

The Doon School WEEKLY

"I sketch your world exactly as it goes." -Arthur Foot
January 16, 2021 | Issue No. 2590



CLARIFIED

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Mathematics: Misunderstandings that Made You Hate It

Yuvraj Sarma | *Winner of the Gombhar Speech Trophy Contest, 2020.*

"Hehe. We have a maths exam tomorrow, and I'm now certain that all this is pretty much a scam because no matter what you do, listen attentively in the class and be the diligent student, it's all in vain. I mean even after months of doing this, I still don't understand how you take derivatives. But what scares me the most, is what's going to happen tomorrow. Even right now, I know that when I sit for the exam, ah, it's going to pull the hair out of my head. It has happened countless before, and that's what's going to happen tomorrow: the questions will scream at me in a language that I genuinely don't understand. Yet I will still know they don't want me lurking anywhere near them. Nope. Maths is not for everyone, definitely not for me. It's all useless anyway."

That's how a friend of mine looked at maths. I, being a maths enthusiast, felt hurt. Somewhere down there was a fundamental misunderstanding. But back then I had nothing to say that would explain why this guy wasn't succeeding. But I think now, after all these months in lockdown, I have come to some conclusions.

What I say next is not to flatter you as judges, masters or as high-schoolers. Instead, I'm here to say sorry. Sorry on maths' behalf, for

all the torture it has unknowingly inflicted upon you, just by being misunderstood. In the next few minutes, I will try to help rectify some of these long-festered misunderstandings. No. Don't punch yourself for being ignorant and not knowing any of this. Pat yourself for surviving until now. I'm sure it wasn't easy.

You see, it turns out that there wasn't one fundamental misunderstanding, but rather three in that attitude.

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Sorry on maths' behalf, for all the torture it has unknowingly inflicted upon you, just by being misunderstood
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The first misconception here is about what the essence of maths is. A lot of people think - no, believe - that maths is just a via media: the language of physics or the sword of economics. Others think it solely exists to make life easier in college. And there are of course a few people who think it

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is some cosmic conspiracy. I have to agree with the last group, but the first two interpretations feel problematic. Maths is a domain of its own, and is not the least about utility. If it were, then nobody would dedicate their entire lives to these mundane formulae. After all, who would find that fun? Rather, maths is a means to explore the astounding connections between phenomena, fundamental ideas that hold everywhere. As a French mathematician beautifully phrased it, "Rules, even God has to obey".

Unfortunately, it is this same abstraction that has led to us memorising and mindlessly applying that massive quadratic formula. And at that point, maths just turns from beauty to utility, something it isn't. When my friend exclaimed in frustration "It's all useless anyway", he clearly did not

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understand why we study maths.

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At the same time, my friend there had a poor understanding of how he was to handle all the information he was being fed, and how he ought to engage with maths. I think I have a good analogy to help explain this. Two little kids were taken to a huge playhouse with lots of toys. The kids were told that they had to leave in half an hour. The first boy immediately started gathering as many toys as possible. The other, saw a nice little teddy and a trolley car, and played around with just that in contentment. Before they knew it, the parents were back to collect them. The first kid had barely had any time to play around with what he had collected. He left the playroom staring wistfully at that huge pile he had created. Disappointment was written all over his face. The other kid was quite the opposite. He had a blast.

The status quo for maths is quite similar. There's a lot to learn. Just look at this book. It boasts of being in two colours: red and black. And if we take our limited time and use it to cram in as much information as possible from books like these and then finish off the course, we're going to inevitably meet the same fate as the first kid. Instead if we selected a few things that we initially found

interesting and started to play around with these, we would really enjoy it. So be curious and ask yourself *what if's* of each problem. What if this line was a little longer? Does this relationship still hold? What if I change the coefficients in this quadratic, what happens to the discriminant? What if I roll the dice just twice instead of five times? Just doing this makes it a whole lot more fun. And in that, our relationship with maths will have gone beyond the classroom to the intimate level.

The last misunderstanding I saw there was about the nature of problem solving.

