.7250
Statistics												
Mean of 3, g	**0.0167**	**0.0250**	**0.0500**	**0.1000**	**0.2083**	**0.5125**	**1.0292**	**1.4667**	**2.2000**	**2.4625**	**3.2042**	**3.7250**
Standard Deviation	0.007	0.000	0.000	0.000	0.014	0.012	0.007	0.014	0.000	0.012	0.007	0.000
Coefficient of Variation (CV)	43.301%	0.000%	0.000%	0.000%	6.928%	2.439%	0.701%	0.984%	0.000%	0.508%	0.225%	0.000%

Accura 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
Mean **Accura** Weight (Y)	**0.0167**	**0.0250**	**0.0500**	**0.1000**	**0.2083**	**0.5125**	**1.0292**	**1.4667**	**2.2000**	**2.4625**	**3.2042**	**3.7250**
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**
Difference from Mettler Weight (g)	0.0068	0.0050	-0.0002	-0.0003	0.0083	0.0127	0.0257	-0.0366	-0.0634	-0.0461	-0.0628	-0.0417
Percent of Mettler Weight	168.687%	125.000%	99.602%	99.701%	104.150%	102.541%	102.561%	97.565%	97.199%	98.162%	98.078%	98.893%

Note: The 0 to 1 gram beam is divided into 0.1 gram markings, which are subdivided into 0.025 gram markings (1/4 of 0.1 gram). An analyst can easily discern the poise arrow at the "halfway" point between these "1/4 of 0.1 gram" markings. Hence, the analyst can report readings of "1/8 of 0.1 gram" = 0 0.0125 gram. (Hence, increments of: 0.0125, 0.0250, 0.0375, 0.0500, 0.0625, 0.0750, 0.0875, and 0.1000)

Regarding a 1 gram mass: Accura scale can NOT weigh a 1 gram mass at its "1 gram" poise-peg position on the BACK beam—beam falls too low. Front beam works well on 1 g mass.

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

Mass Range	Accuracy
≤ 1.00 gram	± 0.025 gram
>1.00 gram	± 2.8%

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