

# STUDENT STUDY PROJECT ON ROLE OF MATHEMATICS IN MEDICINE



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## CERTIFICATE

This is to certify that the student study project work entitled "Role of Mathematics in Medicine" is a bonafide work done by the students of III MPC & MPCs C. Ramu, B. Sridhar Goud, S. Devi Bai, D. Anil, P. Badri under my supervision for the award of student study project work in Mathematics, Department of Mathematics, Dr.BRR Government Degree College, Jadcherla.



Signature of Supervisor



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## DECLARATION

We hereby declare that student study project work entitled "Role of Mathematics in Medicine" is a genuine work done by us under the supervision of S.Madhavi Latha, Department of Mathematics, Dr.BRR Government Degree College, Jadcherla and that the project work hasn't been previously formed the basis for the award of any degree or diploma of this college or any other institute for the award of any degree.

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## **INTRODUCTION:**

**Doctors and nurse use math when they write prescriptions or administer medication. Medical professional use drawing up statistical graphs of epidemics or success rates of treatments .Math applies to x-rays and CAT scans .Numbers provide an abundance of information for medical professionals in addition to calculus I and II ,there are many higher level math classes that are useful in the study of medicine ,especially to those who wish to conduct medical research .Two of these are multivariate calculus and differential equations .Chemistry, biology and either math's or physics will keep all the medical schools open .It can be helpful for doctors to understand the shape and size of different cells, organs and body parts in relation to each other and in relation to the size and shape of various medical devices**

## **AIMS & OBJECTIVES**

To know how mathematics is useful in medicine field in following sectors

- In X-rays
- In ECGS
- Mathematics used in Heart Disease
- Maths used in Cancer
- In Vaccination



## x-ray uses:

1. Check Symptoms in the Body. ...
2. Diagnosing Injuries. ...
3. Dental Check. ...
4. Mammography. ...
5. Joint Changes and Arthritis.



x-ray

## ECG USES:

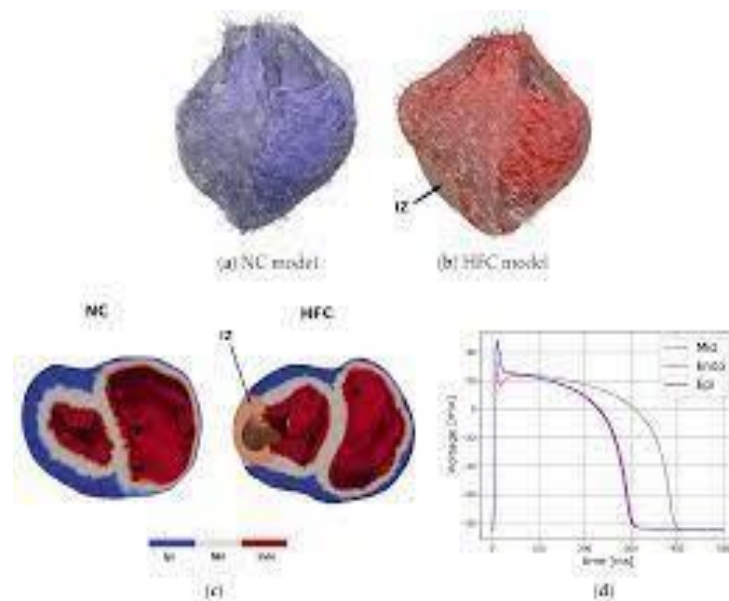
An ECG is often used alongside other tests **to help diagnose and monitor conditions affecting the heart**. It can be used to investigate symptoms of a possible heart problem, such as chest pain, palpitations (suddenly noticeable heartbeats), dizziness and shortness of breath.





