

# NASA B.Ed ACADEMY

SAMPLE RECORD

B.Ed., 20<sup>21</sup> - 20<sup>23</sup>

## CERTIFICATE

This is to certify that Mr./Mrs./Miss. [REDACTED]

bearing the Register Number [REDACTED]

has successfully completed his/her Activity Record work for

Pedagogy OF Mathematics

as a part of B.Ed., (Regular) Course for the semester One

2021 - 2023

Signature of the Lecturer

Principal

Date :





# Nature And Scope Of Mathematics

## Introduction

The term mathematics is derived from two greek word "Mathanestn" and "Techn". Ethimological meaning of mathanestn is learning and techne is an art or technique. Therefore the meaning of mathematics is art of learning related to discipline.

## Definations

Mathematics is the study of quantity.  
- Aristotle

Mathematics is a science of order and measure.  
- Descartes

## Nature Of Mathematics

Mathematics is also called the science of logical reasoning. According to Locke "Mathematics is a way of teaching in mind a habit of reasoning. Reasoning in Mathematics is of two types.

### (a) Inductive Reasoning

Mathematics is a making of experimental and inductive. It leads from concrete to abstract, particular to general and from examples to general rule.

## (b) Deductive Reasoning

This type of reasoning is based on self-evident truths, postulates, axioms etc.

## Pure Mathematics

In pure mathematics we start from rules of inference. It treats only theories and principles without regard to their application to concrete things thus pure mathematics involves systematic and deductive reasoning.

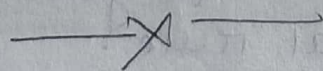
## Applied Mathematics

Applied mathematics consider those parts of mathematical theories that have certain direct or practical applications to objects or actions in the material world.

## Scope Of Mathematics

The scope of mathematics is unlimited. It occupies all walks of life. Mathematics plays its role in the following ways.

- \* In developing technology
- \* In learning any subject
- \* In becoming self dependent
- \* In developing various skills
- \* In developing intellectual power



### Meaning & Concept Of Academic Standard OF CCE.

We need some specific statements which guide us to develop those skills in Mathematics classroom. The statements are named as "Academic Standards."

Academic Standards are clear statements about what students must know and be able to do with in a stipulated period to perform skills in a particular content or connecting contents.

### Academic Standards:

#### 1. Problem Solving:

(a) Kinds of Problem: Problems can take various forms: puzzles, word problems, reading data, graphs etc. Steps in Problem Solving

(b) Complexity

#### 2. Reasoning Proof:

(a) Reasoning between various steps

(b) Understanding and justifies procedures

(c) Examining Logical arguments

(d) Understanding the nation proof.

- (e) Uses inductive and deductive Logic
- (f) Testing Mathematical conjectures.

### 3. Communications

- (a) Creating Mathematical expressions
- (b) Explaining Mathematical Ideas in her own words.
- (c) Explaining mathematical procedures
- (d) Explaining mathematical domains

### 4. Connections

- (a) Explaining Mathematical logic
- (b) Making connections with daily life
- (c) Connecting concepts of different mathematical domains.
- (d) Connecting concepts to multiple procedure

### 5. Visualization & Representation

1. Interprets and reads data in a table, number line, bar graph, picture.

2. Making tables, bar graph, pictures.

3. Mathematical symbols and figures.

## Inductive Method Of Teaching Mathematics

### Meaning

Inductive Method is based on the process of Induction. It leads from concrete to abstract, particular to General and from examples to generate rules.

### Procedure

Induction means to provide a universal truth by showing that it is true for a particular case, It is true for all such cases. A formula or a generalisation is thus arrived at through a convincing process of reasoning and solving problems.

Example.  $3+5=8$   
 $5+7=12$   
 $9+11=20$

### Conclusions

The sum of 2 odd numbers is an even number.

### Merits

- \* It reduces homework & encourage self activity
- \* It is based on experimentation and discovery.
- \* It helps in increasing the pupil teacher contact

### Demerits

- \* This method is more laborious and also time consuming.
- \* It is applicable only in the understanding of rules at the early stage.

### Unit Plan (or) Lesson Plan

The planning for a unit is known as unit plan. A unit may have several lessons a unit also includes the procedure of presentation of the subject matter that means the unit is not only a block of content but also a method in itself.

"Unit is as large a block of selected subject matter as can be over-viewed by the learner" - Preston.

"A unit is an outline of carefully selected subject matter which has been isolated because of its relationship to pupils needs and interests." - Sanford.

### Characteristics of A Good Unit

1. The aims should be clear and well defined.
2. It should consider the previous experience of the students.
3. It should keep in view the needs, capabilities and interests of the students.
4. It should have similar type of content.

### Steps Involved In developing A Unit

1. Preparation:- By knowing the overall idea of a unit by the teacher, pupils are motivated.
2. Knowing the previous experiences The second step that should follow motivation is testing the previous knowledge of the students.
3. Presentation  
This second step provides new experiences to the students.
4. Organization of the learning - Students should be provided opportunities to organize their learning.
5. Summarization:- At the end of the unit, the entire is in a systematic order to bring all the learning together.
6. Review and drill:- For this step is meant to rechecking the main points should be done.
7. Evaluation:- This last step is meant to check the achievement levels of the students.

### Advantages

- \* It creates interest and curiosity
- \* It based on aim and objectives.
- \* It develops the content of knowledge.

### Disadvantages

- \* Evaluation is difficult to do at lower stages
- \* It requires committed & hardworking teachers.

### ICT Based Pedagogical Tools

ICT is the information and communication Technology. Worldwide research has shown that ICT can lead to improved student learning and better teaching methods. ICT has a positive impact on student achievement, especially in terms of knowledge, comprehension, practical skill and presentation skill in subject areas such as Mathematics, Social, social study.

The ICT tools in Education can be divided into three categories. They are-

- (1) Input Sources
  - \* Document cameras
  - \* Student Response System
  - \* PC
  - \* Application software.
  - \* Tablet
- (2) Output Sources

Projector, Interactive white board, Display monitor, TV etc.
- (3) Other

Digital camera, Switcher, Digital recorder and other technology.

Generally, the following ICT and multimedia resources can be used in teaching physical Science are

- Virtual Learning environment
- Multimedia players
- Projector
- Youtube video
- Internet etc.