



Federal Urdu University
OF ARTS, SCIENCE AND TECHNOLOGY

Teaching OF Mathematics



****(Assignment)****

Group#02

- 1. Eman Imtiaz***
- 2. Fareha Iqtidar***
- 3. Mehreen***
- 4. Zeenat Bano***
- 5. Gulshan***

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UNIT # 01

TOPICS:

***1.5) USE IN THE STUDY OF OTHER
SUBJECTS.***

****(Eman Imtiaz)****

***1.6) USE OF MATH IN DIFFERENT
VOCATION.***

****(Fareha Iqtidar , Mehreen)****

***1.7) AESTHETIC I CULTURAL AND
MATHEMATIC.***

****(zeenat Bano ,Gulshan)****

1.5) USE IN THE STUDY OF OTHER SUBJECTS

Name: Eman Imtiaz

MATHEMATICS WITH BIOLOGICAL SCIENCE

DEFINITION:

Mathematical biology (also known as biomathematics or mathematical and theoretical biology) is a branch of biology that uses mathematical models and analyses and representations of living organisms to examine the systems that govern structure, development, and behaviour of and within biological systems.

APPLICATION:

Mathematics are also used in biology for basic, raw data gathering that's useful in tracking changes over time. Biostatistics uses statistical analyses to form conclusions about biological phenomena, such as drawing comparisons or correlations between biological variables.

NEEDS:

Mathematical models allow researchers to investigate how complex regulatory processes are connected and how disruptions of these processes may contribute to the development of disease.

BENEFITS:

After completion of 10+2 (Biology and Mathematics), you can appear for both medical entrance examination as well as engineering entrance examination. Professional courses after 12th for Bio-Maths students: Medical. Para-Medical.

MATHEMATICS WITH CHEMISTRY:

DEFINITION:

From the very beginnings of chemistry, mathematics was used to create quantitative and qualitative models for helping comprehend the world of chemistry by understanding the elements that make up molecules. An atom is made up of particles which are known as protons, neutrons, and electrons.

USED:

Math is also used to calculate energy in reactions, compression of a gas, grams needed to add to a solution to reach desired concentration, and quantities of reactants needed to reach a desired product.

IMPORTANCE:

Taking measurements, performing dimensional analysis, determining temperature, density, and so on are all things that cannot be done without math.

SKILLS:

Chemists need a good understanding of basic mathematical concepts including numerical calculations, algebraic functions and data handling skills in order to succeed in chemistry. In this course you will learn about the core mathematical ideas that are required for a deep understanding of chemistry.

NEEDS:

Maths You will need to be confident in your mathematical ability. If you're someone who doesn't enjoy maths, a Chemistry degree may not be for you: it requires lots of maths, and you will probably find yourself studying even more of it at university.

MATHEMATICS WITH PHYSICS:

DEFINITION:

Mathematical physics refers to the development of mathematical methods for application to problems in physics.

USED:

For physicists, math is a tool used to answer questions. For example, Newton invented calculus to help describe motion. For mathematicians, physics can be a source of inspiration, with theoretical concepts such as general relativity and quantum theory providing an impetus for mathematicians to develop new tools

TOPICS OF MATHS AREN USED IN PHYSICS:

- .Introduction to logarithms.
- .The constant e and the natural logarithm.
- .Slope.
- .Basics of trigonometry.
- .The unit circle definition of sine, cosine, and tangent.
- .The graphs of sine, cosine, and tangent.

1.6) USE OF MATHS IN DIFFERENT VOCATIONS:

Name: Fareha Iqtidar

1. Sports:

Maths improves the cognitive and decision-making skills of a person. Such skills are very important for a sportsperson because by this he can take the right decisions for his team. If a person lacks such abilities, he won't be able to make correct estimations. So, maths also forms an important part of the sports field.

Application:

Probability.

Mathematical Operations and Algorithm.

Logical Reasoning.

Game Theory.



2. Driving

Speed, Time, and Distance, all these three things are studied in mathematical subjects, which are the basics of driving irrespective of any mode of transportation. Maths helps us to answer the following question;

How much should be the speed to cover any particular distance?

How much time would be taken?

Whether to turn left or right?

When to stop the car?

When to increase or decrease the speed?