I think problem solving in maths is very much like a rock-climbing expedition. For a moment, close your eyes and wander off to a rock-climbing site beside a tall cliff. It seems daunting initially, but you know that many others have climbed this cliff before you. You've just got the bare minimum on you: some safety gear, high grip gloves and comfortable shoes. But since there isn't much fun in just staying on the ground, you start to look out for potential paths with good footholds. Then you start climbing. You climb up, until it seems like you've reached halfway, and suddenly there just seems to be no way further. No footholds whatsoever. You take a few steps



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down, then move over to another trail. This happens many, many times, until you've finally reached the top, having tried lots of different routes. Just standing on that cliff top once it's all over isn't exactly fun. But the journey was.

Problem solving in maths is very similar. You start off with limited things, inspect for good places to start and by the time you reach the top, you've met a lot of dead ends, experienced a frozen mind and tried various different routes. The journey is fun and the end is immensely satisfying. By the end of this entire experience, you have a good understanding of internal dynamics of the problem and will have discovered the deep connections and rules that everyone has to obey.

There you have it. The three fundamental misconceptions that were preventing my friend from succeeding. Let us recognise that maths is about deep connections, that we need to start playing around with it and that it is indeed a fantastic journey. Try this new mindset for a few weeks, and no matter what happens, you will still leave with a good understanding of the topic, and the exam paper won't scream at you that hard.

ROUSING RHETORICIANS

The following are the results of the Gombhar Speech Trophy Competition, 2020.

Juniors Category:

Winner: Aditya Agarwal

Runners-up: Neelotpal

Seniors Category:

Winner: Yuvraj Sarda

Congratulations!

THE WHO?

Who is Adam Richard Wiles?

Veraj Goel: A racer

Aradhya Jain: A scientist

Tejveer Dhingra: A poet

Adam Richard Wiles, known professionally as **Calvin Harris**, is a Scottish **DJ**, **record producer**, **singer**, and **songwriter**. He is known for his singles “We Found Love”, “This Is What You Came For”, “Summer”, “Feel So Close”, “Feels”, and “One Kiss”.

“

For last year’s words belong to last year’s language.

And next year’s words await another voice.
And to make an end is to make a beginning.

—
T.S. Eliot

This Week in History

1535 C.E.: King Henry VIII decrees himself “the only supreme head on earth of the Church of England” to marry Anne Boleyn.

1784 C.E.: The Continental Congress ratifies the Treaty of Paris which ends the American Revolution.

1929 C.E.: Martin Luther King Jr. is born.

1932 C.E.: Hattie Wyatt Caraway becomes the first woman to get elected to the U.S. Senate.

1941 C.E.: James Joyce, the famous Irish novelist and author of *Ulysses*, passes away.

1963 C.E.: George Wallace, remembered for his staunch segregationist and populist views, is inaugurated as the Governor of Alabama.

1990 C.E.: Douglas Wilder of Virginia becomes America’s first African-American Governor.

2010 C.E.: Haiti is struck by an earthquake of magnitude 7.0 which kills over 300,000 people, according to the Haitian government.

Around the World in 80 Words

The Delhi Chief Minister banned the sale of eggs due to the Bird Flu. In India, three lakh healthcare staff were vaccinated on the first day of the inoculation drive. Donald Trump was impeached for ‘inciting an insurrection’. Joe Biden revealed a plan to pump 1.5 trillion dollars into the US economy. A fire at a Rohingya camp in Bangladesh left thousands without shelter. The Premier League postponed the Aston Villa vs. Everton match due to a COVID-19 outbreak.

Do Sco Doodle

The Dark Side

Roban Taneja



CLARIFIED



Impeachment

The President of the United States of America, Donald Trump, has recently been impeached for the second time in his term after being charged with ‘inciting an insurrection’. While everyone may be aware of this fact, an understanding of how the process of impeachment works in the United States might not be so clearly understood by all. This edition of *Clarified* therefore sets out to explain the process.

Contrary to popular belief, impeachment is not the act of removing a President from office but is simply a formal accusation that launches a trial. Furthermore, impeachment does not only apply to the President, but extends to all civil officers or all those who hold appointments under the national government, with the exception of military officers.

According to the United States Constitution, an official can only be impeached for “treason, bribery, or other high crimes and misdemeanours.” Since these three terms are not defined precisely anywhere in the Constitution, there remains a lot of room for interpretation. Generally, however, it is understood that impeachment is reserved for serious instances of abuse of power.

