Math 231 — Hw 23
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Suppose you are analyzing student performances in a school. Below is your sample of students and their grades in Math and Science:

Student	**Math**	**Science**
A	85	90
B	78	82
C	92	88
D	88	94
E	70	75
Means	82.6	85.8

You'd like to compress your analysis to one input instead of two and decide to use PCA to achieve this.

1. Compute the variance of each feature.
2. Compute the covariance between math and science.
3. Construct the variance-covariance matrix.
4. Find the eigenvalues of the matrix. Do you think you should reduce the matrix to 2 dimensions?
5. Suppose you choose to reduce the dimension to 1. If you did, find the vector that represents your feature compression.
6. Write down the new scores for the students in this one dimensional space.