

Formulae for Mean and Standard Deviation – Edexcel Board

For a list of numbers	For frequency distributions
<p>Mean, $\bar{x} = \frac{\sum x}{n}$</p> <p>(Not given in the formula booklet)</p>	<p>Mean, $\bar{x} = \frac{\sum fx}{\sum f}$</p> <p>(Not given in the formula booklet)</p>
<p> $S_{xx} = \sum (x_i - \bar{x})^2$ $= \sum x_i^2 - \frac{(\sum x_i)^2}{n}$ $= \sum x_i^2 - n\bar{x}^2$ </p> <p> $\text{Variance, } \sigma^2 = \frac{\sum (x - \bar{x})^2}{n}$ $= \frac{\sum x^2}{n} - \bar{x}^2$ $= \frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2$ $= \frac{S_{xx}}{n}$ </p> <p>(Not given in the formula booklet)</p>	<p> $S_{xx} = \sum f x_i^2 - \frac{(\sum f x_i)^2}{n}$ $= \sum f x_i^2 - n\bar{x}^2$ </p> <p> $\text{Variance, } \sigma^2 = \frac{\sum f (x - \bar{x})^2}{\sum f}$ $= \frac{\sum f x^2}{\sum f} - \bar{x}^2$ $= \frac{\sum f x^2}{\sum f} - \left(\frac{\sum f x}{\sum f}\right)^2$ $= \frac{S_{xx}}{n}$ </p> <p>(Not given in the formula booklet)</p>
<p> $\text{Standard Deviation, } \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$ $= \sqrt{\frac{\sum x^2}{n} - \bar{x}^2}$ $= \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$ $= \sqrt{\frac{S_{xx}}{n}}$ </p> <p>(Given in the formula booklet)</p>	<p> $\text{Standard Deviation, } \sigma = \sqrt{\frac{\sum f (x - \bar{x})^2}{\sum f}}$ $= \sqrt{\frac{\sum f x^2}{\sum f} - \bar{x}^2}$ $= \sqrt{\frac{\sum f x^2}{\sum f} - \left(\frac{\sum f x}{\sum f}\right)^2}$ $= \sqrt{\frac{S_{xx}}{n}}$ </p> <p>(Not given in the formula booklet)</p>