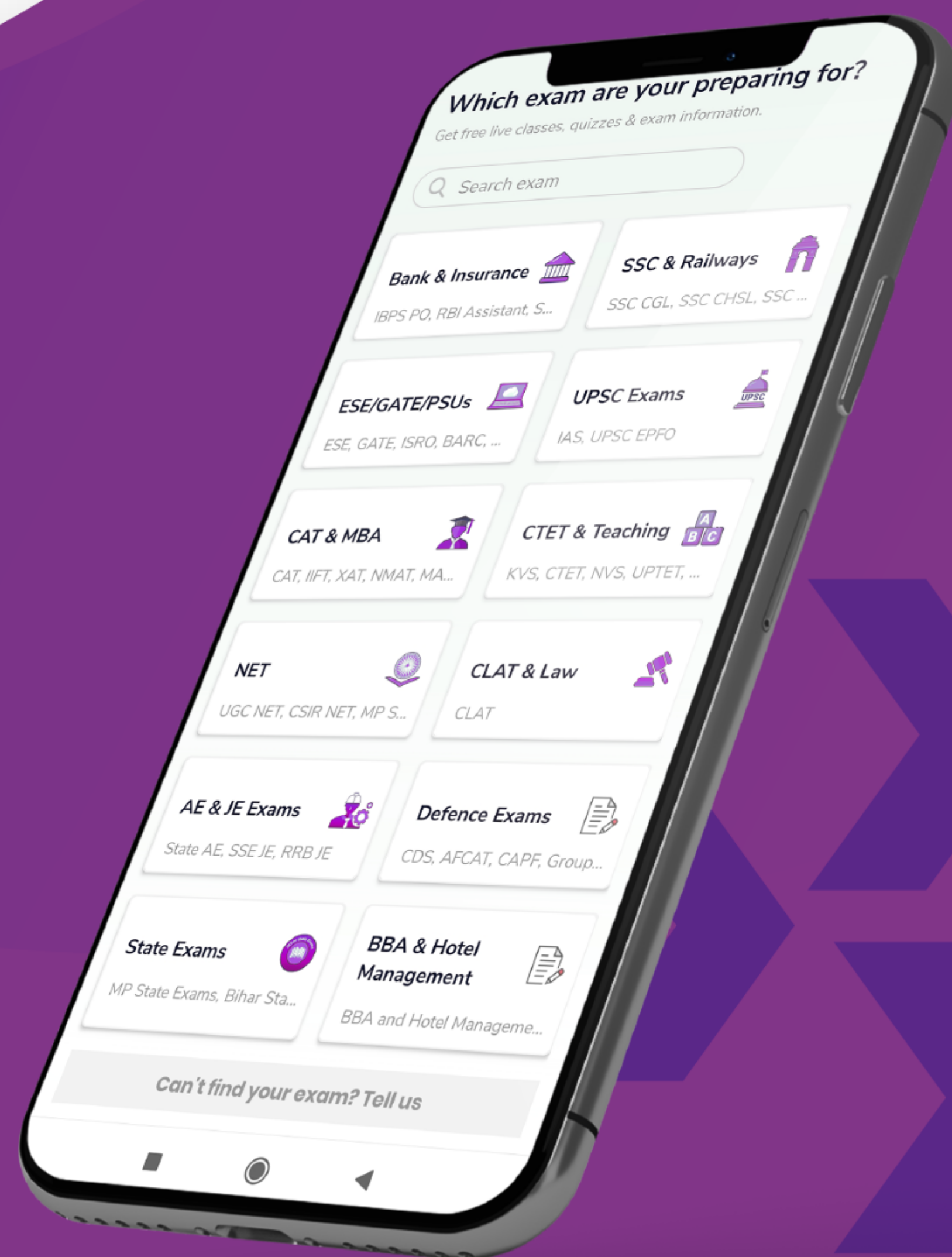# Formula Sheet On Statistics Notes

Measures Of Central Tendency

Measures of Central Tendency: Statistical measures mainly include **mean, Median, mode**. They are also known as Measures ofCentral Tendency.