Though any member of the general public can make a demand for impeachment, only the House of Representatives, one of the two parts of the Congress (the law making branch of the United States Government), can initiate the process. Once a formal accusation is filed, the House Judiciary Committee, a committee that is part of the House of Representatives, reviews the accusations, examines the evidence, and issues a recommendation, which determines whether or not the investigation will proceed. Should the investigation proceed, the House of Representatives votes on the Articles of Impeachment which are the specific charges against the individual under investigation. If one or more of the articles passes by a simple majority, the individual is impeached and the trial commences. The outcome of the trial determines whether the official is removed from office (convicted) or remains in office (acquitted).

The trial is overseen by the Senate, the other branch of the Congress, besides the House of Representatives. Elected members of the House of Representatives, known as managers, act as the prosecution (those who argue that the official is guilty) while the impeached official and their lawyers try to defend themselves. The Senate acts as the Judge and Jury in that its members both conduct the trial and determine the outcome. The impeached official is convicted if two-thirds or more of the members of the Senate vote for removal from office. Anything less than a two-third majority leads to the official remaining in office.

To better understand why an official may be impeached, let us consider some examples. Bill Clinton was impeached in 1998 for lying under oath during a sexual harassment trial, though he was acquitted after less than two-thirds of the Senate voted to convict. The charge against President Trump - ‘inciting an insurrection’ - refers to his alleged role in urging rioters to storm the Capitol building, the meeting place of Congress. The House of Representatives voted to impeach the President on January 20 and House managers are currently preparing their case for trial in the Senate.

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The Woes of a Hypochondriac

Vivaan Sood

I haven't been immunised, nor do I think I ever will be. Depending on your viewpoint, I'm either lucky or unlucky. Lucky to not have had an attack. Unlucky because I don't have any safeguard against a potential attack.

While a post-Covid world seems to be ages away, right now people are getting vaccinated, and being part of a demographic that is not receiving the vaccine is rather troublesome. For one thing, we have to live in constant fear while others can go about their lives freely. While we may be familiar with constant fear in school, it certainly doesn't help that we're adding fuel to the fire.

Being unvaccinated means that amongst a group of people, you're essentially the runt of the pack. It is quite humiliating, being amongst superhumans who are immune, while you have a handicap. "You're less vulnerable", they say, "it doesn't really affect you anyway". And yet, the superhumans can be out and about, parading their immunity in our faces, while I am shackled to my house for the anxiety that comes with being outside would cripple me before the virus even gets a chance. The infection can spring from around the corner. You must always remain vigilant. Everybody and anybody is a potential threat to you. Unfortunately, if you do act that way, your behaviour slowly, but surely, becomes socially unacceptable. Well, I'd sooner become a pariah than succumb to the virus.

When it comes to being unvaccinated, you are burdened by yet another responsibility: the safety of others. That means that for the safety of others and yourself, you must continue

practicing all these precautions. It has been a year since the start of the 'two-week' lockdown, and by now I am practically festering in my own juices. Nevertheless, I am continuing to do what I must, unflinching in the face of duty. I have completely secluded myself from the outside world. I haven't seen a single living soul in the last two months.

