$X \sim U[\alpha, \beta]$

$E[X] = \frac{1}{2}(\alpha + \beta)$ 1st moment MEAN

$E[X^2] = \frac{1}{3}(\alpha^2 + \alpha\beta + \beta^2)$ 2nd moment VARIANCE

Mean of sample:

$$\frac{2+3+5+9+10}{5} = 5.8 = E[X]$$

Variance of sample:

$$\frac{2^2 + 3^2 + 5^2 + 9^2 + 10^2}{5} = 43.8 = \text{var}(X)$$

$\frac{1}{2}(\alpha + \beta) = 5.8$

$\alpha = 11.6 - \beta$

$\frac{1}{3}(\alpha^2 + \alpha\beta + \beta^2) = 43.8$

$\frac{1}{3}\left[(11.6 - \beta)^2 + (11.6 - \beta)\beta + \beta^2\right] = 43.8$

$\beta^2 - 11.6\beta + 3.16 = 0$

$(\beta - 11.3209)(\beta - 0.279131)$ → used wolfram alpha

when $\beta = 11.3209$, $\alpha = 0.2791$

when $\beta = 0.279131$, $\alpha = 11.32$

$(11.6 - \beta)^2 + (11.6 - \beta)\beta + \beta^2 = 131.4$

$\beta^2 - 23.2\beta + 134.56 + 11.6\beta - \beta^2 + \beta^2 = 131.4$

$\beta^2 - 11.6\beta + 3.16 = 0$