1. **Mean:** The mean is synonymous with the average of group of numbers.It is basically the sum of all the data items divided by the number of data items.
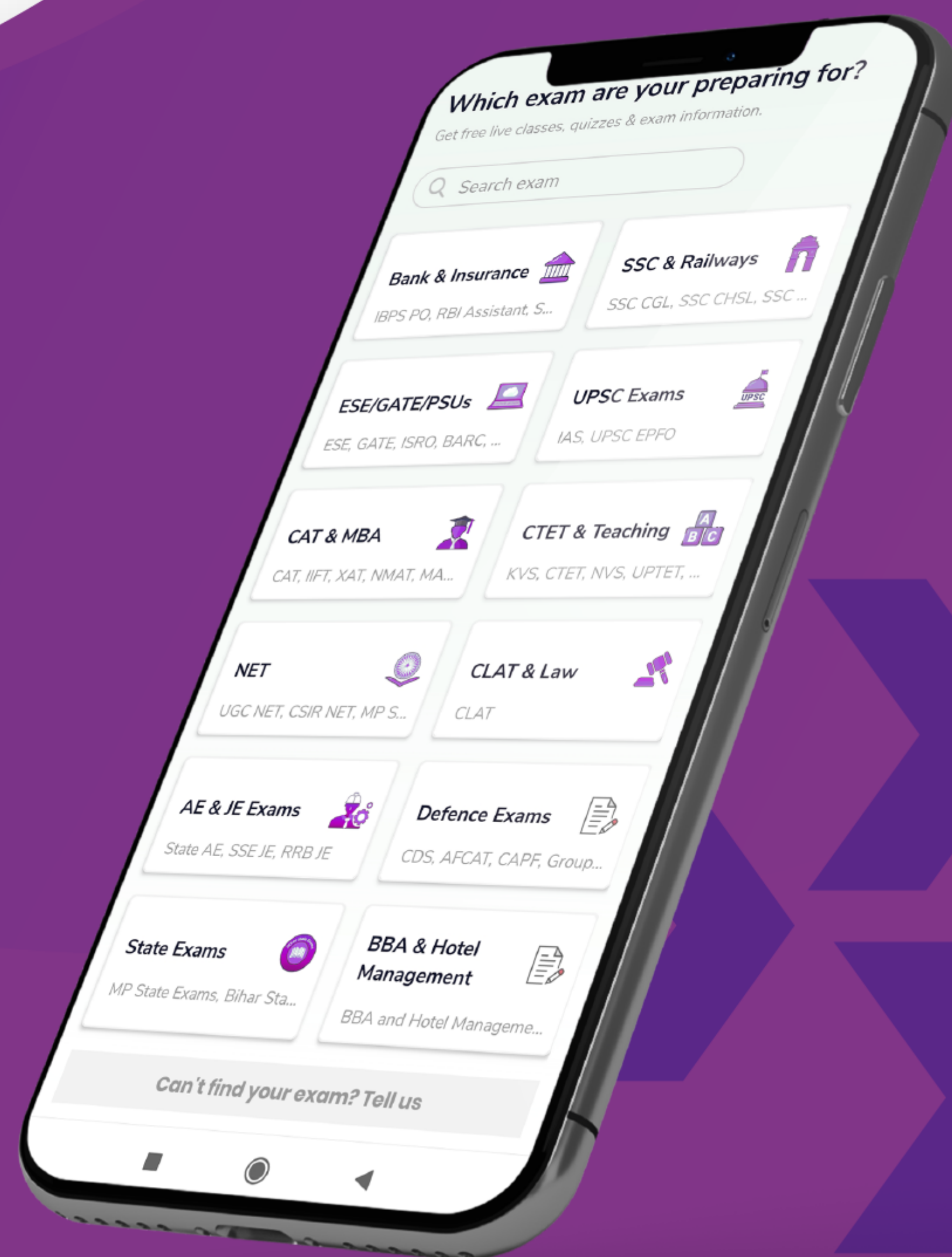
The population mean is represented by the Greek letter mu (μ).

$$\mu = \frac{\Sigma x}{N} = \frac{x_1 + x_2 + x_3 + x_4 + \ldots\ldots + x_N}{N}$$

The sample mean is represented by X.

$$\bar{X}\frac{\Sigma X}{n} = \frac{X_1 + X_2 + X_3 + X_4 + \ldots\ldots + x_n}{n}$$

Here, $\Sigma x = \sum_{i=1}^{N} x_i$; N = Number of samples

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2.   **Median:** The median is the middle value in a sample of data that is ordered from least to greatest.

If there is an odd number of terms in the sample, the middle number will be the median of the sample. If there is an even number of terms, the average of two middle numbers will be the median of the sample.

Steps to find Median-

STEP 1. Arrange the observations in increasing order.

STEP 2. If there is an odd number of terms, find the middle term of the ordered sample. It is the median.

STEP 3. If there is an even number of terms, find the average of the middle two terms. This average is the median.

3.   **Mode:** The **mode** is the number that occurs most often. In other words, most frequent number in a sample of data is called mode of the sample.

