



Aakash

Medical | IIT-JEE | Foundations

KNOWLEDGE BYTES

FEBRUARY 2026

CLASS 10





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PREFACE

What is Knowledge Bytes ?

Knowledge Bytes is a collection of riddles, interesting facts, mnemonics and puzzles that will make your learning fun and engaging.

We want you to be delighted about studying. Knowledge Bytes helps you to know more about the subject in a fun, motivating and educational way and helps to implement what you learn in a creative way.

Benefits



Saves Time



Develops Learning Skills



Stimulates Interest



Leads to Increased Comprehension

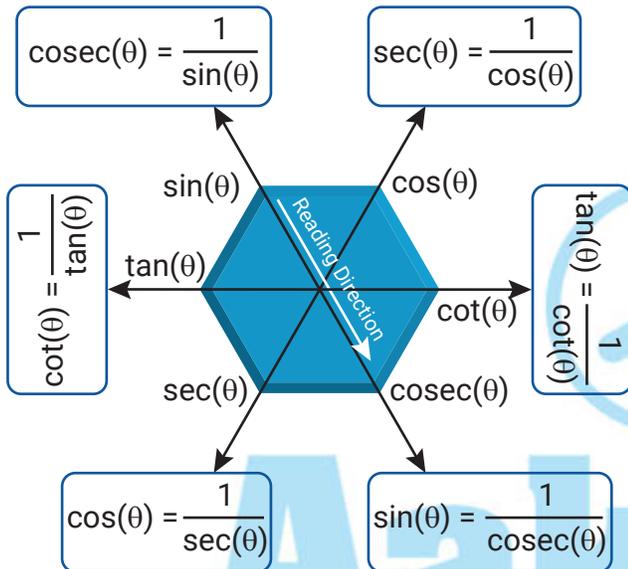
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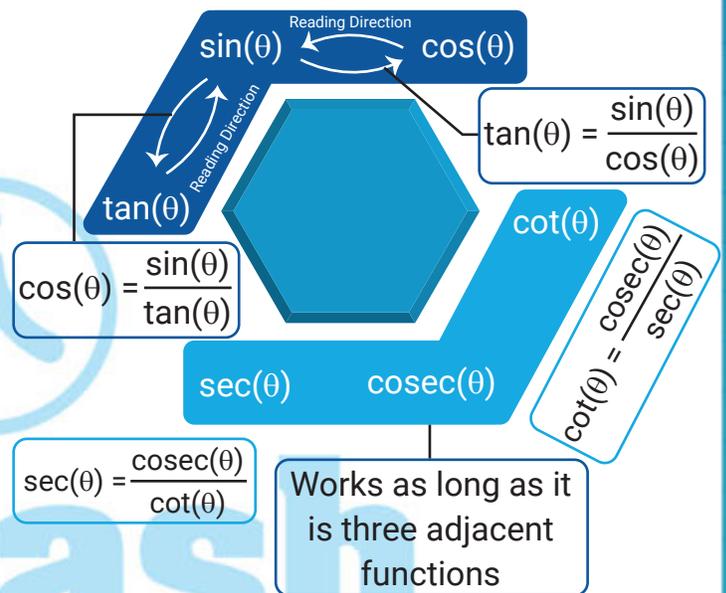


Hexagon Mnemonic

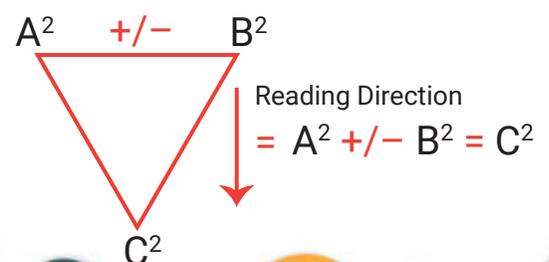
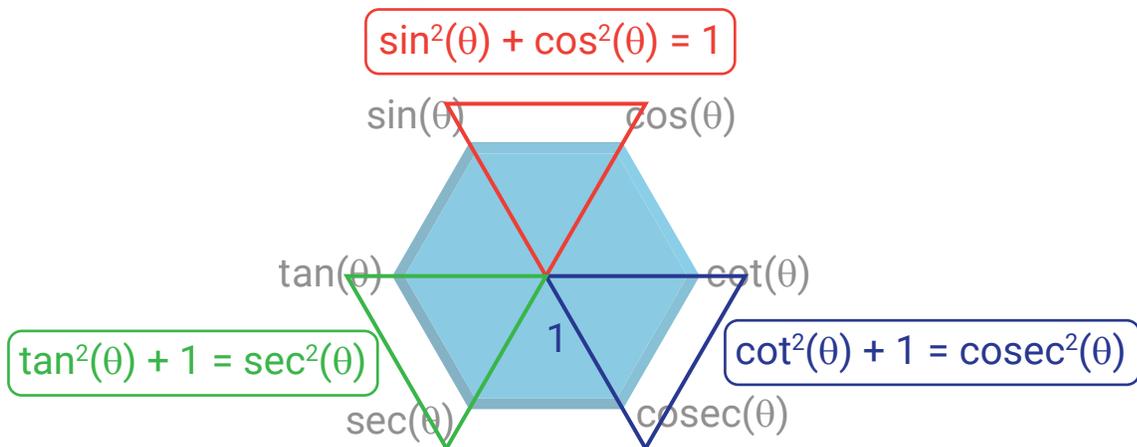
Reciprocal Identity



