



## Question 1

Imagine that we apply  $X = \text{PCA}(n\_components=5).fit\_transform(data)$  and data has shape (5000, 53). What is the shape of X?

**Correct answers:**

- (5000, 5). Yes, it should be (n\_samples, n\_components).

**Incorrect answers:**

- (5, 53). No, we cannot transform 5000 samples into 5.
- (5, 5000). No, we cannot transform 5000 samples into 5.
- (53, 5). No, we cannot transform 5000 samples into 53.

## Question 2

To which data NMF is NOT applicable?

**Correct answers:**

- Standartized matrix. "Standartized" means that every feature column has zero mean and unit variance. This implies that we have negative values and cannot apply NMF.

**Incorrect answers:**

- Bag-of-words matrix. Since BoW matrix is non-negative matrix, we *can* apply NMF to it.
- One-Hot encoded feature. Since this matrix contains only 0's and 1's -- it is non-negative and we can apply NMF.