

**Physics :**

Any one of the following –

1. To study and compare two capacitors in series and parallel combination.
2. To study refraction of light in rectangular glass slab.
3. To study and conduct a portable mobile charger
4. To study and construct a circuit of clap switch / switch board / Touch Alarm

**Chemistry :**

Any one of the following –

1. Measuring the amount of Acetic acid in vinegar.
2. Surface chemistry colloidal solutions.
3. Comparative study and qualitative analysis of different brands of cold drinks available in market.
4. Determination of the rate of evaporation of different liquids.
5. To study the quantity of Casein present in different samples of milk.
6. Study of adulterants in food-stuffs.
7. To prepare rayon threads from filter papers using cuprammonium process.

**Biology :**

Any one of the following –

1. Addiction (DRUG / CAFFEINE)
2. Reproductive and mental health
3. Case study of a global disease

4. Population Interactions

5. Gene Therapy

### Mathematics [Group D & G] :

**Activity :** To demonstrate a function which is not one-one but is onto/  
Which is one- one but not onto.

**Material Required :** Cardboard, nails, strings, glue, plastic, strips.

**Method :**

1. Paste Plastic strip on the left hand side of the cardboard and fix three / two nails on it. Name the nails.
2. Paste another strip on the right hand side of the cardboard and fix two / three nails and name them.
3. Join nails on the left strip to right strip in order to show **one-one but not onto / not one-one but onto.**

**Demonstrate :**

1. Take the set  $X = \{1,2,3\}$
2. Take the set  $Y = \{a, b\}$
3. Join (Correspondence) element of X to the element of Y in order to show one-one but not onto/ not one-one but onto

**Observation :** Write the domain, range and co-domain.  
In an onto function the range = Co-domain or not?  
Check.

**Conclusion :** Write down your conclusion and understanding.

### Business Studies :

Students should prepare a project on any one of the following topics :

1. Fayol's Principles of Management **OR** Scientific technique of management.
2. Marketing management.