Quotient Identity



Pythagorean Identity



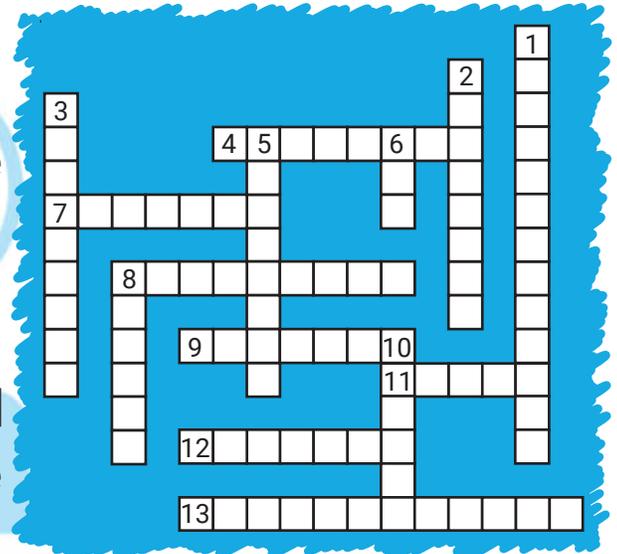


Areas Related to Circles

Crossword

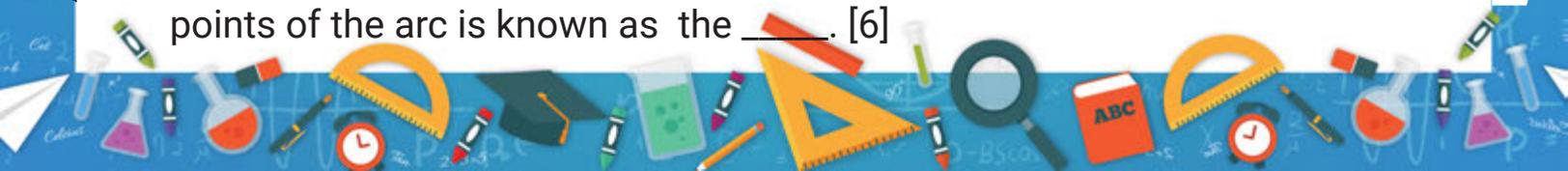
Across

4. The longest chord of a circle. [8]
7. A line that touches the circle at only one point is a _____. [7]
8. Two circles having the same radii are _____. [9]
9. A parallelogram circumscribing a circle. [7]
11. Angles in the same segment of a circle are _____. [5]
12. The region between a chord and its corresponding arc is called a _____. [7]
13. An arc formed by the end points of a diameter is a _____ arc. [12]

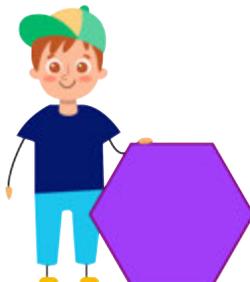
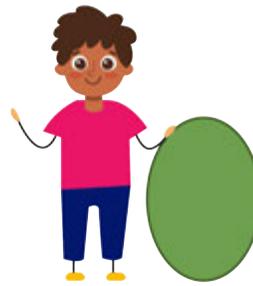
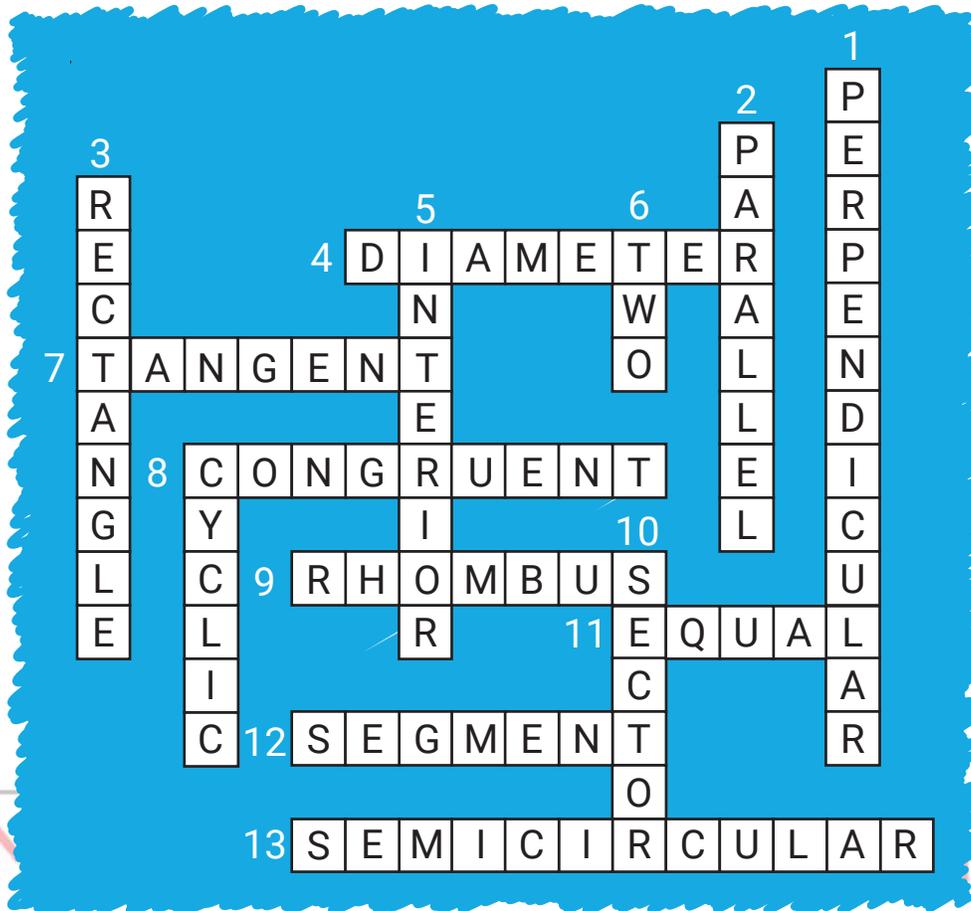


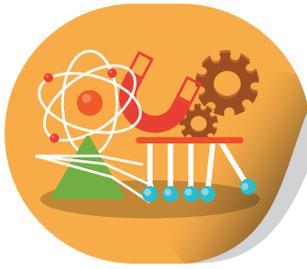
Down

1. The tangent at any point on a circle is _____ to the radius through the point of contact. [13]
2. Tangents drawn at the ends of a diameter are _____. [8]
3. A cyclic parallelogram is _____. [9]
5. The centre of the circle lies in the _____ of the circle. [8]
6. The maximum number of tangents to a circle through a point lying outside the circle is equal to _____. [3]
8. A quadrilateral with all its four vertices lying on a circle is called _____. [6]
10. The region between an arc and the two radii joining the centre to the end points of the arc is known as the _____. [6]



