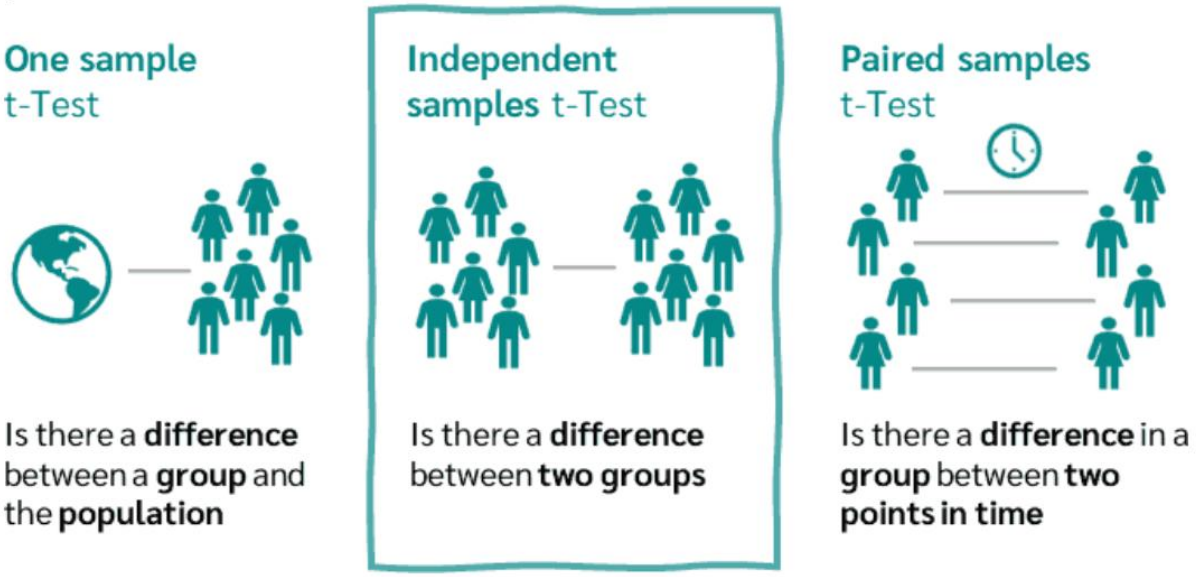
The Paired-Samples T Test

procedure compares the means of two variables for a single group. The procedure computes the differences between values of the two variables for each case and tests whether the average differs from 0. The procedure also automates the t-test effect size computation.



In [10]:
```
import numpy as np
from scipy.stats import ttest_rel

#Create tow sample
smp1=[29,30,26,50,47,62,47,65,95,85]
smp2=[45,65,25,78,62,14,54,35,26,48]

print("Sample One Mean is ",np.mean(smp1))
print("Sample Two Mean is ",np.mean(smp2))

#Perform paired Test
t_test,p_val=ttest_rel(smp1,smp2)
print("P-Value is ",p_val)

if p_val>0.05:
    print("Null Hypothesis Accepted")
else:
    print("Null Hypothesis Rejected")
```

```
Sample One Mean is  53.6
Sample Two Mean is  45.2
P-Value is  0.47008206173919165
Null Hypothesis Accepted
```

Blood Pressure Analysis After Meal and Before Meal

In [19]:
```
import pandas as pd
from scipy.stats import ttest_rel
df=pd.read_csv("blood_pressure.csv")
df.head()
```

Out[19]:

	patient	Gender	agegrp	bp_before	bp_after
0	1	Male	30-45	143	153
1	2	Male	30-45	163	170
2	3	Male	30-45	153	168
3	4	Male	30-45	153	142
4	5	Male	30-45	146	141

In [14]:
```
df[['bp_before','bp_after']]
```

Out[14]:

	bp_before	bp_after
0	143	153
1	163	170
2	153	168
3	153	142
4	146	141
...	...	...
115	152	152
116	161	152
117	165	174
118	149	151
119	185	163

120 rows × 2 columns

In [15]:
```
df[['bp_before','bp_after']].describe()
```

Out[15]:

	bp_before	bp_after
count	120.000000	120.000000
mean	156.450000	151.358333
std	11.389845	14.177622
min	138.000000	125.000000
25%	147.000000	140.750000
50%	154.500000	149.500000
75%	164.000000	161.000000
max	185.000000	185.000000

In [24]:
```
t_test,p_val=ttest_rel(df['bp_before'],dUPr'])
print(p_val)
if p_val>0.05:
    print("Null Hypothesis is Accepted")
else:
    print("Null Hypothesis is Rejected")
```

```
0.0011297914644840823
Null Hypothesis is Rejected
```