Application:

Logical reasoning

Numerical Reasoning

Mathematical Operations



3.cooking and Baking

In your kitchen also, the maths is performed. For cooking or baking anything, a series of steps are followed, telling us how much of the quantity to be used for cooking, the proportion of different ingredients, methods of cooking, the cookware to be used, and many more. Such are based on different mathematical concepts. Indulging children in the kitchen while cooking anything, is a fun way to explain maths as well as basic cooking methods.

Application:

Mathematical Algorithm

Mathematical Operations

Ratios and proportions



4.Business

The most obvious place where you would see the application of basic mathematical concepts is your neighborhood grocery store and supermarket. The schemes like 'Flat 50% off', 'Buy one get one free', etc., are seen on most of the stores.

Application:

Mathematical Operations

Ratio and Percentage

Algebra



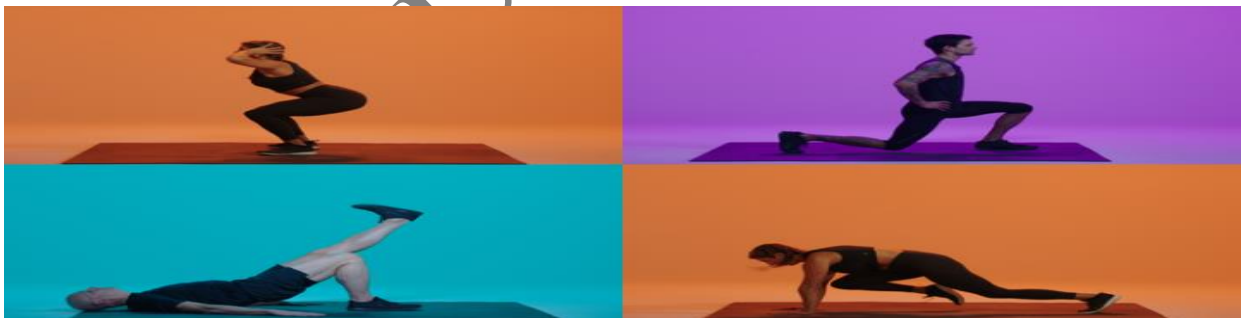
5.Exercise and Training

I should reduce some body fat! Will I be able to achieve my dream body ever? How? When? Will I be able to gain muscles? Here, the simple concept that is followed is maths. Yes! based on simple mathematical concepts, we can answer to above-mentioned questions. We set our routine according to our workout schedule, count the number of repetitions while exercising, etc., just based on maths.

Application:

Basic Mathematical Operations (additions, subtraction, multiplication, and division)

Logical and Analogical Reasoning



6,Computer Applications

. The fields of mathematics and computing intersect both in computer science. The study of computer applications is next to impossible without maths. The concepts like computation, algorithms, and many more forms the base for different computer applications like powerpoint, word, excel, etc. are impossible to run without maths.

Applications:

Computation

Algothirm

Coding Methods

Cryptography



Name: Mehreen

7. Automobiles Industry

The different car manufacturing companies produce cars based on the demands of the customers. In companies, basic mathematical operations are being applied to gain knowledge about the different demands of the customers.

Application:

Mathematical Operations



8. Hospital:

Every Hospital has to make the schedule of the timings of the doctors available, keeping the records of the patients, records of success rate of surgeries, number of ambulances required and scheduling all tasks, etc. All these are done based on Mathematical concepts.



9. Construction purpose

maths is the basis of any construction work. A lot of calculations, preparations of budgets, setting targets, estimating the cost, etc., are all done based on maths.

Applications.

Measurements

Mathematical Operations



10. Management of Time

Now managing time is one of the most difficult tasks which is faced by a lot of people. An individual wants to complete several assignments in a limited time. Not only the management, some people are not even able to read the timings on an analog clock. Such problems can be solved only by understanding the basic concepts of maths.

Applications :

Mathematical Operations

Calculus



11. Marketing:

The marketing agencies make the proper plans as to how to promote any product or service. The tasks like promoting a product online, use of social media platforms, door to door sales, sending e-mails, making calls etc. Are all done on the basis of simple mathematical concepts. Thus, maths is present everywhere.

Application:

Budgeting
Percentages

Ratios



Aesthetic values I cultural values of Mathematics

Name ; zeenat bano

Aesthetic value:

One gets pleasure solving mathematical problems especially when he gets correct answer his problems.

~ Different symmetric designs by Ramanujan are a source of great pleasure.