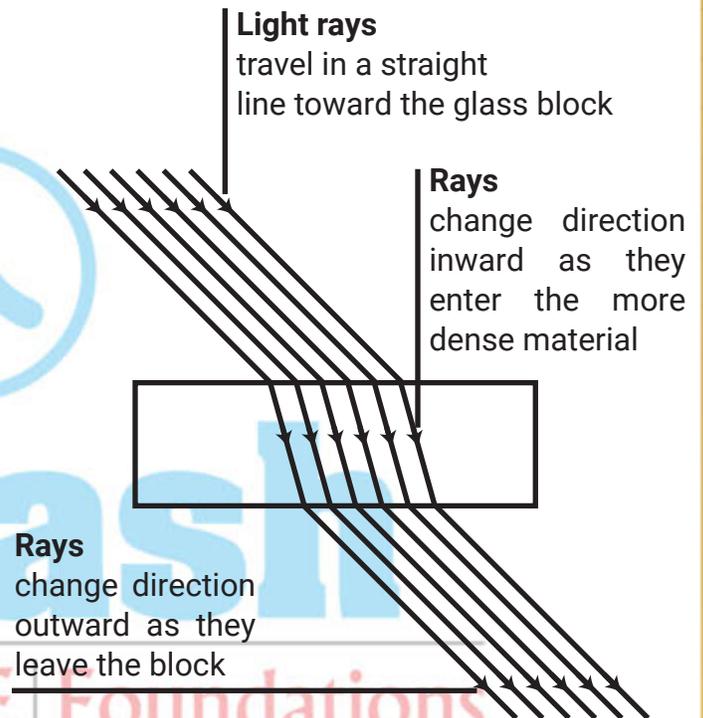
Answer (Crossword)





Light : Refraction

Light rays usually travel in straight lines, but when they pass from one medium to another they can be forced to bend (change direction and continue on a new straight path). The bending is called refraction. It happens because light travels at different speeds in different media. If light rays travel through air and enter a more dense medium, such as water, they slow down and bend into the more dense medium. Light rays moving into a less dense medium, such as from water to air, speed up and bend outwards.

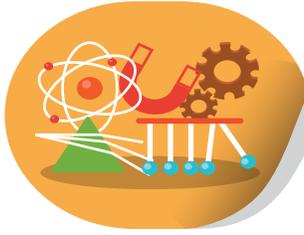


Light rays bend or refract if they enter a glass block at an angle. When they pass from air into glass, they bend inwards and slow down. They travel in a straight line through the glass at an angle to their original direction. As they pass out from the glass into air, they bend outwards and speed up again.

Puzzle For The Eye

If you kept a straw in a glass of water, the top and the bottom of the straw no longer seem to fit together. This trick of the light is caused by refraction. Light bends outwards when it travels from water to air, so the eye sees the bottom of the straw (in the water) as deeper than the top of the straw (in the air).



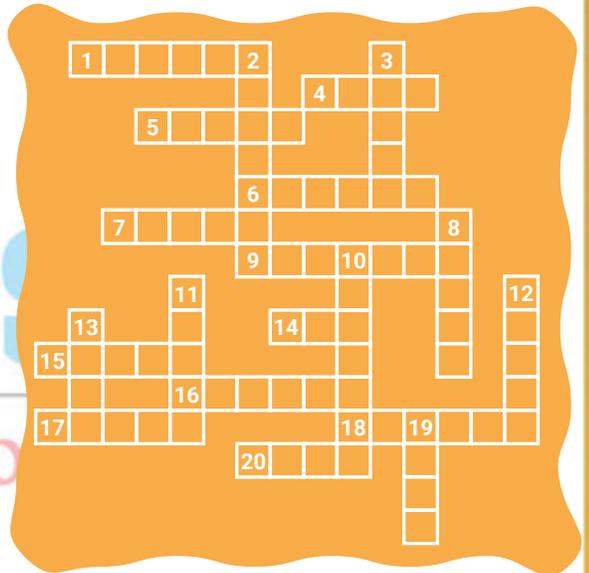


Magnetic Effects of Electric Current

Crossword

Across

1. It's a machine which can convert mechanical energy into electrical energy.
4. _____ is a good example of magnetic substance.
5. The magnetic North pole is located towards the Geographic _____ pole of Earth.
6. The field lines directed from South to North _____ a magnet.
7. All of the lines of force around a magnet sets magnetic_____.
9. A magnet made by electric current.
14. A Solenoid is just similar to a _____ magnet.
15. Cobalt is an example of _____ magnetic material.
16. We can not have a magnet with _____ pole.
17. The ends of a magnet.
18. A metal that has magnetic properties. Hint: It begins with N
20. Voltmeter is a device used to measure _____ .



Down

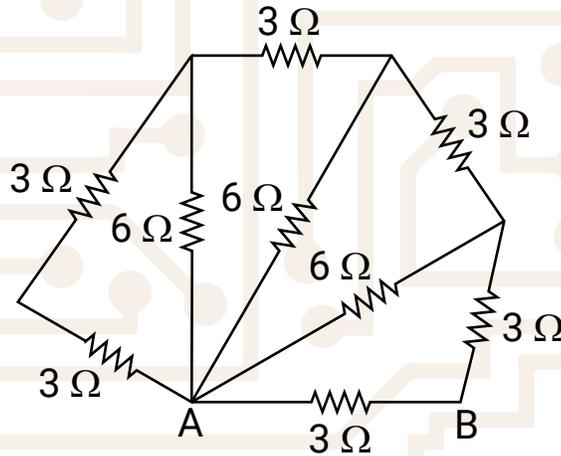
2. The field lines directed from North to South_____ a magnet.
3. Microphone is a device which converts _____ into electrical energy.
8. A freely suspended magnet always aligns in_____ -south direction.
10. Ammeter is a device used to measure_____.
11. The magnetic field lines never_____ each other.
12. Similar poles of a magnets_____ each other.
13. The net magnetic moment in the diamagnetic material is_____.
19. Many loops of wire are placed one on top of another.





