**Suppose a fast-food claim that its delivery services are 30 minutes or less on average. it is what expected and all people think about that. But as you are a curious person, you wanna test this idea.**

1. There is a claim (delivery services are 30 minutes or less on average) that we want to test it. We call it a **Hypothesis.**
2. There is an accepted claim which says delivery services are 30 minutes or less on average. We call this **Null-Hypothesis**. Null-hypothesis is currently acceptable.
3. You have an idea which says, delivery services may are more than 30 minutes on average. So you should make a test. As a result, then you can accept the claim(null-hypothesis) or reject it. Your claim is called **Alternative-Hypothesis**. Be aware that you test fast-food’s claim and you decide whether to accept or reject that

Now you should choose a threshold that shows the confidence of your test. You want besure 99% sure then level of confidence should be 0.99. You should decide before you start an experiment.

Start sampling from the delivery service. your samples are independent and you gather enough (more than 30) samples. Your samples are randomly chosen and have a normal distribution.

# Week 5 exercise

## Question 1

1. What is the z-score of a value of 37, given a set mean of 32, and a standard deviation of 4?
2. **The height of plants in a certain garden are normally distributed with a mean of  μ = 24.5 inches and a standard deviation of σ = 2.5 inches. Approximately what percentage of plants are greater than 26 inches tall?**

## Question 2

It is known that 45% of the people who enter electronics shops in Nairobi end up purchasing something. A shop owner wanted to find if the number is higher for the shop owned by him. He already had the results of a study conducted for his shop where 96 out of 190 people who entered his shop purchased something. The shop owner denoted that the proportion of people who entered his apparel shop and purchased something. The null hypothesis framed by him was p = 0.45, and the alternate hypothesis was p > 0.45. Find the p-value for the research at a significance level of 5%

## Question 3

43% of the Youth in a district in California are under the age  
of 25 as per a recent research study. A researcher is curious to  
find out if the figure is higher in his Country. He then frames  
the null and alternate hypotheses. He tests H0: p = 0.45. Ha: p >  
0.45. Here, p is the proportion of Youth under the age of 25. He  
commissions a survey in his Sub-district to find out the number  
of people who are under the age of 25. He finds that 52 out of  
135 people are under the age of 25. Calculate the test statistic  
Z (