# DSID-4 Example Calculation for Applying Regression Information in the Statistical Results Table

**Contents**



## Introduction and Definition of Terms

The parameter values in Table 1 can be used to apply the regression results for DSID-3 to labeled levels for ingredients in MVM and omega-3 fatty acid supplement products. Calculations for the following list of terms are defined below:

PM% = Predicted Mean Percent Difference from Label
PM = Predicted Mean Amount per Serving

SEM% = Standard Error (SE) of the Predicted Percent Difference from Label (Mean)
SEM = SE for Predicted Mean

SEO% = SE of the Predicted Percent Difference from Label (Individual Observation)
SEO = SE for Predicted Observation

## Important Notes

When performing these calculations, the parameter values must not be rounded. Rounding parameter values will produce inaccurate results.
The Excel spreadsheet for Table 1 may not display all of the digits for a parameter value.
Please click on the individual cell to get the complete value, and do not rely on the cell as displayed.
E represents "times ten raised to the power of." Therefore, -2.26323E-05 is equivalent to $-2.26323 \times 10^{-5}$
DSID reports results to 3 significant digits for PM and PM%, and to 2 significant digits for SEM and SEO.

## Example Calculations

These example calculations are for a children's (age 4 and up group) multivitamin/mineral supplement with a labeled level of **30 mcg** of **iodine**.
Each parameter is assigned a column letter in this document, so as to make the example calculations easier to read.

### 1. Calculating Predicted Mean Value

| A | B | C |
|---|---|---|
| **Prediction of the Mean Intercept** | **Prediction of the Mean Linear** | **Prediction of the Mean Quadratic** |
| 86.63869248 | -1.806314473 | 0.009299788 |

Predicted Percent Difference from Label (PM%)
PM% = (Column A) + [(Column B) * (Label Amount)] + [(Column C) * (Label Amount$^2$)]
PM% = (86.638692482013) + [(-1.80631447346639) * (30)] + [(0.00929978820645634) * (30$^2$)] = 40.819067663832

Predicted Mean Amount per Serving (PM)
PM = (Label Amount) * [1 + (PM% / 100)]
PM = (30) * [1 + (40.819067663832/100)] = 42.2457202991496

### 2. Calculating Standard Error of the Predicted Mean

| D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|
| **SE of the Predicted Mean Intercept** | **SE of the Predicted Mean Linear** | **SE of the Predicted Mean Quadratic** | **SE of the Predicted Mean Cubic** | **SE of the Predicted Mean Quartic** | **SE of the Predicted Mean Quintic** | **SE of the Predicted Mean Sextic** | **SE of the Predicted Mean Septic** | **SE of the Predicted Mean Octic** |
| 17.77804514 | 0.29044245 | -0.049325526 | 0.00154952 | -2.1744E-05 | 1.53E-07 | -4.68E-10 | 0 | 2.23E-15 |

SE of the Predicted Percent Difference from Label for Mean (SEM)

SEM% = (Column D) + [(Column E) * (Label Amount)] + [(Column F) * (Label Amount$^2$)] + [(Column G) * (Label Amount$^3$)]
+ [(Column H) * (Label Amount$^4$)] + [(Column I) * (Label Amount$^5$)] + [(Column J) * (Label Amount$^6$)]
+ [(Column K) * (Label Amount$^7$)] + [(Column L) * (Label Amount$^8$)]
SEM% = (17.7780451447202) + [(0.290442449580882) * (30)] + [(-0.0493255260170493) * (30$^2$)] + [(0.00154951656276245) *(30$^3$)]
+ [(-0.0000217441239371518) * (30$^4$)] + [(1.52656478992153E-07) + (30$^5$)] + [(-4.6814831782059E-10) * (30$^6$)] + [0 * (30$^7$)]
+ [(2.23461526026106E-15) * (30$^8$)] =9.69229046918585

SE for Mean (SEM)
SEM = (Label Amount) * [(SEM%) / 100]
SEM = (30) * [(9.69229046918585) / 100] = 2.90768714075575

### 3. Calculating Standard Error of the Predicted Observation

| M | N | O | P | Q | R |
|---|---|---|---|---|---|
| **SE of the Predicted Observation Intercept** | **SE of the Predicted Observation Linear** | **SE of the Predicted Observation Quadratic** | **SE of the Predicted Observation Cubic** | **SE of the Predicted Observation Quartic** | **SE of the Predicted Observation Quintic** |
| 37.7663905 | -0.4876034 | 0.009368685 | -7.196E-05 | 1.90E-07 | 0 |

SE of the Predicted Percent Difference from Label for Individual Observation (SEO%)
SEO% = (Column M) + [(Column N) * (Label Amount)] + [(Column O) * (Label Amount$^2$)] + [(Column P) * (Label Amount$^3$)]
+ [(Column Q) * (Label Amount$^4$)] + [(Column R) * (Label Amount$^5$)]
SEO% = (37.7663905043796) + [(-0.487603358893001) * (30)] + [(0.00936868508222579) * (30$^2$)]
+ [(-0.0000719608413513465) * (30$^3$)] + [(1.89684186803514E-07) * (30$^4$)] = 29.7808077864173

SE for Predicted Observation (SEO)
SEO = (Label Amount) * [(SEO%) / 100]
SEO = (30) * [29.7808077864173 / 100] = 8.93424233592519