## VECTOR DAY 2021 (24th July)

"It's like asking why is Ludwig van Beethoven's Ninth Symphony beautiful. If you don't see why, someone can't tell you. I know numbers are beautiful. If they aren't beautiful, nothing is." ~Paul Erdos

### <u>Quiz</u>

Engage your intellect in a quiz of mathematical topics. Quick observations and ingenious thought are the only qualities that are sought. Challenge yourself and solve complex problems from an area of math beyond the general curriculum. Requires a free and curious mind to do well!

#### Heads: Yashwardhan Budhiraja and Asavari Singh Saigal

#### Senior Quiz(9-11)- 3 participants-

Preliminary Round followed by Final round. Three members, one from 9th, one from 10th and one from 11th, are selected from each house for the final round.

#### Junior Quiz(6-8) – Requires 3 participants-

One round over Kahoot. Three members, one from 6th, one from 7th and one from 8th are selected from each house for the final round.

#### **Rules and format:**

- The Vector Day Junior Quiz will be for classes 6-8
- The Vector Day Senior Quiz will be for classes 9-11
- There will be 6 teams of 3 students, one from each house.
- Each team must have 1 student from classes 6, 7, 8 for the junior quiz
- Each team must have 1 student from classes 9, 10, 11 for the senior quiz

#### There will be 3 official and 1 preliminary round(s) in the quiz.

#### **Preliminary Round:**

• This round will contain only MCQ questions.

- Each MCQ question will be worth 5 points
- Designed to aid the decision of house captains in choosing the teams for the round

#### Round 1:

- This round will contain only MCQ questions.
- Each MCQ question will be worth 5 points
- Questions cannot be passed between teams
- The two teams with the lowest score at the end of the second round will be eliminated
- There will be no negative marking.

#### <u>Round 2:</u>

- This round will contain both MCQs and structured questions
- Each MCQ is worth 5 points and each structured question 10 points
- Only structured questions can be passed on to the next team, and to one team only.
- This passed question will be worth 5 points and if the next team fails to answer it will be passed on to the audience.
- At the end of this round, the team with the lowest total is eliminated.
- There is no negative marking

#### <u>Round 3:</u>

- This round will contain written questions only.
- There will be negative marking for each wrong answer.
- Each wrong answer will deduct 10 points.
- Each correct answer will gain 10 points.
- Questions cannot be passed.
- Top 3 will be decided based on points.

#### Tie-breaker questions:

- These questions will be structured questions only.
- These will be fastest-finger first questions.
- There will not be any negative marking

### **Does It Function?**

#### Heads: Ansh Thukral, Kusha Jaggi, Aayush Tomar and Tia Singh

#### <u>Classes:</u> 10-12th

#### From the DPSI logo to Google's 'G' everything can be explained using functions. And that's essentially what the motive of 'Does it function' is

#### Rules

- 10 points will be awarded for each correct answer.
- 5 points will be awarded for partially correct answers.
- There is no negative marking
- The use of a graphical calculator is allowed in the first round only.
- Any cheating will result in immediate disqualification.

All teams will participate in both rounds. The scores from both rounds will be added to determine the results

#### <u>Round 1</u>

The logo of a company/organisation will be displayed on the screen. Participants will be given 3 minutes to give the equations for the functions that make up the shape of the logo. 10 points will be awarded if all the equations are correct. 5 points will be awarded for partially correct answers.

#### Round 2

Each team will be given a set of equations that make up the logo of a company/organization. 10 points will be awarded if the participants successfully identify the brand. 5 points will be awarded for correctly drawing the shape of the logo but failing to identify the brand. Each team will be given 1 minute to do so.

## <u>Hackathon</u>

#### Love Mathematics? Love Programming? How about both?

#### 2 participants per house from class 9th to 12th

#### Heads: Lakshay Kalra

#### **Rules and Format**

- Participants will be required to create a website/app based upon a maths related prompt given on the spot.
- They will be given the topic a day before so that they can prepare accordingly.
- Participants will also need to write a paragraph that explains the mathematical side of the website, for example participants can talk about how they used the golden ratio to help them design patterns on the website.
- For example: Design a website that helps students in solving graphical questions. An example website as a solution could be: <u>Graphing Calculator</u>
- Pre-requisites: Basic HTML, CSS and JS
- As the participants will have less time than conventional hackathons, they will be allowed the use of basic bootstrap templates, tailwind CSS and tail blocks(these have to be cited).
- Any and All code that has been copied from either GitHub, CodePen or any other website HAS TO BE MENTIONED IN THE README file.
- Any uncited code that's found to be copied will result in negative marking/disqualification.
- All submissions will only be accepted as **public** GitHub repositories. For more information about GitHub repos. Please check out: <u>https://docs.github.com/en/github/getting-started-with-github/quickstart/crea</u> <u>te-a-repo</u>. If there are any problems/doubts regarding Git, please contact the event head.

#### Scoring Rubric

- Creativity (0-10)
- Technical Complexity (0-10)
- UI (0-10)
- Use Cases (0-10)

## <u>Mathematical Bingo</u>

# Exercise your mathematical ability by playing our own version of the popular game Bingo!

#### Heads: Devaj Gupta and Arrav Kuruvilla

#### **Rules and format:**

- The event will be a single, continuous round event for all students of grade 5 and 6
- Each student will be receiving an image of a card on their official DPS International email accounts one day before the event
- This card will need to be either printed out or copied onto a suitable paper, which will now be the playing card for the student
- Each student is required to attempt to answer each question displayed on their screens as the round progresses, to the best of their ability
- The answer to the question, which will be present on the card, will need to be struck out and the exact question number to be written in place of that
- The event will end when all participants have submitted their playing cards and winners shall be declared at a later time.
- At the end of the event, all participants will be ranked by the number of **correctly crossed out solutions.**

**Note:** At the discretion of the quizmasters, any participant can be asked to reproduce evidence of working for the solution and if unsatisfied with the same, the solution will be discredited and the participant may be liable to punitive action.

## Mind Bender

Challenge yourself and solve complex problems from an area of math beyond the general curriculum. Requires a free and curious mind to do well!

#### Heads: Aman Gulati and Arohan Mittal

#### **Rules and format:**

- 3 participants from 10th to 12th grades
- The distribution of topics is the call of the participants
- Each participant will be told the titles of the topics approximately 10 minutes before the event
- The tasks will be heavily proof based and will be marked by the scoring rubric specified below
- If 2 houses receive the same number of points, the house with the lower cumulative time taken will be awarded tie-breaker points
- If there still exists a tie, bonus tie-breaker questions will be given as a means to resolve the challenge
- Rest lies on discretion of the conductor
- Time 2hrs

# <u>Note:</u> it is not compulsory for one student to be in 10th and the other to be in 11th. 3 11th/10th/12th graders can also do the event.

- The event is about understanding how higher level mathematics can be a wonderful addition to their existing skill set, done so in a fun and active manner.
- Working details of the event shall be specified 30 minutes prior to the end of the event.

#### Scoring Rubric:

- Clarity of argument
- Connection between drawn conclusions
- No logical/factual fallacies \_\_\_\_\_\_