Mathematics is closely related with arts, drawing ,paintings ,music etc. .

~All musical instruments like harmonium ,drum ,flute ,guitar ,violin etc. Are played with the rules of mathematics.



Example Of Aesthetic Value :

Mathematics does not only give pleasure through its application in various arts as described Above, it also entertain us with its own riddles games and puzzles it's can be observed through the following examples.

1.MAGIC SQUARE:

In magic square one can derive pleasure by getting an equal sum Every time after adding horizontally, vertically or diagonally. This Can be ascertained through this magic square



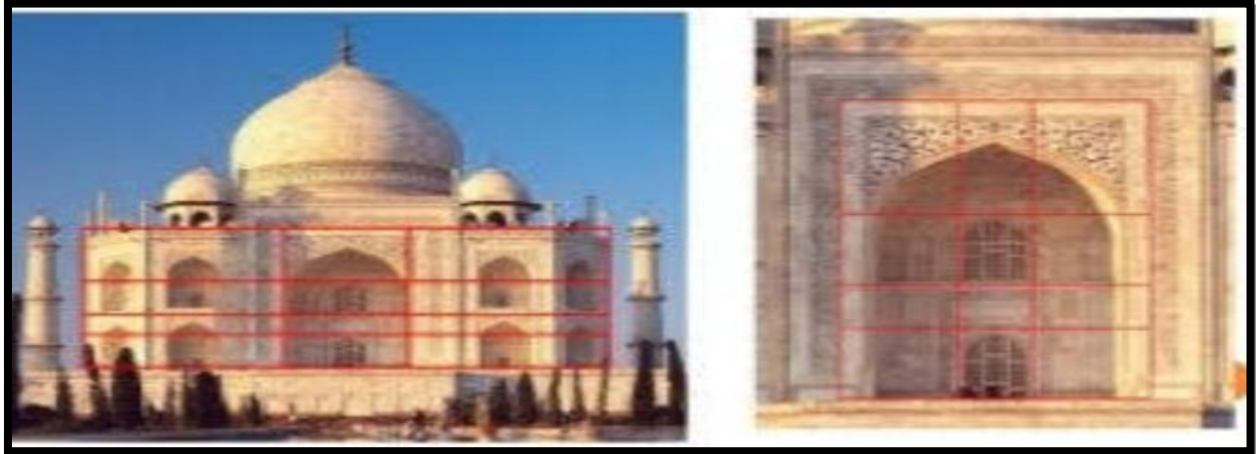
2.IN DANCE:

Mathematics can be taught using dance. Within the dancers body he or she can create Shapes, angles and lines which contributes to the effect of the dance. Geometry is perhaps the Most apparent subfield of mathematics present in dance. With their arms and legs they form Simple shapes such as circles, triangles as well as more complex shapes. In dancing one take Care of mathematics in taking steps and responding to the tunes.



3.IN THE FIELD OF ARCHITECTURE :

Math has various roles in architecture. Aesthetic consideration in architecture includes Line, shape, size, texture, colour, balance, unity, movement etc. In maths, geometry has a Crucial part for designing. Architects uses geometry to define the spatial form of the Buildings.



4. NUMBER PATTERNS:

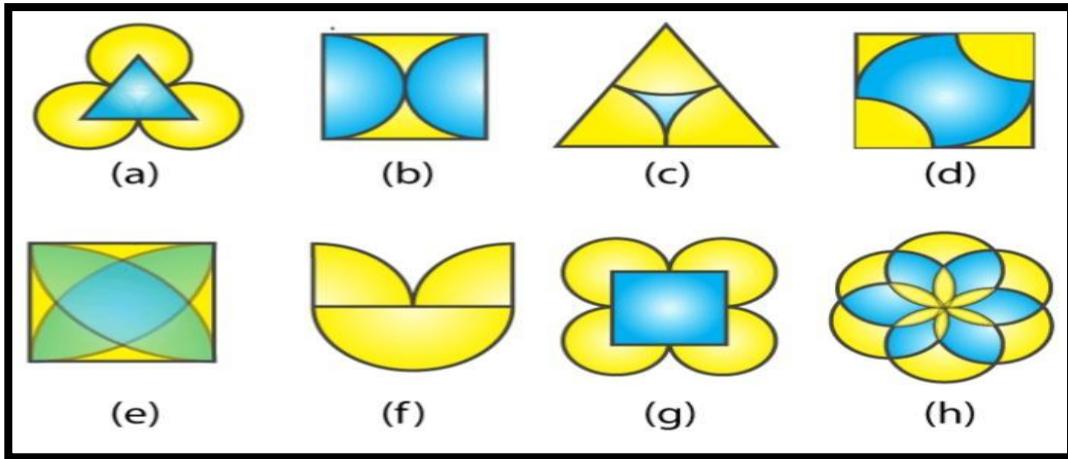
Numbers can do more than just help us count, they can help us discover beautiful patterns.

