



***Delhi Public School, Dwarka***

**presents**

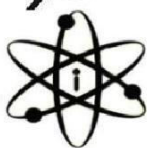
***IGNITE & AXIOM 2018***

***(Science & Mathematics Festival)***

**Organisers:**



**Flux, the Physics Club**



**Ionista, the Chemistry Club**



**Genesis, the Biology Club**



**Axiom, the Mathematics Club**

***Thursday, 25 October 2018 and Friday, 26 October 2018***

The Principal,

Date: 28 September, 2018

Dear Sir/Madam

**'STEM is the artery through which the solutions of tomorrow's problems flow'**

Keeping in mind the theme 'STEM (Science, Technology, Engineering, Mathematics)' Delhi Public School Dwarka is organising Ignite and Axiom 2018, the Science and Mathematics festival on 25 and 26 October 2018.

We cordially invite the students of your school to participate in this event. The core idea of this event is to promote Science, Technology, Engineering and Mathematics (STEM) among the young and innovative minds.

Please find enclosed the Event Details, Rules & Regulations along with the Registration Forms.

Schools will register Online at **[www.igniteaxiom.com](http://www.igniteaxiom.com)** from **01 October** to **15 October** 2018.

Looking forward to enthusiastic participation of your school.

With regards,

Yours sincerely,

**Principal**

## GENERAL GUIDELINES:

- All schools must report by 8:00 am sharp for registration.
- The participants must carry their school Identity card with them.
- The schedule, venues and rules are subject to last minute changes.
- A student may take part in more than one event. However, it is the responsibility of the student to ensure that the timings of the events **do not clash**. In case of any last-minute changes in the event schedule, the host school might not be able to accommodate the student in both the events.
- All the participants must be present in their school uniform.
- To compete for the Overall Trophy, a school must participate in all the events.
- The Overall Winner's Trophy and the Runners Up Trophy will be awarded to the schools securing the highest and the second highest aggregate score respectively in all the events.
- Aggregate score for IGNITE and AXIOM will be calculated separately.
- There will be separate Overall Winners and Runners up Trophy for IGNITE and AXIOM.
- In case of a tie for the Overall position, the trophy will be awarded to the team with the maximum number of winning positions.
- The decision of the judges will be final and binding.

# Contact us

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## Student Coordinators:

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## IGNITE 2018 Events at a Glance

### Events by Flux – The Physics Club

S. No.	Event	No. of Participants	Eligibility
1	Circuitron	2	IX – XII
2	Aquajet	2	IX – XI
3	Meta Analysis	2	IX – XI

### Events by Ionista – The Chemistry Club

S. No.	Event	No. of Participants	Eligibility
1	Elementary	2	XI – XII
2	Enigma	2	X – XII
3	Chemi-Con	1	VIII – XII

### Events by Genesis – The Biology Club

S. No.	Event	No. of Participants	Eligibility
1	Bio-Arena	2	XI – XII
2	Diagnostix	2	XI – XII
3	Eureka	2	IX – X

### Integrated Science Events

S. No.	Event	No. of Participants	Eligibility
1	Group Discussion	1	IX – XII
2	Quiz	2	IX – XII
3	Be Like Oppenheimer	1	IX – XII
4	Surprise	2	IX – XII

### Axiom 2018 Events at Glance

S. No.	Event	No. of Participants	Eligibility
1	Crossword	2	VI – XII
2	Problem Solving Junior	2	VI – X
3	Quiz	2	VI – XII
4	Problem Solving Senior	2	VI – XII
5	Mind Bender	2	VI-VIII

# IGNITE Event Details

## Events by Flux – The Physics club

### **1. Circuitron:**

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes IX - XII  
**Number of participants** : 2

#### **General Rules:**

- Participants will be required to build circuits on breadboards using components such as LEDs, transistors etc.
- Participants will be provided all the necessary components on the spot.
- Participants should be well-versed with the basics of circuits and breadboards.

