Formulae for Mean and Standard Deviation – OCR Board

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