These patterns contain some form of sequencing, and they are known for their beauty and at Times brought up as mathematical recreation.

$1 \times 8 + 1 = 9$	$1 \times 1 = 1$
$12 \times 8 + 2 = 98$	$11 \times 11 = 121$
$123 \times 8 + 2 = 987$	$111 \times 111 = 12321$
$1234 \times 8 + 2 = 9876$	$1111 \times 1111 = 1234321$
$12345 \times 8 + 2 = 98765$	$11111 \times 11111 = 123454321$
$123456 \times 8 + 2 = 987654$	$111111 \times 111111 = 12345654321$
$1234567 \times 8 + 2 = 9876543$	$1111111 \times 1111111 = 1234567654321$
$12345678 \times 8 + 2 = 98765432$	$11111111 \times 11111111 = 123456787654321$
$123456789 \times 8 + 2 = 987654321$	$111111111 \times 111111111 = 12345678987654321$

5.SYMMETRY

:Symmetry is a fundamental part of geometry, nature and shapes. It creates patterns that helps organize our world conceptually. Symmetry in everyday language refer to a sense of harmonious and beautiful proportion and balance.



6.GOLDEN RATIO:

The golden ratio is a geometric proportion that has been theorized to be the most aesthetically pleasing to the eye and has been the root of countless mysteries over the centuries. It provides a wonderful example of an attempt to mingle mathematics with arts and nature



SOME MORE EXAMPLES :

Aesthetic beauty. Of mathematics can be Seen in origami The art of paper folding. Fibonacci sequence, Garden , flower, building etc.

Name: Gulshan

3 IMPORTANT VALUES OF TEACHING MATHEMATICS:

Mathematics has got many educational values which determine the need of teaching the subject in schools. These values can be studied under the following heads:

1. Practical Value
2. Cultural Value
3. Disciplinary Value.

1. PRACTICAL VALUE:

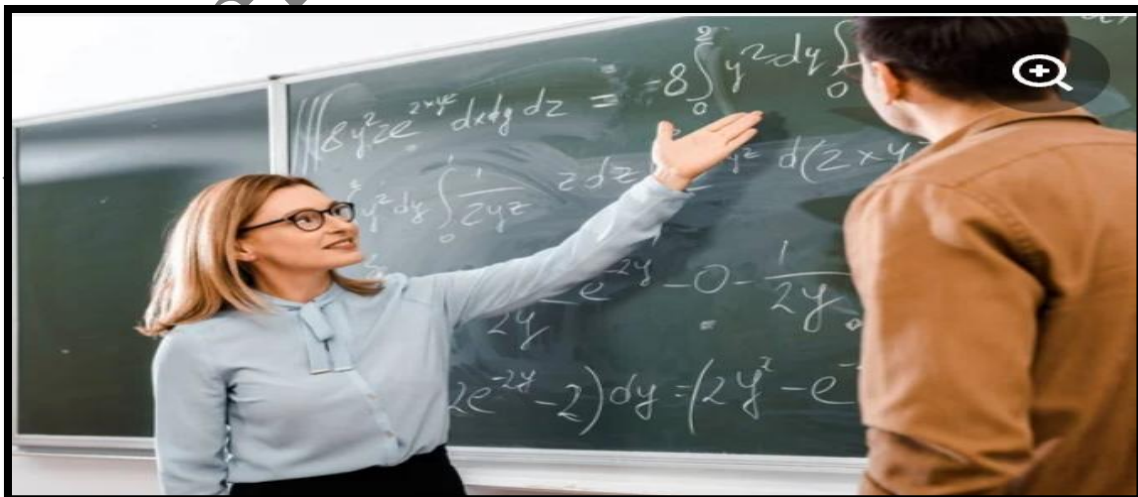
Mathematics has great practical value. Everyone uses some mathematics in every form of life.

