



# Hypothesis Testing

## Normal Distribution

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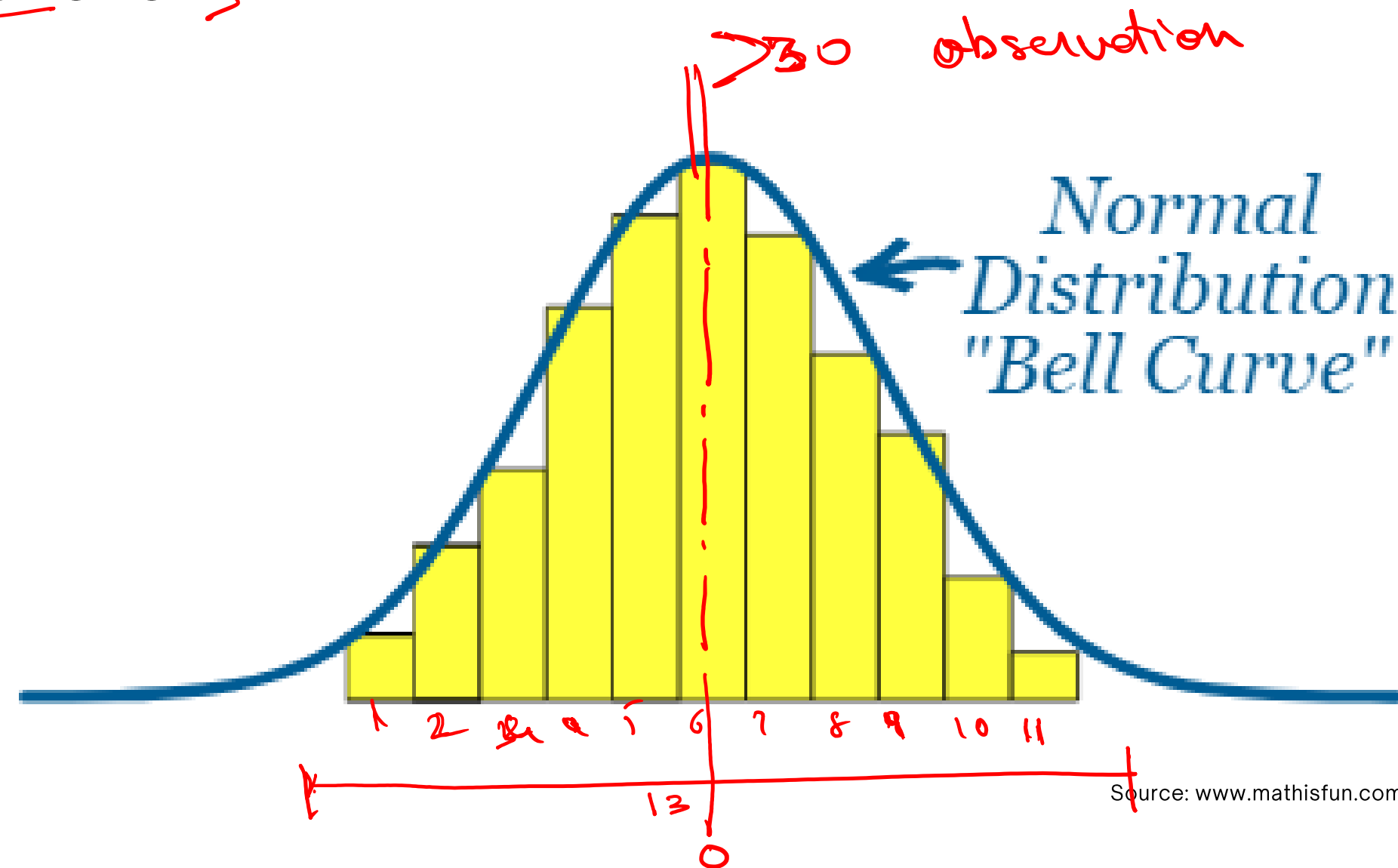
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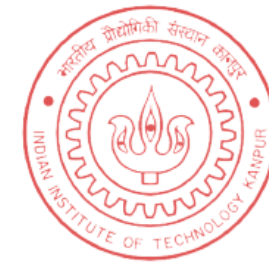
# Normal Distribution



