

Lesson Three: Weighted Means

A weighted mean occurs when some of the scores used to calculate the mean are given more importance than others. To calculate the weighted mean we multiply each score by its weight. Then result is then divided by the total of all the weights.

$$\text{Weighted Mean} = \frac{\text{score} \times \text{weight} + \text{score} \times \text{weight} + \text{score} \times \text{weight} \dots}{\text{sum of weights}}$$

Example 1

Bronwyn took Essential Math 40S last semester. She scored 95% on his classwork and 65% on her provincial exam.

weight = 80

weight = 20

- a) Calculate her final grade if classwork is weighted at 80% and the final assessment is weighted at 20%.

$$\begin{aligned} \text{Final Grade} &= \frac{(\text{score} \times \text{weight}) + (\text{score} \times \text{weight})}{\text{TOTAL WEIGHT}} \\ &= \frac{(95 \times 80) + (65 \times 20)}{(80 + 20)} \Rightarrow \frac{(7600) + (1300)}{100} = \frac{8900}{100} \Rightarrow \underline{\underline{89\%}} \end{aligned}$$

- b) The average of 95% and 65% is 80%. Explain why Bronwyn's final grade is higher than 80%.

- Bronwyn's classwork is weighted at 80%; which means that the classwork worth more the provincial exam (20%)
 - so 95% of 80 = 76 → Her classroom work is 76% of her final

Example 2

Jimin had the following results during his recent social work course at Red River College:

Essays: 420 out of a possible 500 marks ^{weighted = 50%}

Presentation: 57 out of a possible 70 marks ^{weighted = 50%}

a) Calculate Jimin's final grades if the term mark and exam mark are equally weighted ^{50%}

$$\text{Final Score} = \frac{(\text{Essay score} \times \text{weight}) + (\text{Presentation score} \times \text{weight})}{\text{TOTAL weight}}$$

Essay score ⇒ $\frac{420}{500} \times 100 = \underline{\underline{84\%}}$

$$\text{Final Score} = \frac{(84 \times 50) + (81.43 \times 50)}{50 + 50} = \underline{\underline{82.72\%}}$$

⇒ Presentation score ⇒ $\frac{57}{70} \times 100 = \underline{\underline{81.43\%}}$

- b) Calculate Jim's final grade if the essays are weighted at 35% and the presentation is weighted at 65%.

$$\text{Final Grade} = \frac{(84 \times 35) + (81.43 \times 65)}{35 + 65} \Rightarrow \frac{2940 + 5295.95}{100}$$

$$= \frac{8232.95}{100}$$

$$\text{Final Grade} = \underline{\underline{82.33\%}}$$