

**RAYAPATI VENKATA RANGA RAO  
COLLEGE OF EDUCATION**

**GUNTUR - 522006.**

**ACHARYA NAGARJUNA UNIVERSITY**

**B.Ed COURSE : SEMESTER - I**

**ACADEMIC YEAR : 2021 - 2022**



**S I P - Course IV : PEDAGOGY - I**  
**subject :**

**Practicum : Activities / Project / Record**

Name : S. kajal Class No. M1

Group : Mathematics and physics Regd. No. Y22ED03009



# CERTIFICATE

This is to Certify that Mr./Mrs/Kum. <sup>✓</sup> SAHU, KAJAL

Class No. M1 Regd No. Y22ED03009 of R.V.R.R. College of Education visited our institution and conducted the required activities / collected the required data regarding to Pedagogy of Mathematics practicum as a part of B.Ed. Course work stipulated by the Government of Andhra Pradesh and approved by Acharya Nagarjuna University.

Signature of the Concerned Teacher

Name :

Signature of the Head of the Institution:

Name :

Seal :

This is to Certify that Mr./Mrs/Kum. <sup>✓</sup> SAHU, KAJAL

Class No. M1 Regd No. has completed the required activities regarding to Pedagogy of Mathematics practicum towards the fulfillment of B.Ed. Course work stipulated by the Government of Andhra Pradesh and approved by Acharya Nagarjuna University.

This record is assessed.

Lecturer in-charge  
R.V.R.R. College of Education  
Guntur.



# DECLARATION

I hereby declare that the Practicum : Project / Activity/ Record work of Pedagogy  
of Mathematics ..... was done by me and the work is genuine.

Place : Guntur

Date :

S. Kajal

Signature of the Student-Teacher

Name : SAHU.KAJAL

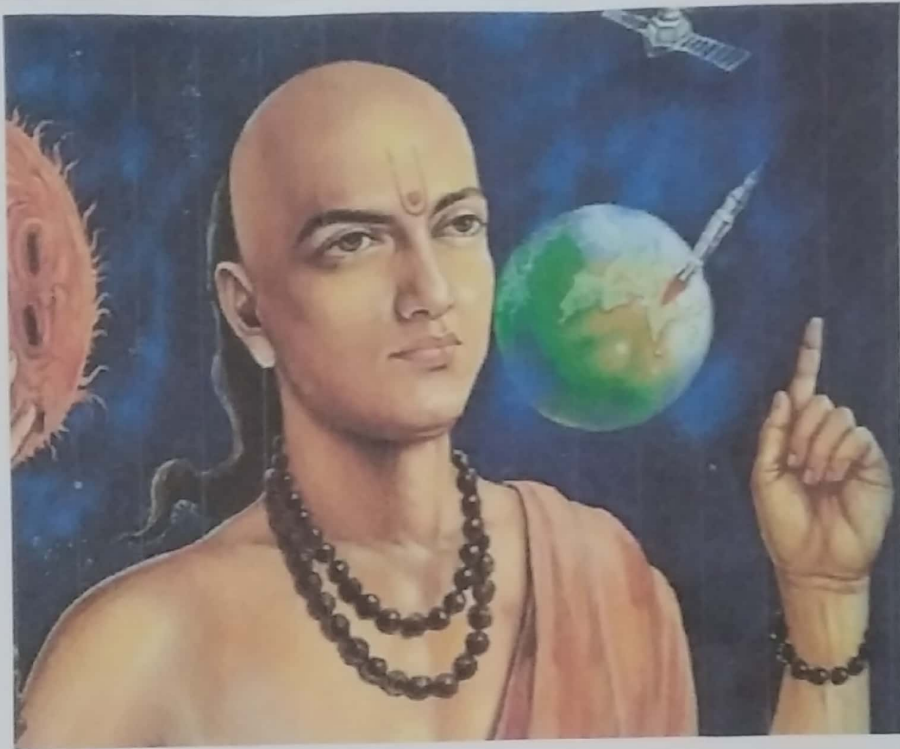
Regd. No. 422ED03009

# INDEX

S.No	Topic	Page.No.
1.)	History and Contributions of "Aryabhata" to mathematics	1-5
2.)	Different activities to realize the Concept probability.	6-8
3.)	preparation of power point presentation on Probability.	9-13
4.)	Identification of suitable methods of teaching different topics from 6 <sup>th</sup> to 10 <sup>th</sup> class maths text book	14-22

## Activity - 1

### History and Contributions of ARYABHATTA to Mathematics



#### Introduction:

ARYABHATTA was a great Indian Mathematician. He was born near Patna (now known as Patna in Bihar) in about 475 A.D. He lived at Patna from 476 A.D. to 550 A.D. He was the student of "Nalanda University" which was very famous in those days. After completing his studies, he wrote the famous mathematical treatise, "ARYABHATIYA" at the age of 23 in 499 A.D.