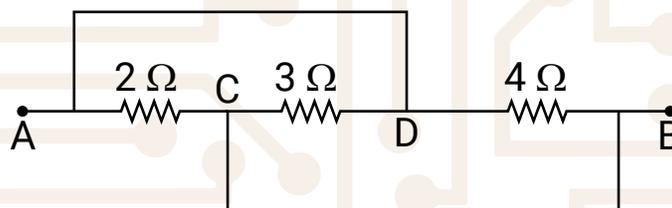
Thunderbolt

Circuit-I Find the equivalent resistance between A and B.



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Circuit-II Find the equivalent resistance between A and B.

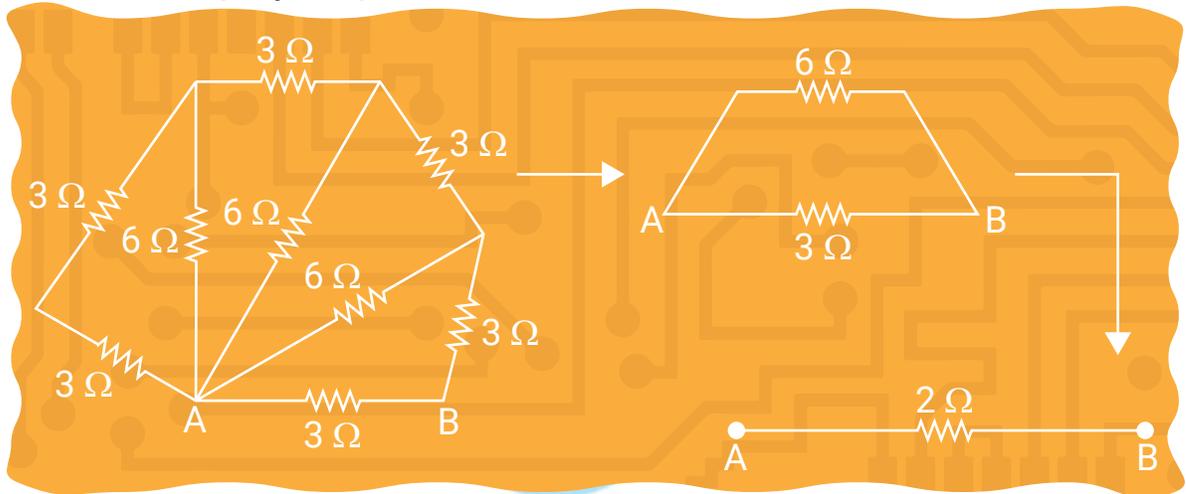




Answer (Thunderbolt)



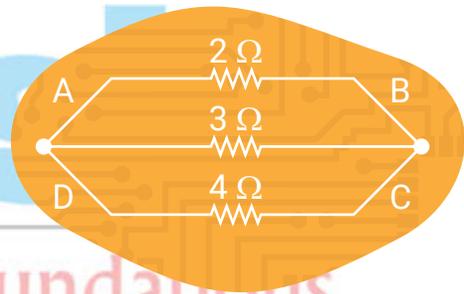
Reconstructed figure equivalent to given figure are given step by step as



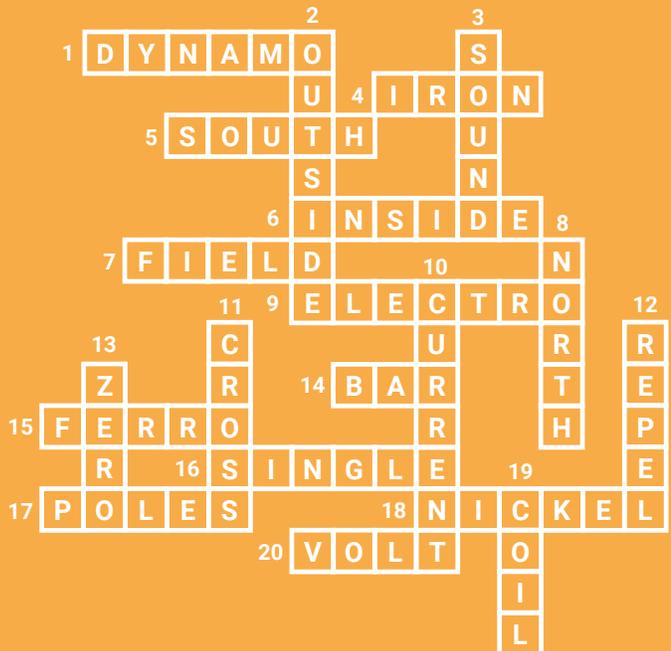
The equivalent figure is given as

$$\text{So, } \frac{1}{R_{\text{eq}}} = \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$$

$$R_{\text{eq}} = \frac{12}{13} \Omega$$



Answer (Crossword)





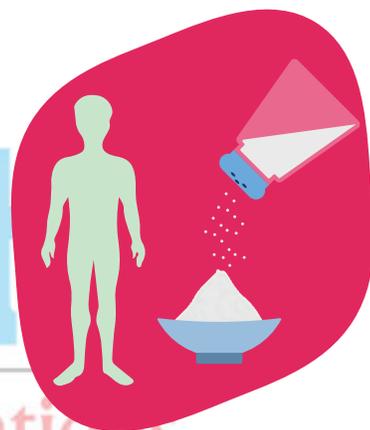
Sodium Chloride (Common Salt)

Common Salt and Us

Why is common salt important for our body?



- ✓ Keeps the body hydrated
- ✓ Essential for nerve and muscle function
- ✓ It regulates blood fluids and prevents low blood pressure.



Maintaining Salt Balance in Our Body

Excess salt consumption causes health problems like kidney disease, high blood pressure, cardiovascular disease and stroke.

Low salt consumption causes vomiting, headache, confusion, loss of energy, brain malfunctioning and muscle weakness.



DID YOU KNOW?

Salt is present in each and every cell of our body. It is required to flush out toxins from the body.

