

# The Weighted Mean

A Weighted Mean allows us to calculate the 'average' of a set of results where one result has more weight than another

This allows us to calculate an average (mean) which is more representative of the data.

For example; A final grade is calculated where 60% of the mark is coursework and the other 40% is a written exam

The formula for the weighted mean:

$$\frac{\sum(\text{value} \times \text{weight})}{\sum \text{weights}}$$

1. Sam wants to buy a new camera, and decides on the following rating system. He has narrowed it down to two, the Sonu and the Conan. The specifications for the two cameras are shown below.

Camera	Image Quality	Battery Life	Zoom Range
Sonu	8/10	6/10	7/10
Conan	9/10	4/10	6/10

a) The mean score for the Sonu Camera is 7/10. What is the mean score for the Conan Camera? \_\_\_\_\_/10

b) Sam knows that image quality is most important to him and Zoom range, not so much, so implements a weighting system shown below.

- Image Quality **50%**
- Battery Life **30%**
- Zoom Range **20%**

Using this weighting system, calculate the weighted mean for both cameras

Sonu: \_\_\_\_\_/10

Conan: \_\_\_\_\_/10

c) which camera should Sam buy? \_\_\_\_\_

2. Alex usually works 7 days a week, but sometimes just 1, 2, or 5 days.

Alex worked:

- > on 2 weeks: 1 day each week
- > on 14 weeks: 2 days each week
- > on 8 weeks: 5 days each week
- > on 32 weeks: 7 days each week

a) What is the total of the weights in this question? \_\_\_\_\_

b) What is the mean number of days Alex works per week? \_\_\_\_\_

## SOLUTIONS

1. Sam wants to buy a new camera, and decides on the following rating system. He has narrowed it down to two, the Sonu and the Conan. The specifications for the two cameras are shown below.

Camera	Image Quality	Battery Life	Zoom Range
Sonu	8/10	6/10	7/10
Conan	9/10	4/10	6/10

c) The mean score for the Sonu Camera is 7/10. What is the mean score for the Conan Camera?

6.33/10

d) Sam knows that image quality is most important to him and Zoom range, not so much, so implements a weighting system shown below.

- Image Quality **50%**
- Battery Life **30%**
- Zoom Range **20%**

Using this weighting system, calculate the weighted mean for both cameras

Sonu: 7.2/10

Conan: 6.9/10

c) which camera should Sam buy? Sonu

2. Alex usually works 7 days a week, but sometimes just 1, 2, or 5 days.

Alex worked:

- > on 2 weeks: 1 day each week
- > on 14 weeks: 2 days each week
- > on 8 weeks: 5 days each week
- > on 32 weeks: 7 days each week

a) What is the total of the weights in this question?

56

b) What is the mean number of days Alex works per week?

5.25