

Weighted averages: count every person

Why group sizes must multiply group rates before you compute a company-wide average

- Weighted Average Principle

Group A

2 students × 60 = 120



Group B

3 students × 80 = 240



Combined mean = (120 + 240) ÷ (2 + 3) = 72

Group size determines the weight

- 1 · Calculate group totals

- Group payroll = employees × salary per employee.
- 10 employees at ₹20,000 cost ₹2,00,000.
- 30 employees at ₹40,000 cost ₹12,00,000.

- 2 · Divide by total weight

- Weighted mean = $\Sigma(w \times \text{value}) / \Sigma w$.
- Total payroll ₹14,00,000 ÷ 40 employees = ₹35,000 average.
- A simple mean of the two salaries gives ₹30,000 and ignores different group sizes.

- 3 · Handle a subgroup change

- Raise 30 employees' salaries by ₹2,000: additional payroll = ₹60,000.
- Overall mean rises by ₹60,000/40 = ₹1,500.
- Only the changed group's contribution needs updating.

- 4 · Check the interpretation

- Weights may be people, quantities or frequencies.
- Keep each weight attached to its own value.
- The mean must lie between the smallest and largest values when weights are positive.

REMEMBER Add weighted totals, then divide by total weight; a group's size determines its influence.