- A symmetrical data distribution where most of the results lie near the mean
- The standard normal distribution has two parameters:
  - a) The mean  $\mu = 0$
  - b) The standard deviation  $\sigma = 1$

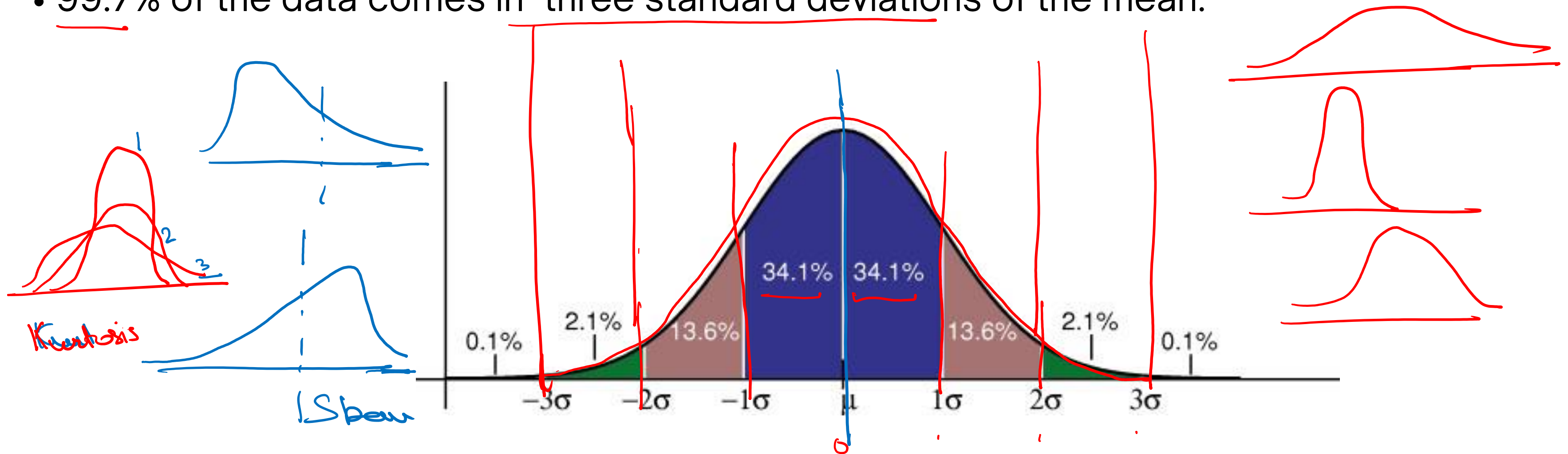


# Empirical Rule



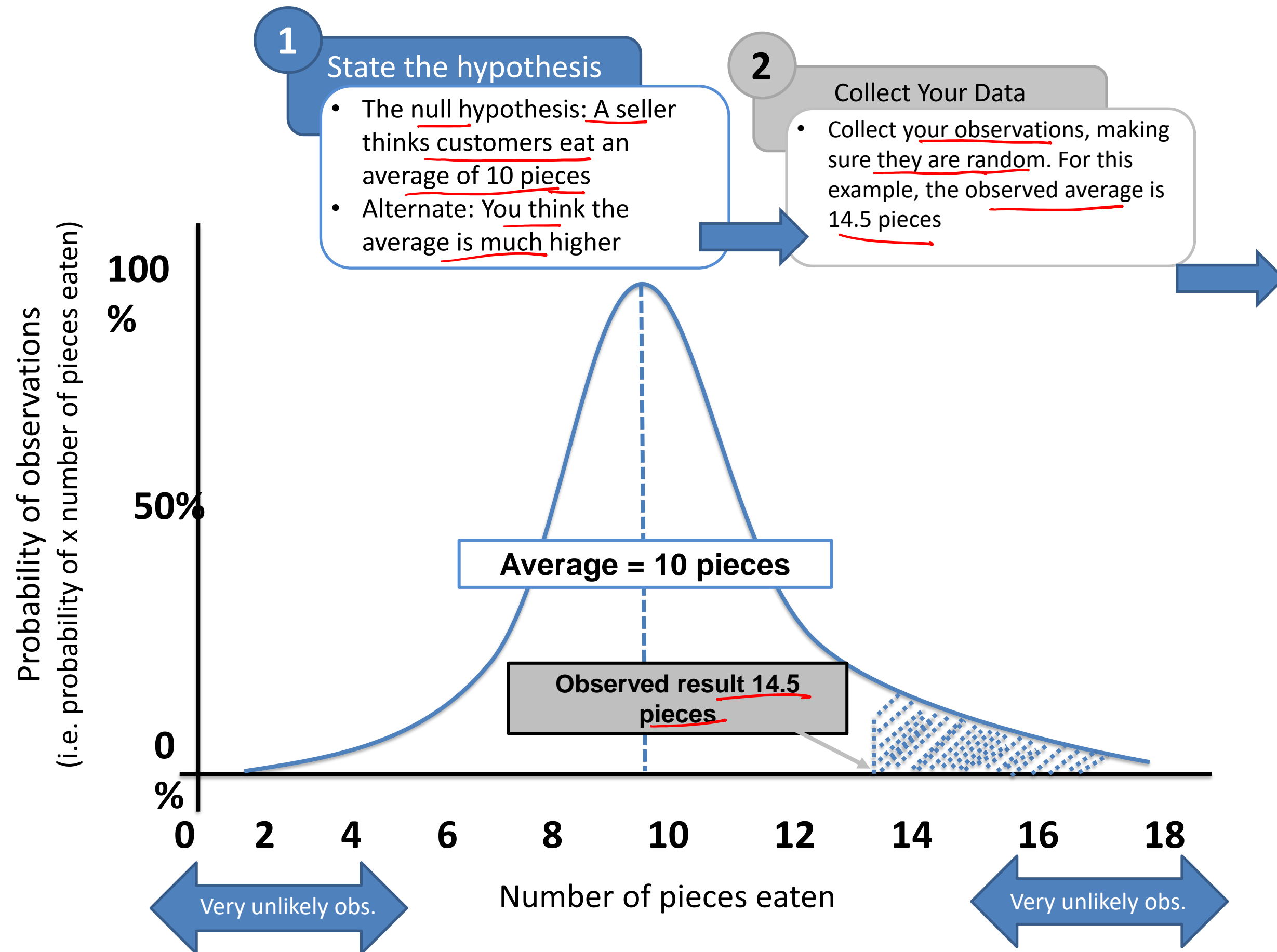
The empirical rule or the 68-95-99.7 rule is called the Empirical Rule because the rule originally came from observations (empirical means “based on observation”).

- 68% of the data comes in one standard deviation of the mean.
- 95% of the data comes in two standard deviations of the mean.
- 99.7% of the data comes in three standard deviations of the mean.