#### **Rounds:**

- **Round 1 - Preliminary:** A test will be conducted based on the theoretical aspects of circuits. 10 teams will qualify for Round-2.
- **Round 2 - Integrated circuits:** Practical approach towards integrated circuits will be the main aspect of this round.
- **Final Round - Circuit Building:** Participants will be given a circuit diagram and they have to build it using the provided components.

### **2. Aquajet:**

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes IX- XI  
**Number of participants** : 2

#### **General Rules:**

- Participants have to build a water-propelled rocket from home, using a 2 litre water bottle. Only three rockets per team will be allowed.

Only manual bicycle pumps and 12V DC pumps will be allowed. Participants **have to bring** their own launchers, air pump and suitable cork as per the requirement. No launchers will be provided by the host school.

- Use of soft chemicals such as baking soda and vinegar is allowed, while use of hard chemicals will lead to disqualification.

- The event will consist of two rounds. 10 teams will qualify for round 2.

### **Judgement Criteria:**

- Distance covered by each rocket will be measured in round 1.
- Time of flight and distance covered will be measured in round 2.

### ***3.Meta Analysis:***

**Day, Date** : Thursday, 25 October 2018

**Eligibility** : Classes IX - XI

**Number of participants** : 2

### **General Rules:**

#### **ROUND 1 :**

- Participants will be tested on their scientific knowledge and trivia
- First 8 teams will qualify for the second round.

#### **ROUND 2 :**

- Participants will be tested on their ability of making observations based on a video depicting different Physics phenomena and deduce the clues provided in the form of texts, audio-visuals and images.
- Questions based on the video will be asked to check the understanding and identification of these phenomena.
- Participants also have to analyse scientific studies and assess their credibility.



## Events by Ionista – The Chemistry Club

### 1. *Elementary:*

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes XI- XII  
**Number of participants** : 2

The event will consist of subjective problems testing students on various fields of Chemistry, namely Organic Chemistry, Inorganic Chemistry and Physical Chemistry. The questions will cover topics from class XI and XII CBSE curriculum.

### 2. *Enigma:*

**Day, Date** : Thursday, 25 Oct 2018 & Friday, 26 Oct 2018  
**Eligibility** : Classes X –XII  
**Number of participants** : 2

Two rounds will be conducted to test practical problem solving skills of the participants. The teams qualifying in the **undisclosed preliminary round** will compete in a practical based final, details of which will be disclosed then

**All finalists must get their own lab coat and gloves.**

### 3. *Chemi-Con:*

**Day, Date** : Friday, 26 October 2018  
**Eligibility** : Classes VIII - XII  
**Number of participants** : 1

Participants will create a comic strip depicting the **history, concept and basis** of a particular theory in chemistry. All the information related to the theory will be provided to the participants. Please note that the participants must bring their own drawing boards.

#### **Judgement criteria:**

- Relevance to the topic
- Originality and Creativity
- Clarity of thought and expression

**Each participant must bring his/her own material like colors, pastel sheets, brushes etc**

## Events by Genesis – The Biology Club

### **1. Bio-Arena:**

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes XI - XII  
**Number of Participants** : 2

The participants will have to go through an undisclosed prelim using primary biology knowledge to reach the finals during which they shall have to earn points and use them to achieve the ultimate organism.

**May the microbes be with you.**

### **2. Diagnostix:**

**Day, Date** : Friday, 26 October 2018  
**Eligibility** : Classes XI - XII  
**Number of Participants** : 2

The aim is to combine the given information ranging from symptoms to test results and arrive at a conclusion as what ails the patient.

### **3. Eureka:**

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes IX - X  
**Number of Participants** : 2

The participants will have to get through a series of logical and problem solving tasks involving creativity and basic biology knowledge.

