**Details of Learnings:**

**Statistical Learnings**

1. **Understanding Random Distribution**
   * The experiment showed how randomly generated one-digit numbers distribute over multiple trials.
   * It confirmed that even numbers appear with a probability of approximately 50% in a large enough sample.
2. **Law of Large Numbers**
   * With an increasing number of trials, the distribution of even numbers stabilized around the expected value (50 out of 100).
   * This demonstrated that randomness averages out over time.
3. **Central Limit Theorem (CLT)**
   * Initially, the distribution appeared binomial, but as trials increased, it started approximating a normal (Gaussian) distribution.
   * This validated the principle that sums (or averages) of random variables tend to follow a normal distribution when sample sizes are large.
4. **Effect of Increasing Trials**
   * Fewer trials showed high fluctuations in the even-number count.
   * Larger trials (e.g., 1000 trials) resulted in a smoother, more predictable distribution.

**Technical Learnings**

1. **Data Visualization Techniques**
   * The use of histograms and frequency curves helped interpret statistical trends.
   * Proper scaling and labeling were necessary for meaningful graph analysis.
2. **Random Number Generation Challenges**
   * Ensuring true randomness was critical for valid results.
   * Computational methods were used to simulate trials accurately.
3. **Statistical Interpretation & Analysis**
   * Understanding probability distributions required careful observation.
   * The study helped in identifying statistical patterns in real-world data.

**Practical Applications**

1. **Predictability in Random Events**
   * The findings can be applied in simulations, cryptography, and data science, where randomness and probability distributions are crucial.
2. **Systematic Experimentation & Data Handling**
   * Organizing data methodically in spreadsheets was essential for accurate calculations.
   * Recording data at each trial phase helped in detailed statistical comparisons.
3. **Team Collaboration & Contribution**

Each team member contributed to different sections, ensuring effective teamwork and division of responsibilities.

**Contribution of Each Team Member:**

**Acknowledgement and Abstract:** Shrinivas

**Introduction:** Ojal and Cyril

**Information Gathering and Analysis:** Keshav and Harshal

**Conclusion and Inferences:** Ryan

**References:** Harshal