A common man sometimes can do without reading or writing but he cannot do without counting and calculating.

We have to calculate how much we have to pay for everything. A house-wife also needs mathematics for looking after her house, preparing family budgets and estimates,

Mathematics is needed by all of us whether rich or poor, high or low. Not to speak of engineers, bankers, accountants, businessmen, planners etc.,

We are living in a world of measurements. We have to measure lengths, areas, volumes and weights. We have to fix timings, prices, wages, rates, percentages, targets, exchanges etc.



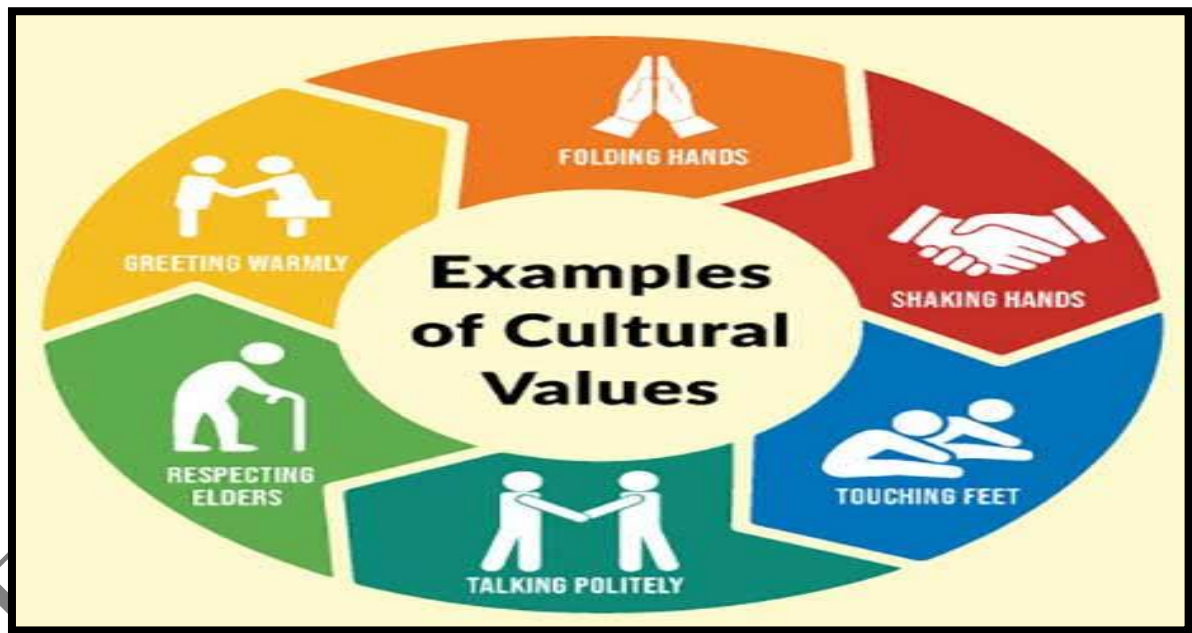
2.CULTURAL VALUES;

Mathematics has got a great cultural value which is steadily increasing day by day. Mathematics has made a major contribution to our cultural advancement. These occupations build up culture.

Hogben says, “Mathematics is the mirror of civilisation”.

The history of mathematics shows how mathematics has influenced civilisation and culture at a particular time. Mathematics is a pivot for cultural arts such as music, fine arts, poetry and painting. Perhaps that is why the Greeks, who were the greatest geometers of their times, were quite adept in fine arts.

- Mathematics has got a great cultural value and has made a major contribution to our cultural advancement.
- The progress of various occupations such as agriculture engineering, industry, medicine, navigation, rail road building etc .



Mathematics trains or disciplines the mind also. It develops thinking and reasoning power. According to Locke, “Mathematics is a way to settle in the mind a habit of reasoning.”

Besides reasoning, mathematics has the following disciplinary values also.

- Development of the power of concentration. The faculty to concentrate one's mind can only be learnt by the study of mathematics.
- Development of inventive faculty. The study of mathematics develops inventive faculty of the students. The solving of a difficult problem in mathematics is just like making a discovery.
- Will power. Mathematics develops patience and perseverance in the students. It strengthens their will power

Thus we see that mathematics has many educational values which show the increasing importance of the subject in schools and in social life.