2

It was one of the most standard works on mathematics. He was appointed as the vice-chancellor of Malanda University.

### History:

The "ARYABHATIYA" is a small astronomical treatise written by Aryabhatta in 118 verses giving a summary of Hindu mathematics up to that time. The Aryabhatiya contains an introduction of 10 verses, followed by a section of mathematics with 33 verses, then a section of 25 verses on the reckoning of time and planetary models, with the final section of 50 verses being on the sphere and eclipses. The mathematical part of the ARYABHATIYA covers Arithmetic, Algebra, plane trigonometry and spherical trigonometry. It also contains continued fractions, quadratic equations, sums of power series and a table of sines, cosines and tangents.

### Contributions to Mathematics:

- 1.) He gave the value of  $\pi$  as 3.1416 as an approximate value, for the first time.
- 2.) He prepared tables for sine.
- 3.) He gave formula for the area of triangle.
- 4.) He gave formula for the area of circle.
- 5.)  $ax-b=c$  was solved by him and was appreciated by world wide mathematicians.
- 6.) He suggested the use of letters for variables.
- 7.) He prepared arithmetic tables.
- 8.) The place value system now we are using is given by him.
- 9.) He formulated for the first time in India the formulae for interest, time and other related ones, in the problems of interest.
- 10.) He declared that number of days for a year is 365.3586. Modern scientists confirmed it as 365 days 5 hours 48 minutes and 46 seconds.
- 11.) The earth takes 23 hours 56 minutes and 4.1 seconds per on revolution, according to Aryabhatta with the help of modern

equipment, today's scientists arrived at 23 hours 56 minutes and 4.091 seconds.

- 12.) He explained how to find out cube root.
- 13.) He gave the formula to find the square root.

14.) He derived the formula to find the length of the radius of a circle.

15.) He gave the procedure for finding out the volume of a prism.

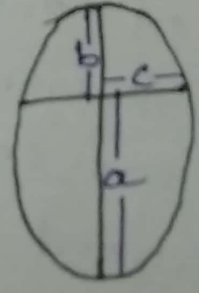
16.) His contributions in geometry are commendable. The famous pythagoras theorem is seen in the following form in his work.

"The Square of the Bhuj plus the Square of the koti is the Square of the karna."

17.) In a circle the product of two sargas is the square of the half chord of the two arcs.

$axb = c^2$

(where c is the half chord)



(The sargas or arrows are the segments of a diameter which bisects any chord)

18.) He explained the procedure for finding

the circumference of a circle.

19) He made a mention of the following algebraic identities in his book...

$$(a+b)^2 = a^2 + 2ab + b^2$$

20) The identities like the following are found in Aryabhataiya for the first time in the history of mathematics.

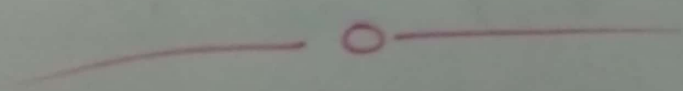
$$1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{1}{6} n(n+1)(2n+1)$$

$$1^3 + 2^3 + 3^3 + \dots + n^3 = (1 + 2 + 3 + \dots + n)^2 = \frac{1}{4} n^2(n+1)^2$$

21) Aryabhata in addition to Mathematics, was also the master of astronomy. He for the first time, boldly declared that "Diurnal motion of the heavens is due to the rotation of earth about an axis".

Conclusion:

In this way Aryabhata was much a head of his time. As a token of respect to him, the Government of India named the Satellite which was sent into space on 19-4-1975 as "Aryabhata". Surely he has an inremovable place in the history of Mathematics.



## Activity - 2

### Different Activities to realize the concept probability

#### Introduction:

I will do the following Activities to teach probability effectively and interestingly to the students.

- # Card probability
- # Tossing a coin
- # Dice probability
- # Probability card game
- # probability Dice game
- # fashion Craft : Spin the wheel designer
- # SAT Snake eyes
- # Game of chance
- # Rolling a Die
- # Spinning the spinner
- # Bag containing different Coloured Balls
- # A letter chosen from English Alphabet.
- # Below is the brief explanation on some of the above Concepts.

