

### Answer on Question #47363, Engineering, Other

One sample has  $n = 4$  scores and  $M = 10$ . A second sample has  $n = 6$  scores and  $M = 5$ . If the two samples are combined, then what is the mean for the combined sample?

#### Solution:

In our task we have the following data:  $\text{Mean}_1 = 10$ ,  $n_1 = 4$  scores,  $\text{Mean}_2 = 5$ ,  $n_2 = 6$  scores.

The mean (more precisely, the arithmetic mean) is commonly called the average. It is the sum of the data, divided by the number of data:

$$\text{Mean} = \frac{\text{sum of data}}{\text{number of data}} = \frac{\text{total}}{\text{number of data}} = \frac{1}{n} \sum_{k=1}^n x_k$$

We start to find sum of the first sample. From the formula noted above we can find total sum.

$$\text{Sum of data} = \text{Mean}_1 \cdot n_1 = 10 \cdot 4 = 40$$

Then we find the sum for the second sample of data. Substitute the given values.

$$\text{Sum of data} = \text{Mean}_2 \cdot n_2 = 5 \cdot 6 = 30$$

Now we can find the new score for combined data, which will be equal:

$$n = n_1 + n_2 = 4 + 6 = 10 \text{ scores}$$

Also we can find the new sum of combined data, which will be equal:

$$\text{Sum of data} = \text{Mean}_1 \cdot n_1 + \text{Mean}_2 \cdot n_2 = 40 + 30 = 70$$

Finally we can find the new Mean of the combined data. We substitute the values of sum data and total scores.

$$\text{Mean} = \frac{\text{Mean}_1 \cdot n_1 + \text{Mean}_2 \cdot n_2}{n_1 + n_2} = \frac{70}{10} = 7$$

$$\text{Mean} = 7$$

Accordingly we found the value of new Mean, which is equal to 7.