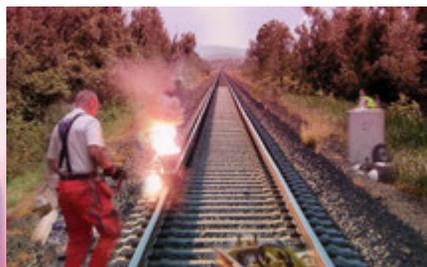
Thermite Process

Thermite process is an important metallurgical process which is used to reduce metal oxide into metal with the help of more reactive metal.

This process is highly exothermic in which metals are obtained in molten state. Due to exothermic nature of process, it is used in



Thermite welding



Joining railway track

DID YOU KNOW?

Thermite process is also used for military purposes. It was used as incendiary bombs in World War II.

These bombs consisted of dozens of thin thermite-filled canisters (**bomblets**) which were ignited by a magnesium fuse. The bombs created massive damage in many cities due to fires started by the thermite. Cities that primarily consisted of wooden buildings were especially susceptible.





Quiz

Q. 1 Which of the following represents the correct number of covalent bonds of a single carbon atom in its allotropes?

- (1) Diamond - 3, Graphite - 3
- (2) Diamond - 4, Graphite - 3
- (3) Diamond - 3, Graphite - 4
- (4) Diamond - 4, Graphite - 4

Q. 2 Which of the following is used for making glass cutters ?

- (1) Graphite
- (2) Diamond
- (3) Steel
- (4) Bronze

Q. 3 $a\text{MnO}_2 + b\text{HCl} \longrightarrow c\text{MnCl}_2 + d\text{H}_2\text{O} + e\text{Cl}_2$
On balancing the given reaction a, b, c, d, e will be

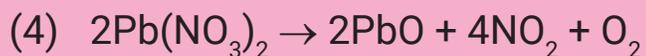
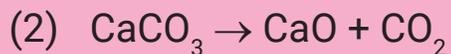
- (1) 1, 4, 1, 2, 2
- (2) 2, 4, 2, 2, 1
- (3) 1, 4, 1, 2, 1
- (4) 1, 1, 1, 2, 1

Q. 4 $\text{N}_2 + \text{O}_2 \longrightarrow 2\text{NO}$ is an

- (1) Exothermic combination reaction
- (2) Endothermic combination reaction
- (3) Exothermic decomposition reaction
- (4) Endothermic decomposition reaction



Q. 5 Identify the odd one with respect to type of decomposition reaction.



Q. 6 Cinnabar is the ore of

(1) Sodium

(2) Iron

(3) Magnesium

(4) Mercury

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Answer

(1) (2)

(2) (2)

(3) (3)

(4) (2)

(5) (3)

(6) (4)



Tabular Summary of Phytohormones

	Germination	Growth to Maturity	Seed Dormancy	Flowering	Fruit Development	Abscission
Auxin	✗	✓	✗	✓	✓	✗
Gibberellin	✓	✓	✗	✓	✓	✗
Cytokinin	✗	✓	✗	✓	✓	✗
Abscisic acid (ABA)	✗	✗	✓	✗	✗	✓
Ethylene	✗	✗	✗	✓	✓	✓

? Can you say which is the only plant hormone that is transported in one direction in a plant – downward, that is from the top to the bottom, like a one-way road from the stem tip to the roots?

HINT: Its concentration is highest at the top of the plant and decreases as you get closer to the roots, this controls the overall shape of the plant and helps to keep the primary stem of a plant the leader.



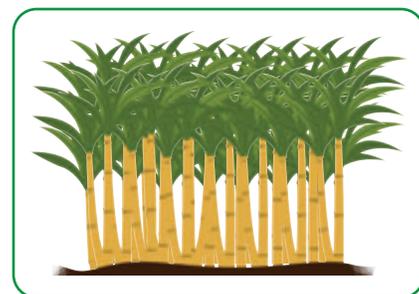
Ans. Auxin

Fact

You know how a farmer and a businessman makes profit out of stem of a plant?

Longer stems would mean more profit, but how?

Gibberellins sprayed on sugarcane elongate the stem between the nodes. Longer stems mean more stored sugar. More sugar to sell means more coin.



Mnemonic

GHG Can Work for MNC

GHG

Green House Gases

Can

Carbon-di-oxide

Work

Water vapour

M

Methane

N

Nitrogen oxide

C

Chlorofluorocarbon

UV Rays and Their Effects On Skin

UV A Rays

Even long waves that can penetrate deep into the skin's surface, releasing free radicals and causing DNA changes that can result in skin cancers.

320 nm
Wavelength

UV B Rays

Longer waves, that reach skin's surface can cause surface tanning, burning and signs of aging.

