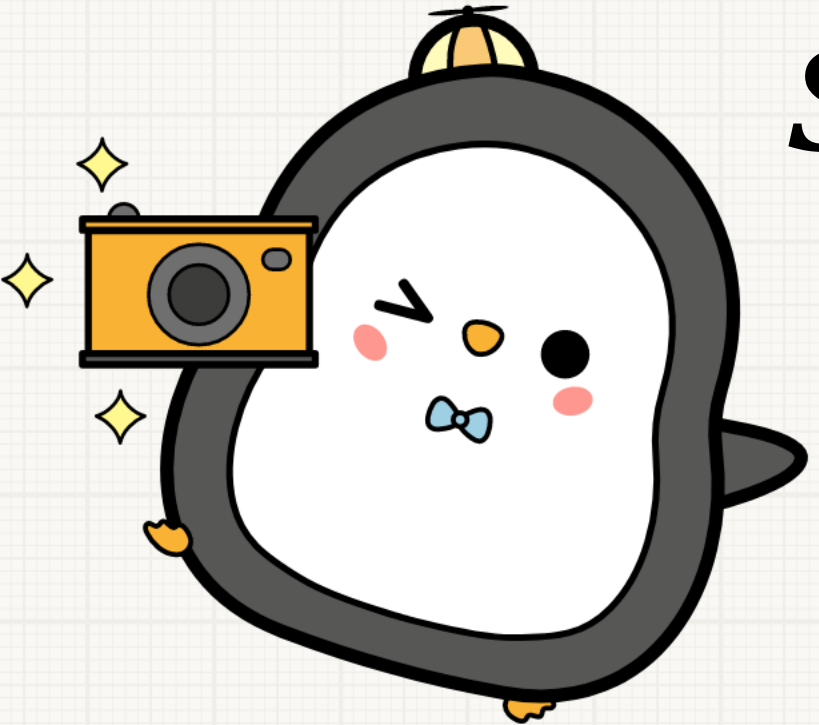
AP Bio Math Mondays

Statistical Analysis: Standard Deviation

NOTES

Standard Deviation



$$s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n - 1}}$$

Math Monday #1

SD

Treatment of tomato plants with a growth hormone yielded the following weights of tomatoes: 104 g, 82 g, 121 g, 96 g, 108 g, 73 g. What is the standard deviation of the tomato masses after treatment?

$n = 6$

Standard Deviation

$$s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$$

$$s = \sqrt{\frac{\sum(x_i - 97.3)^2}{6-1}}$$

Math Monday #1

$$s = \sqrt{\frac{\sum(x_i - 97.3)^2}{6-1}}$$

SD

Treatment of tomato plants with a growth hormone yielded the following weights of tomatoes: 104 g, 82 g, 121 g, 96 g, 108 g, 73 g. What is the standard deviation of the tomato masses after treatment?

$$n = 6$$

$$s = \sqrt{\frac{(104-97.3)^2+(82-97.3)^2+(121-97.3)^2+(96-97.3)^2+(108-97.3)^2+(73-97.3)^2}{5}}$$

$$s = \sqrt{\frac{(6.7)^2+(-15.3)^2+(23.7)^2+(-1.3)^2+(10.7)^2+(-24.3)^2}{5}}$$

$$s = \sqrt{\frac{44.89 + 234.09 + 561.69 + 1.69 + 114.49 + 590.49}{5}}$$

$$s = \sqrt{\frac{1547.34}{5}} \qquad s = \sqrt{309.468} \qquad s = 17.59$$

TI Tricks

Standard Deviation

Button: “STAT”

Select Edit → 1:Edit

Button: “ENTER”

Under L1, enter the values

Quit back to main screen by: Button “2nd” then “MODE”

Button: “STAT”

Select Calc → 1: 1-Var Stats

Button: “ENTER”

Button: “ENTER”

The standard deviation is the Sx

Example Problem

SD

Initial mass of pumpkin cores was measured in grams. What is the standard deviation of the initial mass for the pumpkin cores? Round to the nearest hundredth.

29.15, 28.45, 30.92, 29.25, 32.09, 31.67

Standard Deviation

$$s = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$$

Example Problem

$n = 6$ $s = \sqrt{\frac{\sum(x_i - 30.26)^2}{6-1}}$ **SD**

Initial mass of pumpkin cores was measured in grams. What is the standard deviation of the initial mass for the pumpkin cores? Round to the nearest hundredth.

29.15, 28.45, 30.92, 29.25, 32.09, 31.67

$$s = \sqrt{\frac{(29.15-30.26)^2+(28.45-30.26)^2+(30.92-30.26)^2+(29.25-30.26)^2+(32.09-30.26)^2+(31.67-30.26)^2}{5}}$$

$$s = \sqrt{\frac{(-1.11)^2+(-1.81)^2+(.66)^2+(-1.01)^2+(1.83)^2+(1.41)^2}{5}}$$

$$s = \sqrt{\frac{1.2321 + 3.2761 + 0.4356 + 1.0201 + 3.3489 + 1.9881}{5}}$$

$$s = \sqrt{\frac{11.3009}{5}} \qquad s = \sqrt{2.26018} \qquad s = 1.5034 = 1.50$$