

ALBERTA WEIGHTLIFTING ASSOCIATION

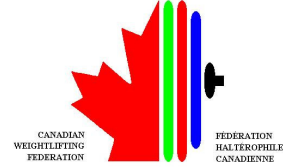
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The Sinclair Coefficients for the Olympiad

January 1, 2009 to December 31, 2012

For Men's and Women's Olympic Weightlifting



The Sinclair coefficients, derived statistically, are adjusted each Olympic year and are based on the World Record Totals in the various bodyweight classes as of the previous several years.

The Answer to the question "What would be the total of an athlete weighing x kg if he/she were an athlete in the heaviest class of the same level of ability?" is given by the formula:

$$\text{ACTUAL TOTAL} \times \text{SINCLAIR COEFFICIENT} = \text{SINCLAIR TOTAL}$$

The Sinclair coefficient (abbreviated to S.C.) is given by:

$$\text{S.C.} = \begin{cases} 10^{AX^2} & (x \leq b) \\ 1 & (x > b) \end{cases}$$

where $X = \log_{10}\left(\frac{x}{b}\right)$

$x =$ athlete bodyweight (kg)

	Men	Women
A	0.784780654	1.056683941
b	173.961 kg	125.441 kg

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Comments



- I. The formulas given above are suitable for either a calculator or a computer. In words, they state that the Sinclair Coefficient is:
- If his/her bodyweight of x kg is less than or equal to b kg then the Sinclair Coefficient is equal to 10 raised to the exponent A times X squared, where X equals the logarithm to the base 10 of the ratio of x to b .
 - If his/her bodyweight of x kg exceeds b kg then the Sinclair Coefficient is equal to 1 .

As an example, suppose a male athlete weighing 61.9 kg has a total of 320 kg. For him:

$$A = 0.784780654$$

$$X = \log_{10}(61.9/173.961) = -0.448761246$$

$$AX^2 = 0.158044352$$

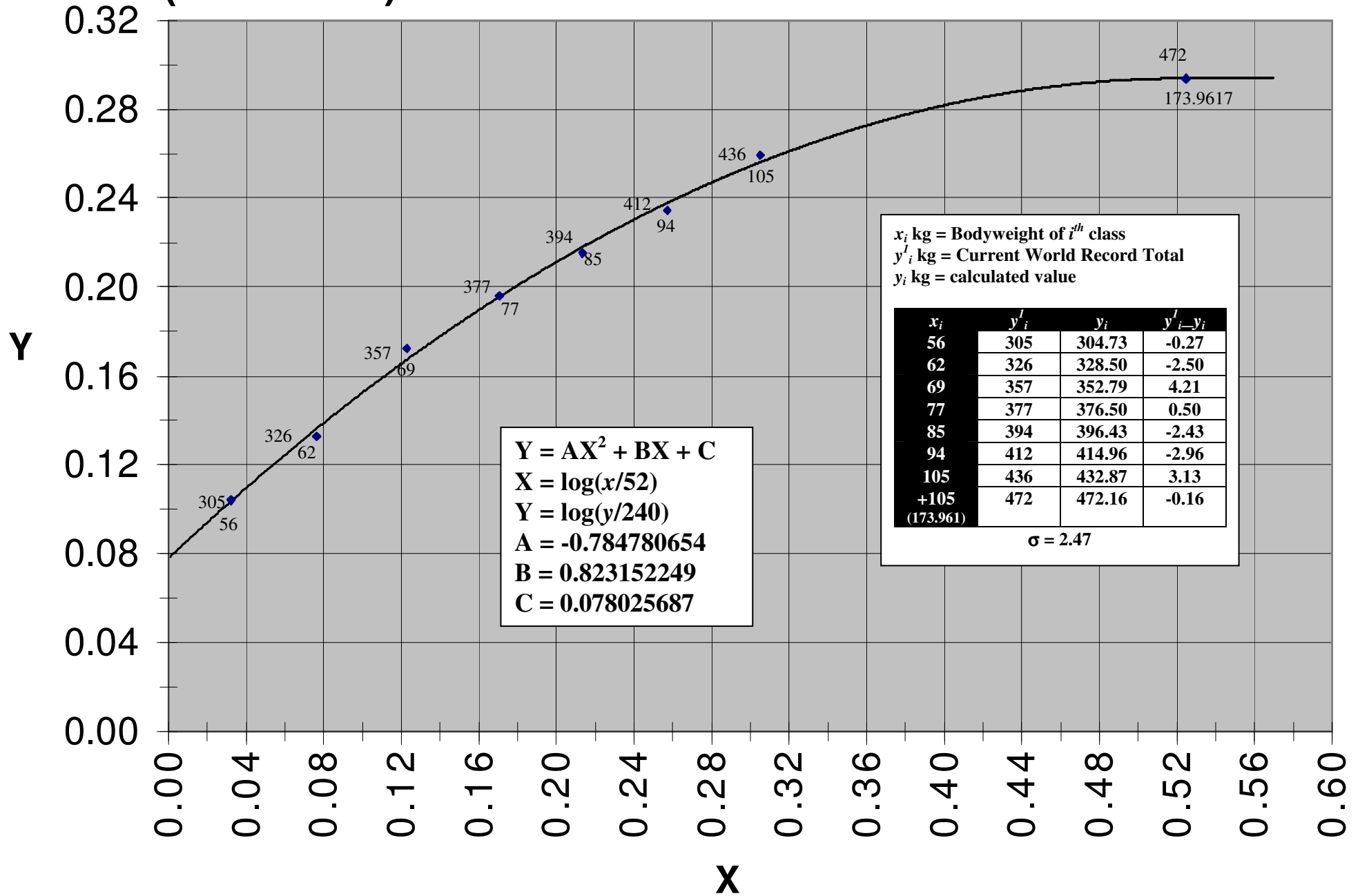
$$S.C. = 10^{AX^2} = 10^{0.157331991} = 1.438945522$$

$$\text{Sinclair Total} = \text{Actual Total} \times S.C.$$

$$\text{Sinclair Total} = 320 \text{ kg} \times 1.438945522 = 460.463 \text{ kg}$$

- II. In addition to the above, two tables are given, one for men and one for women. In each table, the athlete's bodyweight, x kg, appears in the first column and the Sinclair coefficient in the second. As noted above, the Sinclair Coefficients are derived statistically and are based on the World Record Totals of athletes in the prime of life, that is, mainly in their twenties, early thirties or late teens. This implies that the athlete's bodyweight, x kg, should not be too far below the upper limit for the lightest bodyweight class. Nevertheless, as a guideline for very young athletes who often are very light, the analytic curve 10^{AX^2} is extended to $x = 32.0$ for males and $x = 28.0$ for females.
- III. Two graphs are appended, one for Men and one for Women. The branch of mathematics called Dimensional Analysis leads one to plotting, not the World Record Total y kg against the bodyweight class, x kg, but rather $Y = \log(y/240)$ against $X = \log(x/52)$ for men and $Y = \log(y/140)$ against $X = \log(x/44)$ for women. The "best-fit" parabola is then obtained statistically.

Men (2009-2012)



Women (2009-2012)