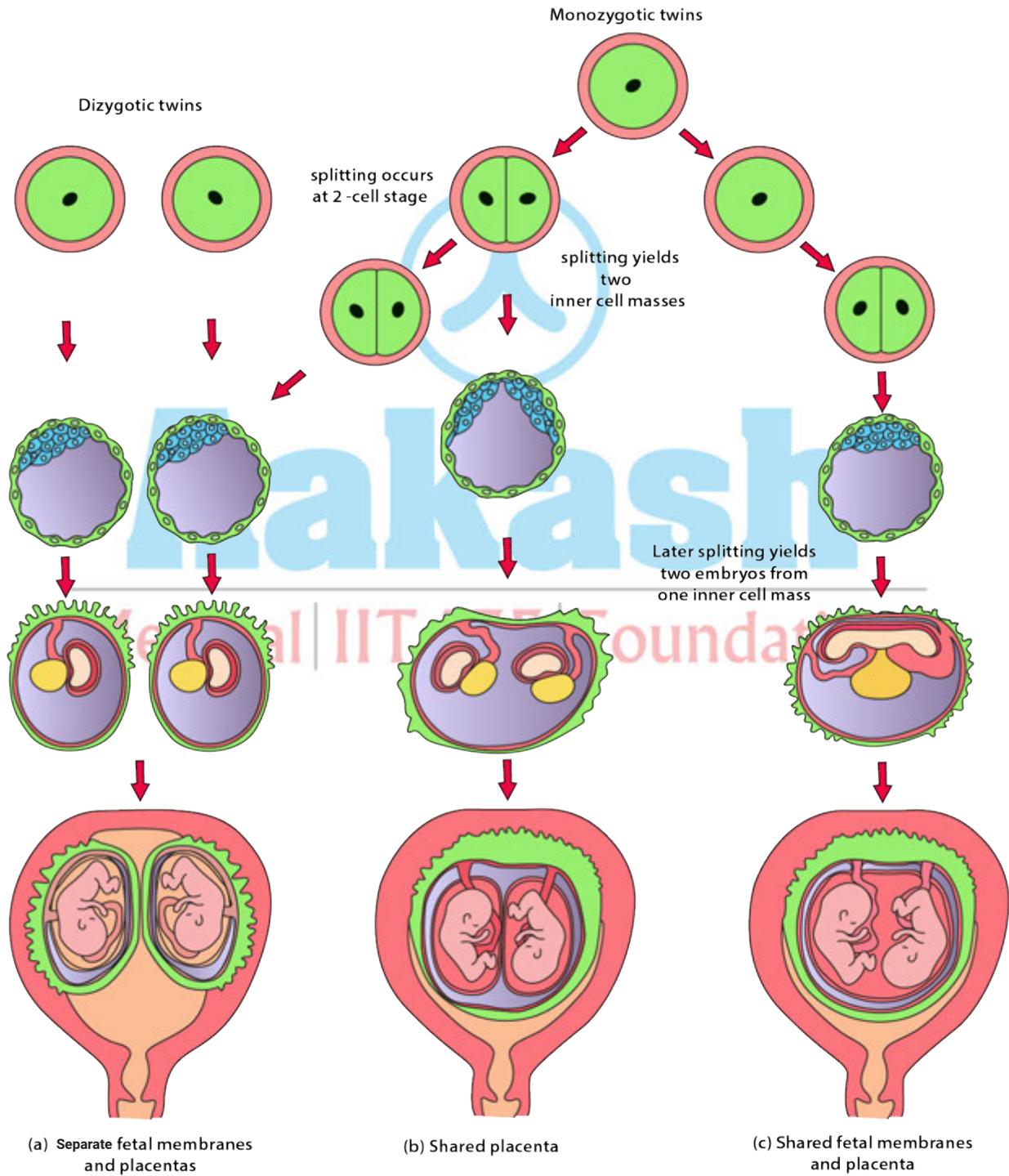
290 nm
Wavelength

UV C Rays

Shortest waves, usually do not penetrate the Earth's ozone layer.

100 nm
Wavelength

GAME of Twins





Globalisation and the Indian Economy

Meaning of Globalisation

Globalisation means the process of increasing interaction and integration between countries of the world. It involves the free flow of goods, services, capital, technology, and information across national boundaries.

Globalisation in India

India adopted globalisation in **1991** as part of the New Economic Policy (NEP).

Key Features of Globalisation in India:

1. Reduction of trade barriers
2. Encouragement of foreign investment
3. Privatisation of public sector companies
4. Liberalisation of import-export policies
5. Growth of multinational companies (MNCs)

Impact of Globalisation on the Indian Economy

Positive Effects

1. Growth of Foreign Trade

- ▶ Indian products are now sold in international markets.
- ▶ Export of software, textiles, pharmaceuticals, etc. have increased.

2. Increase in Foreign Investment

- ▶ Many MNCs like Google, Amazon, Samsung, etc. invested in India.
- ▶ More job opportunities were created.

3. Improvement in Technology

- ▶ Access to modern technology improved productivity.
- ▶ Growth of IT and digital services.

4. Consumer Benefits

- ▶ More choices of goods at competitive prices.
- ▶ Better quality products available.

5. Economic Growth

- ▶ GDP and industrial production increased.



Negative Effects

1. Competition for Small Industries

- ▶ Small-scale industries face tough competition from big global companies.

2. Job Insecurity

- ▶ Contract jobs and outsourcing increased.

3. Income Inequality

- ▶ Gap between rich and poor widened.

4. Dependence on Foreign Companies

- ▶ Some sectors depend heavily on MNCs.

Role of Multinational Companies (MNCs)

MNCs invest in India by:

- ▶ Setting up factories
- ▶ Partnering with Indian companies
- ▶ Outsourcing services

Globalisation

and the

Indian Economy



Globalisation



Opening of Indian Economy (1991)



Liberalisation & Privatisation



Entry of Multinational Companies



Foreign Investment & Technology



Growth of Trade and Industries



Economic Development of India





Vocabulary

Crossword Puzzle

Solve the crossword using the list of words and the clues related to 'investigation'.