Measures of Variability: Measures of central tendency yield information about particular points of a data set. However, researchers can use another group of analytic tools to describe a set of data. These tools are measures or variability, which describe the spread or the dispersion of a set of data.
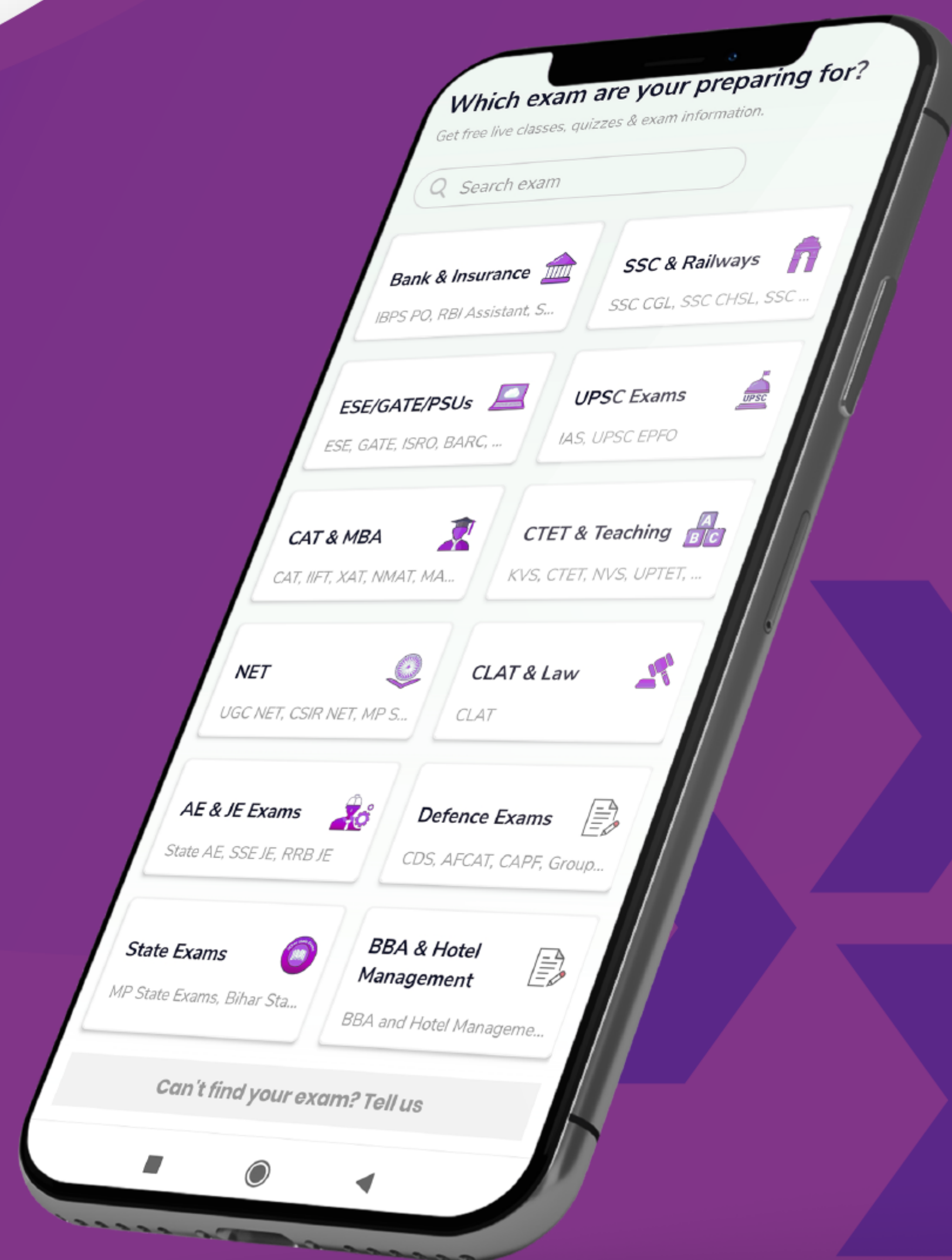
4. **Range:** The range is the difference between the largest value of a data set and the smallest value. Although, it is usually a single numeric value, some researchers define the range as the ordered pair of smallest and largest numbers (smallest, largest).

Range = Highest – Lowest

5. **Mean Absolute Deviation:** The mean absolute deviation (MAD) is the average of the absolute values of the deviations around the mean for a set of numbers.

$$MAD = \frac{\Sigma |X - \mu|}{N}$$

6. **Variance:** The variance is the average of the squared deviations about the arithmetic mean for a set of numbers. The population variance is denoted by σ^2.

$$\sigma^2 = \frac{\Sigma (X - \mu)^2}{N}$$

7. **Standard Deviation:** The standard deviation is the square root of the variance. The population standard deviation is denoted by σ.

$$\sigma = \sqrt{\frac{\Sigma (X - \mu)^2}{N}}$$

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