

## Single Statistics - Mixing Groups

Remember to use the five quantities and that you can combine  $n$ ,  $\sum x$  and  $\sum x^2$  only.

To find  $\sum x$  use  $\bar{x} = \frac{\sum x}{n} \Rightarrow \sum x = n\bar{x}$ .

To find  $\sum x^2$  use  $\sigma = \sqrt{\frac{\sum x^2}{n} - \bar{x}^2} \Rightarrow \sum x^2 = n(\sigma^2 + \bar{x}^2)$ .

1. There are seven boys in a room. Their average IQ is 95 and the variance of their IQs is 100. In walk Erika and Magdalena, each with an IQ of 140. Find the mean and variance of the IQs of the combined group.
2. The sport viewing habits of 10 boys and 15 girls are measured. The boys viewed an average of 8 hours per week, with a standard deviation of 2 hours. The girls viewed an average of 2 hours per week, with a standard deviation of 1 hour. Find the average viewing time and standard deviation for the combined group.
3. Five maths teachers have an average IQ of 140 and standard deviation 9. Eight economics teachers have an average IQ of 125 and standard deviation 20. Find the average IQ and standard deviation of the combined group. 130.8, 18.2
4. In a class there are 13 boys. Their average IQ is 130 and the standard deviation of their IQs is 10. There are also 15 girls in the class. Their average IQ is 145 and their standard deviation is 5. What is the mean and standard deviation of the class as a whole? 138.04, 10.76
5. The number of hours praying in a monastery and a nunnery were measured in a week. There were 21 monks and they spent an average of 13 hours praying with a sd of 3 hours. In the nunnery there were 15 nuns who spent an average of 16 hours praying with a sd of 4 hours. What are the mean and sd for the combined total of monks and nuns? 14.25, 3.756
6. In a field there are blue orchids and pink orchids. There are 25 blue orchids with an average height of 35cm and a sd of 2cm. There are 17 pink orchids. The sum of their heights ( $\sum x$ ) is 697cm and the sum of the squares of their heights ( $\sum x^2$ ) is 28730cm<sup>2</sup>. What is the average and standard deviation of all the orchids in the field? 37.43, 3.834