## **Integrated Science Events**

### **1. Group Discussion:**

**Day, Date** : Thursday, 25 October 2018  
**Eligibility** : Classes IX - XII  
**Number of Participant** : 1

Let's talk science. The event will be held in a 2 tier process - a preliminary round followed by the final round. Participants will be given topics related to any domain of science. The format of the Group Discussion and the topics will be disclosed on the day of the event.

## 2. Quiz:

<b>Day, Date</b>	: Thurs, 25 Oct 2018 & Fri, 26 Oct 2018
<b>Eligibility</b>	: Classes IX - XII
<b>Number of Participants</b>	: 2

A test of scientific trivia and thinking skills consisting of a written preliminary round and an on-stage final round. Six teams from the preliminary round will qualify for the final round.

## 3. Be like Oppenheimer:

<b>Day, Date</b>	: Thursday, 25 October 2018
<b>Eligibility</b>	: Classes IX – XII
<b>Number of participant</b>	: 1

### General Rules:

- Participants have been provided with six principles (enclosed).
- Each participant must submit a quality summary paper on the principles and working of their design.
- The length of the research paper must be between 800 - 1500 words. Any diagrams or illustrations will not be included in the length.
- The summary paper must be mailed to **igniteoppenheimer2018@gmail.com** latest by 18 October 2018.
- Best six teams will be shortlisted and will be asked to pitch their idea and ask for funding. The list of finalists will be posted on the Facebook page of Ignite & Axiom latest by 21 October 2018.
- The finalists will have to prepare a pitch to present their research projects and demand an appropriate amount of funding required for their research, from a panel of judges. The finalists can use Power Point presentations.
- The objective of their pitch should help them to get the maximum of the demanded amount.
- The winning teams will be adjudged according to the fraction of demand granted by the judges. For example, if team A has demanded Rs 1000 and manages to get a funding of Rs 500 from the panel, then their score will be 5/10.

### Judgement Criteria:

- **Originality and creativity**
- **Depth of Research**
- **Feasibility of Application**
- **Logic**

#### ***4. Surprise:***

<b>Day, Date</b>	<b>: Friday, 26 October 2018</b>
<b>Eligibility</b>	<b>: Classes IX - XII</b>
<b>Number of participants</b>	<b>: 2</b>

**Expect the unexpected!**

# PRINCIPLES FOR BE LIKE OPPENHEIMER

It's the year 2055. Humans have had a colony on Mars for 20 years now. They have decided to reclaim earth as their own and have launched an invasion. All countermeasures have been unable to slow their progress.

Using any one of the given principles devise a new countermeasure to stop the invasion in its tracks

## 1. Spaghettification

Spaghettification is the vertical stretching and horizontal compression of objects into long thin shapes in a very strong non-homogeneous gravitational field.

Within a small region the horizontal compression balances the vertical stretching so that small objects being spaghettified experience no net change in volume.

It is caused by tidal forces.

To use Spaghettification as one of the principles

- Explore the underlying concept of tidal forces, when is their effect more pronounced and how it can create collision between two large bodies.
- Use the unique principle of extension to create synthetic localised environments to counter
- You can design new objects in interstellar space ranging from asteroids to new planets for using Spaghettification as a principle.

## 2. Mutation

Mutation refers to change in DNA sequence due to errors in DNA replication and environmental factors such as Uv rays and radiations. The world of mutants in the marvel comics has made this concept known to everyone.

For using mutation as one the principles:

- learn about how mutation can be controlled and in what way the prenatal existence of mutants is depicted in X-men comics.
- The fictional context of each principle is completely relevant i.e.-you can create your own weapon 'X'.
- Mutation doesn't always end up in creating mutants. Feel free to develop a new concept which uses mutation as it's primary principle.

### **3. Interstellar ice**

Interstellar ice consists of grains of volatile compounds in the ice phase that are formed in the interstellar medium. Ice and dust grains form the primary material out of which the Solar System was formed, thus having immense significance. These volatile compounds include nitrogen, ammonia, carbon dioxide water etc.