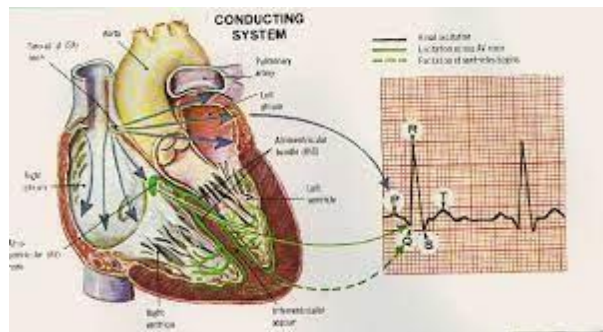
## MATHEMATICS USED IN HEART DISEASE:

Another way that mathematics increases understanding the heart is by **modeling the flow of blood using computer approximations in equations of fluid dynamics**. In determining the dynamics of blood flow, scientists must also solve equations for the unknown that is the motion of the heart walls.



## Is math used in cardiology?

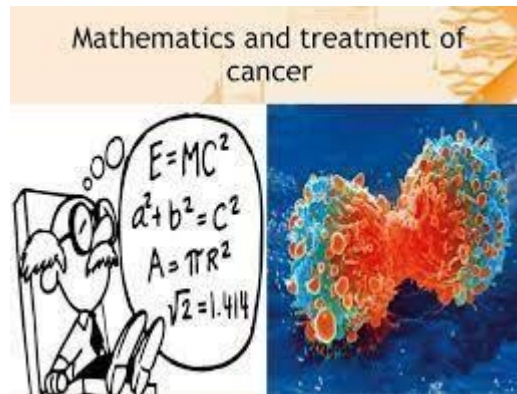
One of the essential languages of cardiology is mathematics. Unfortunately, medical education does not emphasize, and in fact, often neglects empowering physicians to think mathematically.



CARDIOLOGY

## How is math used in cancer?

Math is **helping researchers understand how cancers grow and how cancer cells function**. This knowledge equips scientists with tools to predict treatment response and, in turn, improve those treatments overall. Math allows us to dive deeper into cancer cells.



## VACCINE FOR CANCER DISEASE:

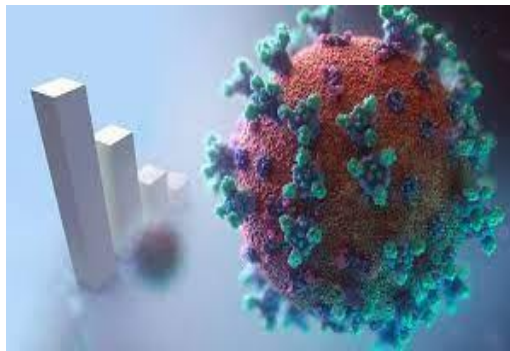
The only vaccine approved to prevent cancer is: **Human papillomavirus (HPV) vaccine**: The U.S. Food and Drug Administration has approved several vaccines to prevent HPV infection, which target high-risk HPV strains responsible for nearly all cervical cancers and linked to some throat, anal and other cancers.



CANCER VACCINE

## MATHEMATICS USED IN CORONA VIRUS:

Mathematical models are useful to understand the behavior of an infection when it enters a community and investigate under which conditions it will be wiped out or continued. Currently, COVID-19 is of great concern to researches, governments, and all people because of the high rate of the infection spread and the significant number of deaths that occurred. In December 2019, corona virus first reported in Wuhan, China, is an infectious disease caused by a newly discovered corona virus. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air and quickly fall on floors or surfaces. Corona virus-confirmed cases reached nearly four million in 187 countries and approximately 295,000 people have lost their lives due to this virus.



## **CORONA VACCINE:**

Now that COVID-19 vaccines have reached billions of people worldwide, the evidence is overwhelming that no matter which one you take, the vaccines offer life-saving protection against a disease that has killed millions. The pandemic is far from over, and they are our best bet of staying safe.



## **Conclusion:**

There are so many ways that Mathematics is vital in human and veterinary medicine. Medical professionals may be calculating the risk of a disease spreading, how much medicine to give, how quickly the heart is beating, or whether a patient is improving or declining. The next time you are doing some math's, think about ways it might be useful for doctors, nurses, veterinarians, scientists, and other people working to make us healthier. If you are thinking of pursuing one of these careers in your future, then remember that your math's classes are just as important as your science classes.