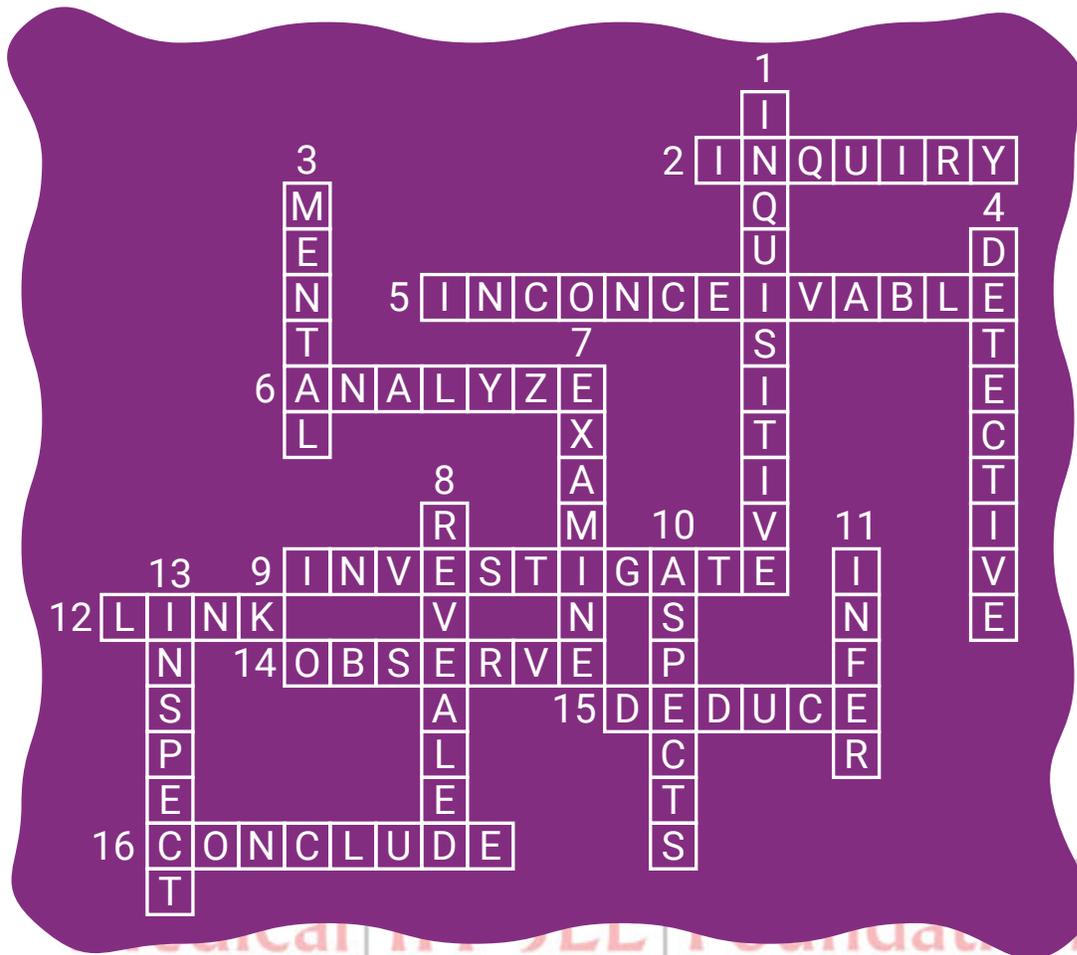
Infer	Inconceivable	Inquisitive	Analyze
Observe	Aspects	Inspect	Mental
Examine	Link	Conclude	Deduce
Revealed	Detective	Inquiry	Investigate

The crossword puzzle grid consists of 16 numbered starting points for words:

- 1: Down, top right
- 2: Across, top right
- 3: Down, middle left
- 4: Down, middle right
- 5: Across, middle
- 6: Across, middle left
- 7: Down, middle left
- 8: Across, middle left
- 9: Across, middle left
- 10: Down, middle left
- 11: Down, middle right
- 12: Across, bottom left
- 13: Down, bottom left
- 14: Across, bottom left
- 15: Across, bottom middle
- 16: Across, bottom left



Answer (Crossword Puzzle)



Answer (Jumbled Words)

1. POTATO

2. BOTTLE

3. DOCTOR

4. CALCULATOR

5. MONITOR

6. PLANE

7. MANGO

8. CLASSROOM

9. PORTION

10. PURCHASE





Gap Filling

1. Most internet consumers _____ think about the internet service providers' responsibility in peering beyond their own network.

(A) don't

(B) doesn't

(C) aren't

(D) haven't

2. In _____ hyper-connected world where access to information is abundant, internet is a blessing in disguise.

(A) a

(B) an

(C) the

(D) X (No article)

3. Never mistake knowledge for wisdom. One _____ you make a living. The other helps you _____ a life.

(A) help, make

(B) helps, makes

(C) helps, make

(D) help, makes

4. That _____ wisdom – the “why” of things we do. Information is “what” and knowledge is “how”.

(A) has

(B) is

(C) does

(D) had



5. Positive psychology research has shown that gratitude touches _____ many aspects of our lives.

- (A) at (B) in
(C) with (D) on

6. Gratitude is an effective strategy for _____ insecurity. A grateful emotion is triggered _____ we perceive an act of benevolence directed towards us.

- (A) reduction to, when (B) reducing, when
(C) reduced, than (D) reduces, than

7. Gratitude has been _____, in multiple studies, to make people kinder and more friendly.

- (A) shows (B) shown
(C) showing (D) showed to

8. The counsel for the applicants said the present situation is not _____ for conducting any type of physical mode examination, for any class of students.

- (A) conducive (B) condnucive
(C) conducevi (D) conducting

9. India celebrates 'National Reading Day' on the death anniversary of social reformer PN Panicker, known as _____ Father of the Library Movement in India.

- (A) the (B) a
(C) an (D) X (No article)

10.

Last year, Infosys _____ with employees by providing opportunities for continuous learning and career advancements.

(A) engaged

(B) engaged

(C) is engaging

(D) had engaged

Answers

1. (A)

2. (A)

3. (C)

4. (B)

5. (D)

6. (B)

7. (B)

8. (A)

9. (A)

10. (A)

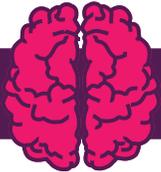
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Miscellaneous Reasoning

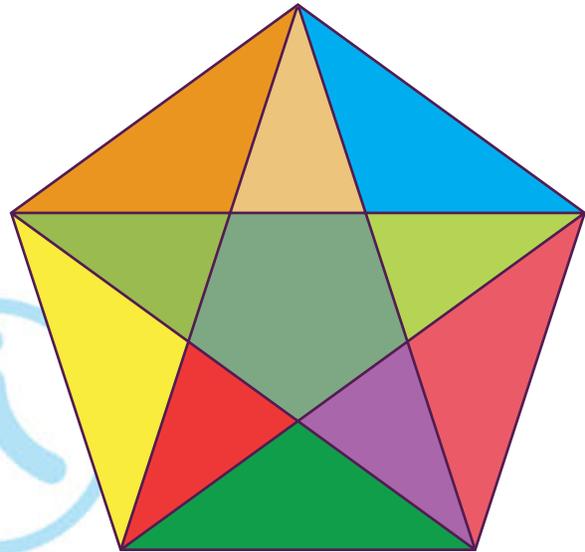


Brainstormer

Three friends Amar, Beena and Chetan were playing on the ground. Arun brought 5 caps in which 2 red and 3 were green. Arun was asked them to stand in a straight line such that Amar was standing in the front of the line, can't see either of the friends behind him or their heads. Beena was in the middle, can see only Amar and his head. Chetan at the rear can see both friends and their heads. None of the friends can see the cap on his own head. Arun put a cap on each head and asked to deduce its colour. Finally Amar made an announcement. "My cap is green", he was correct. How did he come to this conclusion ?

