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Mathematics Applications Across Domains And Functions.

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Abstract: Mathematics is all pervasive across various walks of economy and life. There is an urgent need to understand the same to give strategic importance to subject to make everybody aware and basic mathematics ready.

For somebody who has tried filing their own taxes, signing a lease agreement, investing money, negotiating your salary with a new employer you would have realised importance of maths in everyday life. If you are at sea with some of these tasks, it may have to do with your skills at mathematics. Mathematics pervades all parts of our life some visibly and some beyond the surface.

Let's start with finance and economics. Finance completely relies on various mathematical models predicated on simple concepts of future value of money and compounding. Predicting the value of any asset be it a business venture or a commercial property or a shipping vessel all involves this concept of future value of money. In economics, all models of macroeconomic prediction be it GDP, Fiscal deficit all rely on mathematical model. Microeconomics again running on principals of supply, demand, pricing again relies on mathematics for predictions. Without mathematics, its just assumption which doesn't predict. Stock markets use mathematics to price future/options, forwards, upper/lower caps on trading and prevent/predict crashes. Whole branch of algorithmic trading relies on mathematics and computer science logic to function. In personal finance functions like calculating your EMI, insurance premium, your phone bills, credit card bills, taxes, all rely on mathematics principles. For anybody interested in saving money, familiarity with mathematics is the key.

Engineering, the art of building things is very intrinsically linked to mathematics. Civil engineering calculations relating to building bridges, roads, quality of material all rely on science and maths principles involving calculations relating to load bearing capacity, design all backed by mathematics. Electrical engineering for all its circuitry and dynamism uses principals of differential equations and various branches of mathematics for optimal design of grids, equipment design, distribution systems, generation systems. Electronics the advanced version of electrical engineering uses these principles at advanced level . Telecommunications advances, be it in 5G technology, design of telecom circles relies on mathematics and statistics model for all its efficiency and sustainability.

Computer sciences has completely taken over our world first as hardware and then as software. Consciously or unconsciously, one is using computer sciences almost throughout one's day. Logic based programming aims to codify repeated sequences of calculations and scenarios for our benefit. Any algorithm, fundamental of computer science and foundation block for a program relies on logic and mathematics principle. Foundations of computer science involved programming mathematics functions such that they become human independent. Once that is achieved, we moved towards making it popular for everyday use. Application programs such as excel rely on your knowledge of finance and mathematics principle. Google, the pervasive search engine uses mathematics in its page ranking algorithm which decides which are relevant information for you among trillion sources. Artificial intelligence, new domain of computer sciences which is leading us to self-driven cars, movie recommendations, ad recommendations all rely on mathematics and heuristics in a big way. Weather prediction, deriving at shortest route, doing lightning-fast calculation and processes in video games are all based on mathematical models backed by computing power and logic. As we move forward into future, application of mathematical sciences to computers is going to be intricate as use cases are developing thick and fast.

Business function in general uses mathematics extensively be it in their accounts, HR, sales, supply chain , marketing. Payroll, appraisals are all done using mathematics. Sales projections and monitoring rely on calculations. Supply chain design and improvement rely on branch of mathematics for finding out the best possible route for shipping. Now with global supply chains and manufacturing centres, its all become more important.

To end it, various domains of education rely on mathematics. Branches of sciences like Physics, Chemistry build on maths principals. Economics/Econometrics all borrow from Maths heavily. Finance and management all again borrow heavily.

Conclusion:

Mathematics is a universal subject, and it should be given similar treatment. As government, citizens, teachers, and parents, we need to appreciate these use cases across all our daily life. We would be better off if its appreciated and recognised. We would have a much financially, scientifically and management savvy world if that becomes the case as many bad choices would be eliminated from our everyday life.

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