

Describe how to calculate the principal components of a data sample. You may use an illustrative example to clarify your explanation if you wish.

Explain carefully the circumstances under which the representation of data in terms of principal components is likely to be useful and effective. Again, use illustrative examples as you feel appropriate.

A sample of 12 people had the following heights and weights –

Person	Height (Centimetres)	Weight (Kilogrammes)
1	146	47
2	138	59
3	160	65
4	167	56
5	157	61
6	185	76
7	189	75
8	181	85
9	190	90
10	193	94
11	194	102
12	207	103

Calculate the principal components of the data.

State what fraction of the overall variance in the data is accounted for by the first principal component and whether a single index might be an adequate description of the data.