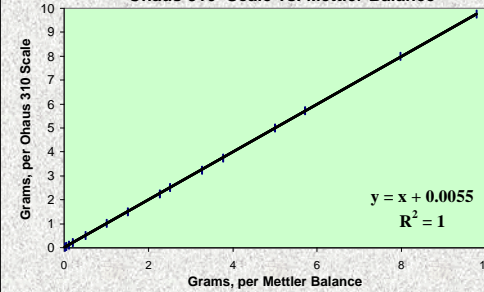
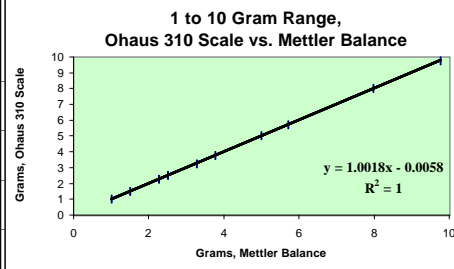
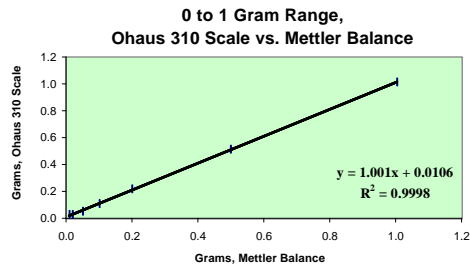


Ohaus Dial-O-Gram 310 Model Mechanical Scale
 0 to 310 Grams
 (Tested ONLY 0 to 10 grams by dial & vernier). A laboratory-quality "hanging pan" balance

**Full 0 to 10 Gram Range,
 Ohaus 310 Scale vs. Mettler Balance**

"Vernier": a device that makes possible the finer setting of a measuring instrument (named for its inventor, Pierre Vernier). On the Ohaus 310 Model, the vernier makes possible the "hundredths of a gram" setting. A dial and vernier completely replace two beams found on its sister model, the Ohaus 311 Model (the 0 to 1 gram beam, and the 0 to 10 gram beam).

Vernier sometimes seems to indicate TWO values at its two extremes—such as "0.02" AND "0.09" grams. To decide which is correct, refer back to the pointer on the main dial. Is it approximately 2/10 or 9/10 past the last tenth-of-a-gram mark?



Ohaus Dial-O-Gram 310 Model 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	0.03	0.03	0.06	0.11	0.22	0.51	1.01	1.50	2.26	2.52	3.23	3.75	5.01	5.71	8.00	9.77
Weighing 2, g	0.02	0.03	0.05	0.11	0.22	0.52	1.01	1.50	2.25	2.50	3.25	3.75	5.00	5.72	8.00	9.77
Weighing 3, g	0.03	0.02	0.05	0.11	0.21	0.51	1.02	1.51	2.26	2.52	3.25	3.76	5.01	5.71	8.00	9.76
Statistics																
Mean of 3, g	0.0267	0.0267	0.0533	0.1100	0.2167	0.5133	1.0133	1.5033	2.2567	2.5133	3.2433	3.7533	5.0067	5.7133	8.0000	9.7667
Standard Deviation	0.006	0.006	0.006	0.000	0.006	0.006	0.006	0.006	0.006	0.012	0.012	0.006	0.006	0.006	0.000	0.006
Coefficient of Variation (CV)	21.651%	21.651%	10.825%	0.000%	2.665%	1.125%	0.570%	0.384%	0.256%	0.459%	0.356%	0.154%	0.115%	0.101%	0.000%	0.059%

Note: The 0 to 10 gram dial is divided into 1 gram markings, which are subdivided into 0.1 gram markings, which are subdivided by a vernier into 0.01 gram markings (1/100 of a gram). The final reading at the "0.01 gram" level can be difficult to discern, since the vernier scale may appear to indicate TWO "neighboring" values (such as **both** "0.07 and 0.08"). Since the dial's accuracy is ± 0.03 g, this is not a significant matter . . . use either number.

Conclusions: The Ohaus Dial-O-Gram 310 Model 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	± 0.017 gram
>1.00 gram	$\pm 0.7\%$

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, 13-FEB-2000, Version 1.0

Ohaus 310 Model 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 Ohaus 310 Weight (Y)	0.0267	0.0267	0.0533	0.1100	0.2167	0.5133	1.0133	1.5033	2.2567	2.5133	3.2433	3.7533	5.0067	5.7133	8.0000	9.7667
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)	0.0168	0.0067	0.0031	0.0097	0.0167	0.0135	0.0098	0.0000	-0.0067	0.0047	-0.0237	-0.0134	0.0120	0.0069	0.0302	-0.0001
Percent of Mettler Weight	269.697%	133.500%	106.175%	109.671%	108.350%	102.701%	100.977%	100.000%	99.704%	100.187%	99.275%	99.644%	100.240%	100.121%	100.379%	99.999%