

SUGGESTED TOPICS:

1. To study the conservation of energy of a ball rolling down on an inclined plane.
2. To study the variation in the range of jet of water by varying the angle of projection.
3. Application of Bernoulli's theorem.
4. Using a simple pendulum, plot a graph between length and Time (T) and hence prove the validity of its time period by the method Dimensional analysis.

SUBJECT: CHEMISTRY

Chemistry is a subject of facts, postulates, theories, observation, inferences and a fascinating world in between. You have initiated an awe striking journey to know things around you from a scientific perspective. You will be directed to learn by taking the logical decisions based on facts. To reinforce the same, here is a set of experiments and activities you need to conduct as part of your holiday home work.

GUIDE LINES:

1. Collect the relevant data visiting a chemical plant, laboratory or a factory.
2. Use pH paper or any other suitable material to study your observations and get to some conclusion.
3. Mention the aim, materials required, method, observation, result and precautions to complete your investigatory project.
4. Mention the resources from where you collected your data and support it with evidence e.g.: a certificate from the factory you visited, photographs at the site etc.

Do an investigatory project on any of the following topics.

- Study of the methods of purification of water.
- Testing the hardness, presence of iron, fluoride, chloride etc. depending upon the regional variation in drinking water and the study of causes of presences of these ions above permissible limit (if any).
- Investigation of the foaming capacity of different washing soaps and the effect of addition of sodium carbonate on them.
- Study of the acidity of different samples of the tea leaves.
- Determination of the rate of evaporation of different liquids.
- Study of the effect of acids and bases on the tensile strength of fibers.
- Analysis of fruit and vegetable juices for their acidity.

Complete your practical files on the given experiments :

- Preparation of standard solution of oxalic acid.
- Determination of strength of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.
- Preparation of standard solution of sodium carbonate.
- Determination of strength of a given solution of hydrochloric acid by titrating it against standard sodium carbonate solution.
 - *Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing /decreasing the concentration of either of the ions.
 - *Crystallization involving impure sample of Copper Sulphate.

Note: Fill the data and readings in the laboratory.

SUBJECT: BIOLOGY

INSTRUCTIONS/GUIDELINES FOR MAKING THE PROJECT

- a) Put diagrams and photographs wherever necessary. Make a proper Index, Acknowledgment and mention the References taken.
 - b) If choosing systems, the project should contain components and physiology of the system.
 - c) If taken up plant kingdom/Animal kingdom, the characteristics of each Division/Phylum including their habitat, structure, mode of nutrition, Reproduction and patterns of life cycle required to be documented.
- 1.** Make a Project on any one of the following topics in a stick file. Put diagrams and photographs wherever necessary. Make a proper Index, Acknowledgment and References taken.
- Endocrine system in Human beings,
 - Human heart,
 - Human brain,
 - Plant kingdom,
 - A study on corals,
 - Immune system in Human beings,
 - Transport system in Human beings.
- 2.** Complete your Biology Practical Note book along with diagrams.

SUBJECT: PSYCHOLOGY

This summer, you need to do a survey research in your locality. Here are some psychology research topics that might help you out or you can choose a topic of your interest.

- Is parental negligence a reason behind child obesity?
- Dating violence and abuse among teenagers.
- Importance of imparting sexual education to children.
- How and why are attractive people treated differently than the non-attractive ones?
- Is it important to have school uniforms?
- Reasons and consequences of introvert behavior in adults.

STEPS TO BE FOLLOWED:

1. Frame a Hypothesis keeping in mind your research question.
2. Develop a questionnaire/Interview questions.
3. Collect the data by taking interviews/filling up the questionnaire.
4. Analyse the result and generate the conclusion.

You need to do it very formally. Use A4 size plain sheets, Times New Roman Font, Text Size 12.

- Acknowledgement
- Index
- First page – What is quantitative research?
- Second Page – Hypothesis and why did you choose it.
- Third Page – Methodology (What method you will take up for data collection?)
- Fourth Page onwards – Evidences of data collection (For eg., attaching the filled up questionnaires, interviews taken, photographs clicked). You can use the no. of pages according to your no. of participants/subjects (minimum no.6).
- Last two pages – research findings and conclusion.

SUBJECT: COMPUTER SCIENCE

Create a presentation on “Object Oriented programming in C++” which includes the following points:

- a) Fundamentals of Object oriented programming:
 - i. Data Abstraction
 - ii. Encapsulation
 - iii. Inheritance
 - iv. Polymorphism
- b) Effect of Object Oriented methodology on software design:
 - i. Maintenance
 - ii. Extensibility
 - iii. Re-usability
- c) Algorithms and Flowcharts

Guidelines for the PPT:

- 1. Presentation should include minimum 40 slides.
- 2. It should run automatically according to the text displayed over particular slide.
- 3. Proper Effects and animations should be used to define the particular topic.
- 4. Presentation should be precise and interactive.

SUBJECT: PAINTING

Prepare two geometrical designs in half imperial sized sheet and color it in assorted color scheme.