## # Tossing a Coin:

I will take a coin into the class and toss the coin and I will ask the students questions like probability of getting head (or) tail, when coin tossed for one time. In this way I will create interest between the students on probability.

## # Rolling a Die:

I will show students a die and roll the die and ask the questions like what is the probability of getting i) an even number ii) an odd number iii) multiples of 2 iv) multiples of 3. In this way this activity will be effective in teaching probability.

## # Spinning the Spinner:

I will take a spinner into the classroom. I will ask students randomly to spin the spinner and ask questions like what is the probability of getting a i) prime number ii) composite number as the spinner is arranged such as it consists of numbers from 1 to 10. In this way

I will teach probability: creatively

# Card Probability:

I will take a deck of cards into the classroom, shuffle them well and ask the students to pick any card and I will ask them to find the probability of getting i) An ace ii) A King iii) A Queen iv) Number 9 etc. In this way the game will create more interest to learn probability: in easy way.

# Bag Containing Different Coloured Balls:

I will put Red, Black, yellow, Blue, Green, Violet coloured Balls in a Bag and ask the students to select a Ball and ask the questions like probability of getting i) Red ii) Blue Coloured Balls etc.

# A letter chosen from Alphabets:

Nowadays Alphabets are available in toy form. So I will take those Alphabets into the classroom and ask the students to select an alphabet letter and ask the questions like i) Getting an vowel ii) Getting a consonant. In this way I do the above activities to teach probability effectively and interestingly.



## Activity-3

### Preparation of power point presentation on probability

#### Procedure:

- \* To open power point:  
clicked start button → clicked all programmes  
→ clicked microsoft office → selected microsoft  
power point - 2007 → clicked enter.  
A Blank slide appears.
- \* To select more slides:  
clicked menu bar → selected home →  
clicked on new slide → clicked on the desired  
slide and clicked enter.  
I have selected a desired slide of my  
choice.
- \* Typing Data:  
clicked menu bar → clicked on insert  
clicked on text box on the blank slide,  
I typed the data using text box and  
I posted the images searched from  
internet.
- \* formatting the slides:

10  
clicked menu bar → clicked on Design →  
Selected them for Back ground style.  
Slides of desired back ground styles  
appear.

### \* Applying Animation effects:

- a) clicked menu bar → clicked animation  
→ Selected transition Sound → clicked enter.
- b) clicked menu bar → clicked Animation  
→ Selected transition Speed → clicked enter.
- c) clicked menu bar → clicked animation  
→ Selected on mouse → clicked enter.
- d) clicked menu bar → clicked Animation  
→ clicked apply to all slides → clicked enter.

### \* Set up slide Show:

clicked menu bar → clicked slide Show  
→ Selected Custom slide show → clicked enter.

### \* To Save the slides:

clicked menu bar → selected Save as  
enter new "Save as" dialogue box appears.  
In the "Save as" dialogue box, I have  
selected my folder "Probability ppt" as  
Storage location and I have typed the  
file name as probability.

The presentation was saved in "probability ppt" folder with file name "probability."

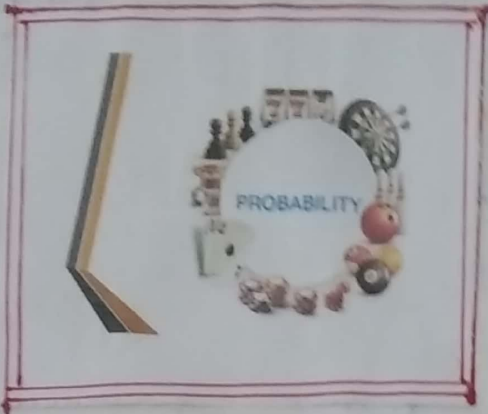
\* To print the slides as Handouts:

clicked menu bar → selected print option → print dialogue box opens → clicked enter.

I have selected print option as "Handouts" with 8 slides for one handout and also I selected vertical handout and clicked on print.

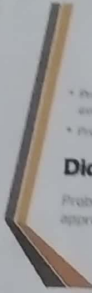
\* Information in slides:

Slide Number	Information
1.	Introduction to probability image.
2.	What is probability
3.	Definition of probability
4,5.	Common terms related to probability
6.	Key points of probability
7.	Conditions of probability
8.	General rules of probability



slide-1

slide-2




**What is Probability**

- Probability is the way of expressing knowledge of belief that an event will occur or chance.
- Probability is a branch of math that studies patterns of chance.