For using interstellar ice as one of the countermeasures:

- Research over its mystifying properties while taking care of smallest of details.
- Understand its significance in astrochemistry and astrophysics for its maximum utilisation.
- The components of interstellar ice can be used to create powerful weapons in space. So put your maximum focus on how they can be created near the colony.

### **4. Weathering**

Weathering occurs because the physical and chemical nature of materials formed in the Earth's interior are in disequilibrium with outside surface. It is the first step for a number of other geomorphic and biogeochemical processes.

- Explore over the rate of weathering and possible factors which affect this rate.
- Take ideas of how this physical phenomenon is depicted in movies and especially in mythologies.

### **5. TV shows**

Can the lannisters join forces with Agents Of SHIELD or will Reverse Flash be successful in rupturing the timelines.

Will Walter White and Dr.House come in terms?

Will apocalypse really shatter the planet like a House of cards. Take help from the Mightiest Heroes and cease the rise in stranger things.

Prove the utmost relevance of Tv shows in today's world by using them to stop our very own species.

### **6. Shopping**

Can grocery list and Loaded Carts make their own way to help mankind?!

The ultimate love of humanity for procuring anything and everything may it be relevant or irrelevant? Rings a bell? Shopping. Although having no correlation whatsoever in preventing an extra-terrestrial invasion shopping has effects on brain, health and society. Take your creativity to extreme levels to find out how a simple leisure activity can prove to be useful in this situation.

Turn the tables to use this obsession to stop the colony from invading earth.

## **FORMAT OF PAPER**

- 1. Suitable title**
- 2. Name of the school and participant**
- 3. Principle chosen**
- 4. Table of contents**
- 5. Introduction**
- 6. Complete principles and explanation of the countermeasures designed**
- 7. Illustrations**
- 8. Conclusion**
- 9. Citations**
- 10. 12 pt. font, 1-inch margin left side, 1.5 line spacing.**

**Proper divisions on the basis format given above should be followed.**

# AXIOM Event Details

## **1. Crossword:**

<b>Day, Date</b>	: Thursday, 25 October 2018
<b>Eligibility</b>	: Classes VI – XII
<b>Number of participants</b>	: 2

Conventional crossword based on cryptic clues.

## **2. Mind Bender:**

<b>Day , Date</b>	:Thursday, 25 October 2018
<b>Eligibility</b>	: Classes VI – VIII
<b>Number of participants</b>	: 2

Participants will be provided with some theory on a topic from a field of mathematics and will be asked related problem solving based questions. There will be only one round.

## **3.Problem Solving Junior:**

<b>Day , Date</b>	: Thursday, 25 October 2018
<b>Eligibility</b>	: Classes VI – X
<b>Number of participants</b>	: 2

Single paper consisting of problems based on various fields of olympiad mathematics including, but not limited to combinatorics, logic, algebra, geometry, number theory. The paper is not subjective, the answers to all questions are objective free response type.

## **4. Quiz:**

<b>Day , Date</b>	: Thurs, 25 Oct 2018 & Fri, 26 Oct 2018
<b>Eligibility</b>	: Classes VI – XII
<b>Number of participants</b>	: 2

A mix of mathematical trivia and logical puzzles consisting of a written **preliminary round** and an **on-stage final round**. Top 6 teams qualify for the finals.



### **5. Problem Solving Senior:**

**Day, Date** : Friday, 26 October 2018

**Eligibility** :Classes VI – XII

**Number of participants** : 2

Single paper consisting of problems based on various fields of olympiad mathematics including, but not limited to combinatorics, logic, algebra, geometry, number theory. The paper is not subjective, the answers to all questions are objective free response type.