Source:

# Example



# Example



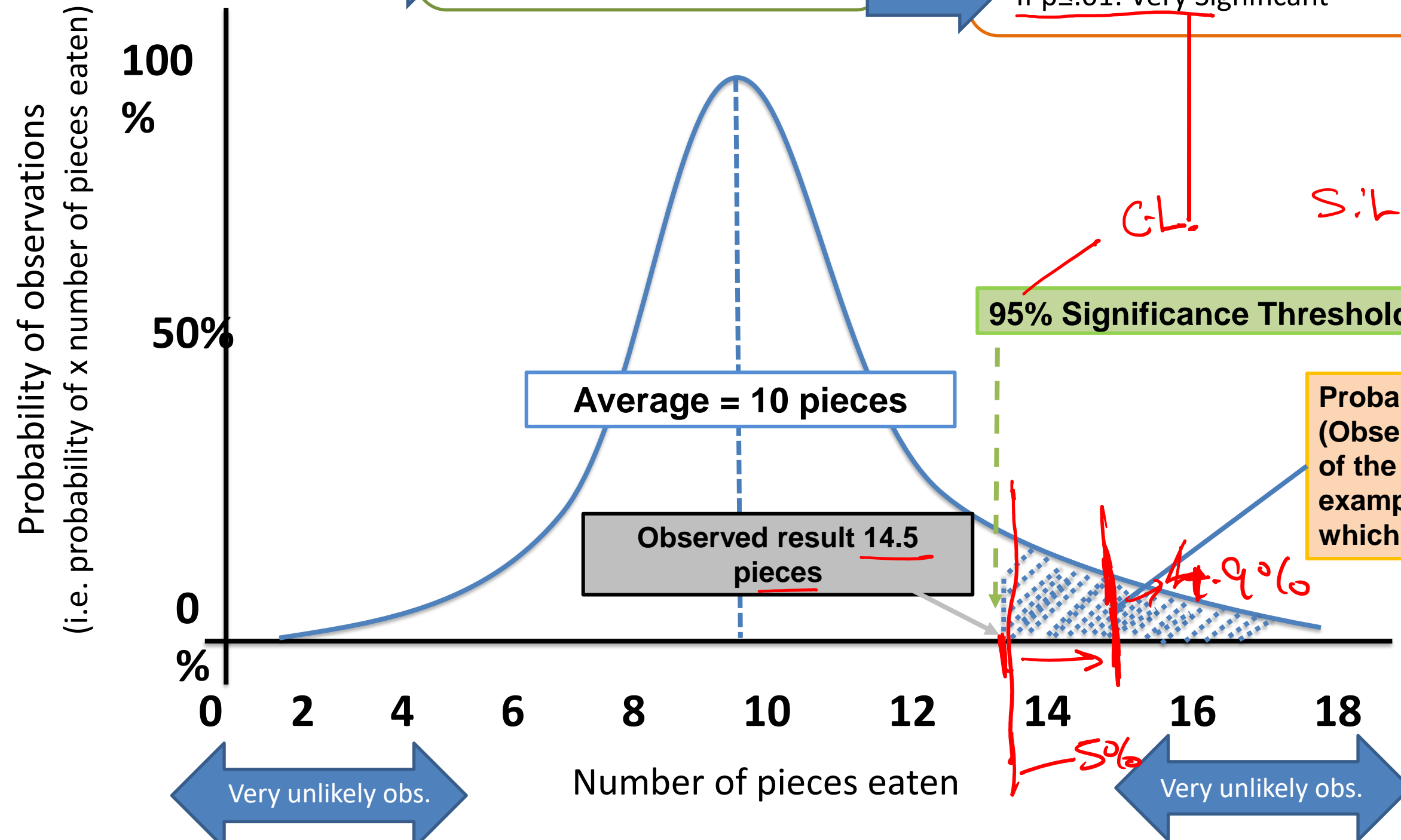
**3** Test the result (avg=5.6)

- Set your significance level (5% in this example), then run your test. For example here z-test was run

**4** Is the result significant?

- $p > .10$ : Not significant
- $P \leq .10$ : Marginally significant
- $p \leq .05$ : Significant
- If  $p \leq .01$ : Very Significant

10%  
10%  
5%  
1%



CL  
S.L = 1 - CL  
= 0.05

Probability value (Observed) is this area to the right of the observed result. For this example, the area is 4.9% (.049), which is significant.

= 4.9%  
 $p = 0.049$

**Thank you**

