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# Day 0: Weighted Mean

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Terms you'll find helpful in completing today's challenge are outlined below.

## Weighted Mean

Given a discrete set of numbers,  $\mathbf{X}$ , and a corresponding set of weights,  $\mathbf{W}$ , the *weighted mean* is calculated as follows:

$$m_w = \frac{\sum_{i=1}^n (x_i \times w_i)}{\sum_{i=1}^n w_i}, \text{ where } x_i \text{ and } w_i \text{ are the respective } i^{th} \text{ corresponding elements of } \mathbf{X} \text{ and } \mathbf{W}.$$

For example, if  $\mathbf{X} = \{1, 3, 5\}$  and  $\mathbf{W} = \{2, 4, 6\}$ , our weighted mean would be:

$$m_w = \frac{(1 \times 2) + (3 \times 4) + (5 \times 6)}{2 + 4 + 6} = \frac{2 + 12 + 30}{12} = 3.\overline{66}$$

If we wanted to round this to a scale of **1** decimal place, our result would be **3.7**.

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