Answer on question 36529 – Math – Probability and Statistics

One sample has a mean of M1 = 4 and a second sample has a mean of M2 = 8. The two samples are combined into a single set of scores.

What is the mean for the combined set if both of the original samples have n = 7 scores?

What is the mean for the combined set if the first sample has n = 3 and the second sample has n = 7?

What is the mean for the combined set if the first sample has n = 7 and the second sample has n = 3?

Solution

Let we have a samples $x_1, x_2, \dots, x_n$ and $y_1, y_2, \dots, y_m$ than the mean is $M1 = \frac{x_1 + x_2 + \dots + x\_n}{n}$ and $M2 = \frac{y_1 + y_2 + \dots + y_m}{m}$.

the mean for the combined set is

$$M = \frac{x_1 + \dots + x_n + y_1 + \dots + y_m}{m + n}.$$

If n=m=7 we get

$$M = \frac{x_1 + \dots + x_7 + y_1 + \dots + y_7}{14} = \frac{x_1 + x_2 + \dots + x_7}{14} + \frac{y_1 + y_2 + \dots + y_7}{14} = \frac{M1}{2} + \frac{M2}{2} = 2 + 4 = 6.$$

If n=3 and m=7, we get

$$M = \frac{x_1 + x_2 + x_3 + y_1 + \dots + y_7}{10} = \frac{3M1 + 7M2}{10} = \frac{12 + 56}{10} = 6.8.$$

If n=7 and n=3, we get

$$M = \frac{x_1 + \dots + x_7 + y_1 + \dots + y_3}{10} = \frac{7M1 + 3M2}{10} = \frac{28 + 24}{10} = 5.2.$$

Answer: 6; 6.8; 5.2.