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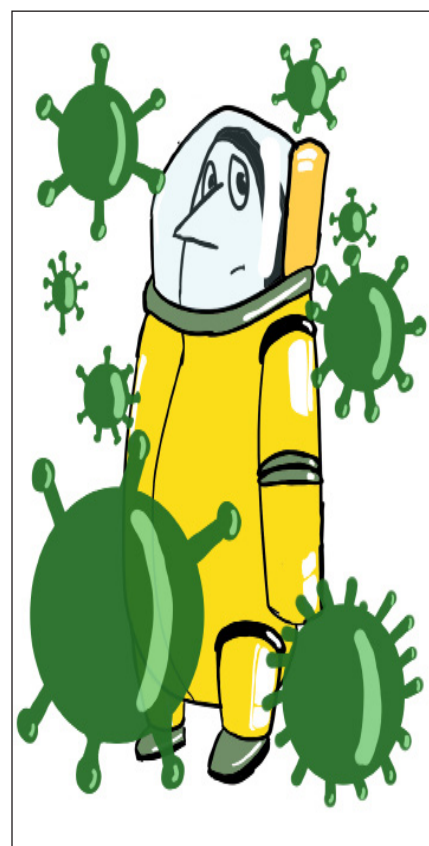
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A lucky few have been immunised by contracting the virus and recovering. Like I said, I'm not sure if I'm immune. While it is quite possible that I got the virus and had no symptoms, I highly doubt that my body is capable of such a great feat. While there is no way to know for sure, for now I am left with two options. Either I continue to shelter-in-place, or I face it head on. My considering actually stepping outside may just be a symptom of the insanity brought on by the isolation, though this too can only be solved by interacting with other people. There was never a shred of doubt this would be arduous, but after this long, I find myself growing increasingly frustrated. Just existing should not be this hard. It is strenuous to endure something this dreadful, especially when the end is nowhere to be seen.

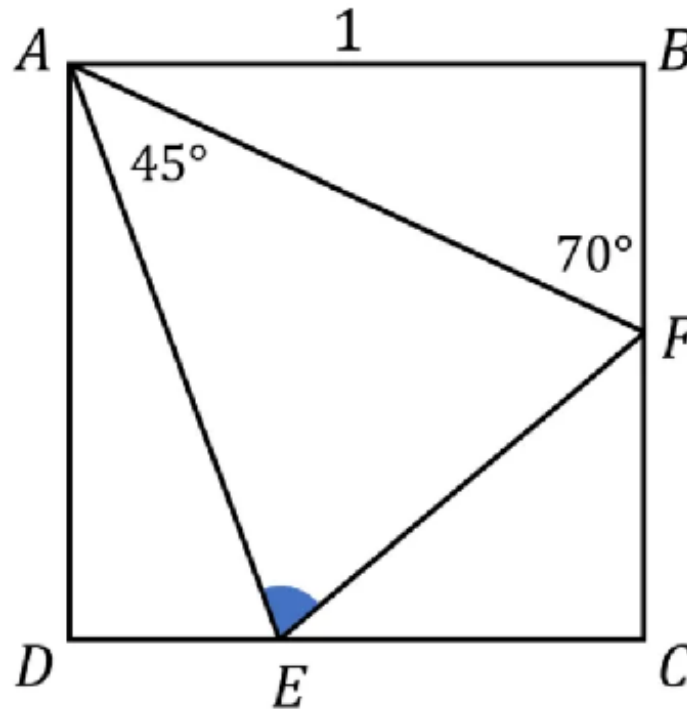
It seems that the knowledge that I will remain unvaccinated

My considering actually stepping outside may just be a symptom of the insanity brought on by the isolation, though this too can only be solved by interacting with other people

has caused me more grief than the isolation. At least then I was comforted by the fact that everyone was as miserable as I was. Now, I must watch in resentment as others flaunt their protection. It is a stressful lifestyle. Perhaps, in the end, I will be proud of making it through without any crutches, such as the vaccine. Then we'll see who parades what in who's face.



The Problem of The Week



ABCD is a square. What is angle AEF? What is $EC + CF + FE$? Solve the question without using trigonometry.

Source: *Mind Your Decisions*

What Have You been Reading During the Lockdown?

The Adventures of the Kohinoor

Authors: William Dalrymple and Anita Anand

Diamonds are forever and so are the stories attached to them. This is a book about a diamond and the lengths to which people went in order to possess it. The book portrays a constant drama between members of the upper class as they attempt to attain the Kohinoor diamond. The story revolves around finding and tracing the original owner of the Kohinoor diamond, and the book affords a great value read.

- Aditya Agarwal

What Have You been Watching During the Lockdown?

The Good Place

Cast: Kristen Bell, William Jackson Harper

The Good Place is a television series set in the afterlife. It may not seem like a conventional sitcom that follows lovable, everyday characters as they try to navigate life and yet, on one level, it is exactly that, except for the fact that its characters try to be better people in death. The show's brilliance, however, lies in its ability to discuss weighty philosophical conundrums and drive you to introspection while maintaining its easy-watching sitcom exterior.

- Advaita Sood

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