### **POINTS TALLY: AXIOM**

<b>S No</b>	<b>Event</b>	<b>First</b>	<b>Second</b>	<b>Third</b>
1	Crossword	100	80	60
2	Problem Solving Junior	100	80	60
3	Mind Bender	100	80	60
4	Quiz	100	80	60
5	Problem Solving Senior	100	80	60

## POINTS TALLY: IGNITE

S No	Event	First	Second	Third
1	Circuitron	100	80	60
2	Aquajet	100	80	60
3	Meta Analysis	100	80	60
4	Elementary	100	80	60
5	Enigma	100	80	60
6	Chemi-Con	100	80	60
7	Diagnostix	100	80	60
8	Eureka	100	80	60
9	Bio Arena	100	80	60
10	Group Discussion	120	100	80
11	Quiz	120	100	80
12	Surprise	120	100	80
13	Be Like Oppenheimer	150	120	100

# IGNITE AND AXIOM 2018

## (Science and Mathematics Festival)

### DAY 1 (Thursday , 25<sup>th</sup> October 2018)

Venue									
Time	Open air Stage	Auditorium	Auditorium Basement	Physics Lab	Biology lab	General Science lab	Senior Library	Senior Wing Classrooms	Sr. Comp. Lab
8:00- 8:30	<h1>REGISTRATION</h1>								
8:30- 9:00									
9:00- 9:30	<h2>INAUGURAL</h2>								
9:30- 10:00	F2	I1	I3	F1	G2	G2	A4	A1,A2,A3,C1,C2,G3	F3
10:00-10:30	F2	I1	I3	F1	G2	G2	A4	A1,A2,A3, C1,C2,G3	F3
10:30-11:00	F2	I1	I3	F1	G2	G2	I2	A2,A3 C1,C2,G3	F3
11:00-11:30	F2	I1	I3	F1	G2	G2	I2	A2,A3 C1,C2,G3	F3
11:30-12:00	F2	I1		F1	G2	G2		A2	F3
12:00-12:30		I1						A2	
12:30-1:00									
1:00- 1:30									

#### Key for events

**FLUX:** F1: Circuitron, F2: Aquajet, F3: Meta Analysis

**IONISTA:** C1: Elementary, C2: Enigma, C3: Chemicon

**GENESIS:** G1: Diagnostix, G2: Eureka, G3: Bio Arena

**INTEGRATED SCIENCE:** I1: Group discussion, I2: Quiz, I3: Be like Oppenheimer, I4: Surprise

**AXIOM:** A1: Crossword, A2: Problem Solving Jr., A3: Mind Bender, A4: Quiz, A5: Problem solving Sr

# IGNITE AND AXIOM 2018

## (Science and Mathematics Festival)

### DAY 2 (Friday , 26<sup>th</sup> October 2018)

Venue	Open air stage	Auditorium	Auditorium Basement	Physics lab	Chemistry lab	Biology lab	Sr. Comp. Lab	Senior Library	Senior Wing Classrooms
Time	<b>REGISTRATION</b>								
8:00- 8:30									
8:30- 9:00									
9:00- 9:30		A4	C3		C2		I4	G1	C2 ,A5
9:30- 10:00		A4	C3		C2		I4	G1	C2,A5
10:00-10:30		A4	C3		C2		I4	G1	C2,A5
10:45-11:00		I2	C3		C2		I4	G1	,A5
11:00-11:30		I2	C3		C2		I4	G1	A5
11:30-12:00		I2							A5
12:00-12:30									
12:30-1:00	<b>PRIZE DISTRIBUTION</b>								
1:00- 1:30									

#### Key for events

**FLUX:** F1: Circuitron, F2: Aquajet, F3: Meta Analysis,

**IONISTA:** C1: Elementary, C2: Enigma, C3: Chemicon

**GENESIS:** G1: Diagnostix, G2: Eureka, G3: Bio Arena

**INTEGRATED SCIENCE:** I1: Group discussion, I2: Quiz, I3: Be like Oppenheimer, I4: Surprise

**AXIOM:** A1: Crossword, A2: Problem Solving Jr., A3: Mind Bender, A4: Quiz, A5: Problem solving sr

NOTE: For any further queries mail us at  
**[igniteaxiom18@gmail.com](mailto:igniteaxiom18@gmail.com)**