**Did you know?**

Probability originated from the latin word meaning approval



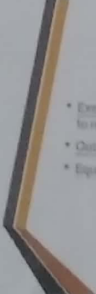
**Definition**

$P(E) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$

Where E = Event


slide-3

slide-4




**Some common terms related to probability**

- **Experiment:** is a situation involving chance or probability that leads to results called outcomes.
- **Outcome:** A possible result of a random experiment
- **Equally likely outcomes:** All outcomes with equal probability.



### Some common terms related to probability (continued..)

- **Sample Space:** The set of outcomes of an experiment is known as sample space.
- **Event:** One or more outcomes to an experiment.
- **Simple Event:** Each element of the sample space is called a simple event.



Slide-5


### Key Points

- $P(A) = \frac{\text{The number of times the desired outcome occurs}}{\text{The total number of trials}}$
- Events are independent if the outcome of one event does not influence the outcome of any other event.
- Events are mutually exclusive if they cannot occur together.
- Addition Rule:  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

Slide-6

### Probability of A Vs. B


- If  $P(A) > P(B)$ , Then A is more likely to occur.
- If  $P(A) = P(B)$ , Then P(A) and P(B) are equally likely to occur.



Slide-7

### Probability - General Rules

- Probability is a number between 0 and 1.
- The sum of the probabilities of all possible outcomes in a sample space is 1.
- The probability that an event does not occur is 1 minus the probability that it does occur. (also called the complement of A)
- Probability of a sure event is 1.
- Probability of an impossible event is 0.



Slide-8

## Activity - 1

Identification of Suitable methods of teaching different topics from 6th class Maths text book:

S.NO	Unit Name	TOPIC Name	Method of Teaching
1.)	Numbers all around us	<ul style="list-style-type: none"><li>• Comparing and ordering of Numbers</li><li>• Method of Numeration</li><li>• Estimation and Rounding of Numbers</li></ul>	Inductive-Deductive Method
2.)	Whole Numbers	<ul style="list-style-type: none"><li>• Representation of whole Numbers on Number line</li><li>• Properties of whole numbers</li><li>• Patterns of whole numbers</li></ul>	Inductive-Deductive Method.
3.)	H.C.F and L.C.M	<ul style="list-style-type: none"><li>• Divisibility rules</li><li>• Factors</li><li>• Types of Numbers</li></ul>	Inductive-Deductive Method.

S.NO	Unit Name	Topic Name	Method of Teaching
		<ul style="list-style-type: none"><li>• Methods of Prime factorization</li><li>• Methods of Finding HCF &amp; LCM</li></ul>	
4.)	Integers	<ul style="list-style-type: none"><li>• Representation of Integers on numberline</li><li>• ordering of integers</li><li>• Addition &amp; Subtraction of Integers</li></ul>	Inductive - Deductive Method.
5.)	Fractions and Decimals	<ul style="list-style-type: none"><li>• Types of fractions</li><li>• Addition, Subtraction, Multiplication of fractions</li><li>• Division of fractions</li><li>• Converting fractions to</li></ul>	Inductive - Deductive Method Analytic - Synthetic method Inductive - Deductive Method

S.No	Unit Name	Topic Name	Method of Teaching
		to decimal Vice versa • Addition and subtraction of decimal	Inductive- Deductive Method.
6.)	Basic Arithmetic	• Ratio's in Simplest form • Comparison of ratios • proportional • percentage • Conversion of percent to fraction and Vice versa.	Inductive- Deductive Method
7.)	Introduction to Algebra	• pattern • Expression with variable • Simple equations • L.H.S and R.H.S of equation	Inductive- Deductive method

S.No	Unit Name	Topic Name	Method of Teaching
8.)	Basic Geometric Concepts	<ul style="list-style-type: none"> <li>• Measuring length of line segment</li> <li>• Types of lines</li> <li>• Angles, types, measuring Angles.</li> </ul>	Inductive - Deductive method.
9.)	2D-3D Shapes	<ul style="list-style-type: none"> <li>• Polygon, types</li> <li>• Triangular Region, circle,</li> <li>• cuboid</li> <li>• Symmetry</li> <li>• faces, Edges, Euler's formula</li> </ul>	Inductive - Deductive method
10.)	Practical Geometry	<ul style="list-style-type: none"> <li>• Construction of line segment</li> <li>• circle</li> <li>• Bisector</li> <li>• Angles</li> </ul>	Laboratory method } Analytic - Synthetic method
11.)	Perimeter and Area	<ul style="list-style-type: none"> <li>• Circumference</li> <li>• Area of rectangles &amp; Squares</li> </ul>	Analytic - Synthetic method

S.No	Unit Name	Topic Name	Method of Teaching
12.)	Data Handling	<ul style="list-style-type: none"> <li>• Organisation of Data</li> <li>• Representation of Data</li> <li>• Construction of Bar graphs</li> </ul>	Project Method Analytic-Synthetic Method

Identification of Suitable methods of teaching different topics from 8<sup>th</sup> class Maths text book:

S.No	Unit Name	Topic Name	Method of Teaching
1.)	Rational Numbers	<ul style="list-style-type: none"> <li>• Properties of Rational numbers</li> <li>• Representation of Rational Numbers on Number-line.</li> <li>• Decimal Representation of Rational Numbers</li> </ul>	Inductive-Deductive Method Analytic-Synthetic Method Inductive-Deductive Method

S.No	Unit Name	Topic Name	Method of Teaching
		• Conversion of Decimal form into rational form	Inductive - Deductive Method.
2.)	Linear Equations in one variable	• Reducing Equations to Simple form • Linear Equations	Analytic - Synthetic method.
3.)	Construction of Quadrilaterals	• Quadrilaterals and their properties • Construction of Quadrilaterals.	Laboratory Method. Analytic-Synthetic Method
4.)	Exponents and Powers	• Laws of Exponents • Powers with Negative Exponents	Inductive - Deductive method
5.)	Comparing Quantities using proportion	• Compound Ratio	Inductive - Deductive method

S.NO	Unit Name	Topic Name	Method of Teaching
		<ul style="list-style-type: none"> <li>• Percentage</li> <li>• Compound Interest</li> <li>• Deducing formula for Compound Interest</li> <li>• finding Discounts</li> </ul>	<p>Inductive-Deductive method</p> <p>Analytic-Synthetic method</p>
6.)	Square roots and cube roots	<ul style="list-style-type: none"> <li>• Properties of Square numbers</li> <li>• pythagorean triplets</li> <li>• Square roots, cube roots.</li> </ul>	Inductive-Deductive Method
7.)	Frequency Distribution Tables and graphs	<ul style="list-style-type: none"> <li>• Basic measures of central Tendency mean, median, mode</li> <li>• Organisation of grouped data</li> </ul>	<p>Inductive-Deductive Method</p> <p>Analytic-Synthetic Method</p>

S.NO	Unit Name	Topic Name	Method of Teaching
		<ul style="list-style-type: none"> <li>• Cumulative frequency</li> <li>• Graphical Representation of data</li> </ul>	Analytic - Synthetic method Heuristic method.
8.)	Exploring geometrical figures	<ul style="list-style-type: none"> <li>• Exploring geometrical figures</li> <li>• Symmetry</li> </ul>	Analytic - Synthetic method Heuristic Method
9.)	Area of plane figures	<ul style="list-style-type: none"> <li>• Area of quadrilaterals</li> </ul>	Analytic - Synthetic Method
10.)	Direct and Inverse Proportions	<ul style="list-style-type: none"> <li>• Direct proportion</li> <li>• Inverse proportion</li> <li>• Compound proportion</li> </ul>	Inductive - Deductive method.
11.)	Algebraic Expressions	<ul style="list-style-type: none"> <li>• Algebraic Expressions</li> <li>• Geometrical verification of the Identities.</li> </ul>	Analytic - Synthetic method Laboratory method.
12.)	Factorisation	<ul style="list-style-type: none"> <li>• factors of algebraic expressions</li> </ul>	Analytic - Synthetic method

S.No	Unit Name	Topic Name	Method of Teaching
		<ul style="list-style-type: none"> <li>• Geometrical verification of the Identities</li> <li>• factorisation using Identities</li> <li>• Division of algebraic expressions</li> </ul>	Laboratory method  Inductive-Deductive method  Analytic-Synthetic method
13)	Visualising 3-D in 2-D	<ul style="list-style-type: none"> <li>• various geometrical Solids</li> </ul>	Laboratory method
14)	Surface Areas and volume (cube & cuboid)	Lateral Surface Area	Inductive-Deductive method
15)	playing with numbers	<ul style="list-style-type: none"> <li>• Expanded form of numbers</li> <li>• puzzles based on divisibility rules</li> <li>• puzzles with missing digits</li> <li>• Divisibility rules</li> </ul>	Analytic-Synthetic method Analytic-Synthetic method Analytic-Synthetic method Inductive-Deductive Method