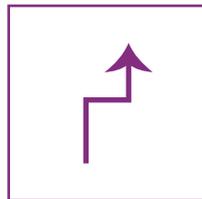
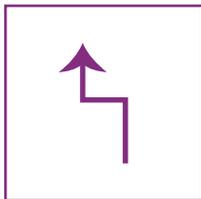
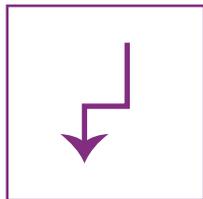
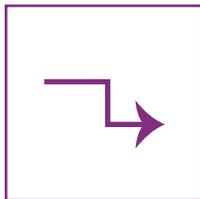
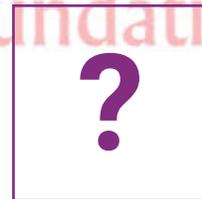
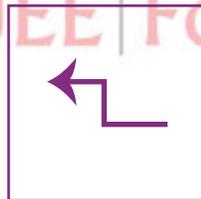
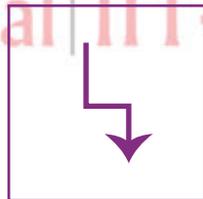
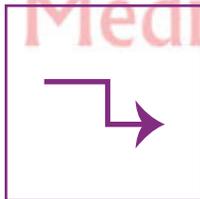


/// 1. How many triangles are there?



- (A) 25 (B) 30 (C) 35 (D) 20

/// 2. Complete the series.



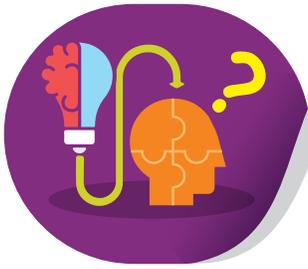
(A)

(B)

(C)

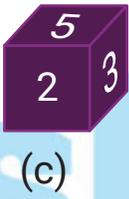
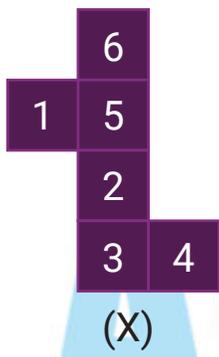
(D)





Cubes and Dice

1. The figure (X) was given on the left-hand of the problem is folded to form a dice. Choose a dice from the alternatives (a), (b), (c) and (d) which is similar to the dice formed.



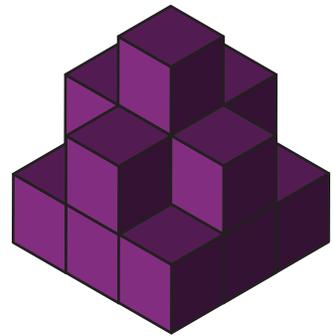
(1) (a)

(2) (b)

(3) (c)

(4) (d)

2. Count the number of Cubes in the following figure :



(1) 8

(2) 9

(3) 12

(4) 15



/// Answer

1. (C) 35

Number of Triangles

Simple \longrightarrow 10

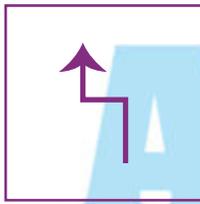
Triangles with 2 components \longrightarrow 10

Triangles with 3 components \longrightarrow 10

Triangles with 5 components \longrightarrow 5

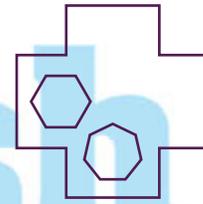
Total number of triangles = 35

2.



(C)

3.



(C)

Answers (Cubes and Dice)

1. (4)

2. (4)

Hints and Answers (Brainstormer)

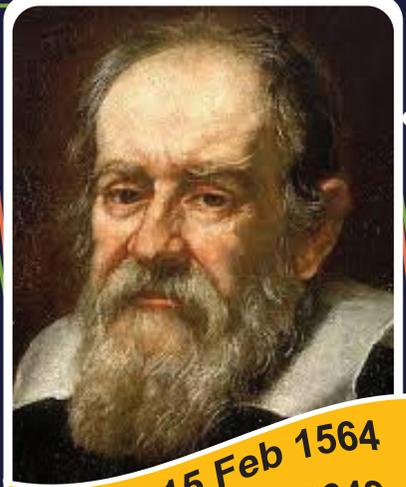
If chetan sees two red caps, in front of him, he would immediately know his cap is green as there were only 2 red caps. His silence told the other two that at least one of them had a green cap. With that information, if the middle person saw a red in front of her she would know for sure that her cap is green. But if she saw a green cap she could not say anything. Her silence thus told Amar that his cap is green.



FATHER OF OBSERVATIONAL ASTRONOMY

Happy Birthday

Galileo Galilei



Born - 15 Feb 1564
Died - 08 Jan 1642

Galileo Galilei is a famous Italian Astronomer, Mathematics Professor, and Physicist who first used the telescope to study space. His contributions in Science and Mathematics still resonate today, and became the basis for different ideas that sprung up during the scientific revolution during and after his time.

NEET 2025 Wasn't Easy. Our Results Say Otherwise.

5 AAKASHIANS IN TOP 10 AIR NEET(UG) 2025



OUR NATIONAL TOPPERS IN NEET (UG) 2025



Our Problem *Solvers* shine bright in **JEE (Advanced) 2025**

Our Top 100 AIR



Aakashians Create History in International Olympiads

(Classroom Program Students)



Dhruv Advani

IBO 2023



Gold Medalists

34th International Biology Olympiad



Rohit Panda



Chirag Falor



International Olympiad on Astronomy & Astrophysics



Dhiren Bhardwaj



32nd International Biology Olympiad



Anshul



32nd International Biology Olympiad



Amritansh Nigam



33rd International Biology Olympiad



Prachi Jindal



33rd International Biology Olympiad



Tanishka Kabra



54th International Chemistry Olympiad

1484 Students Scored Above MAS

420

Classroom Students
Qualified in
NSEs* 2024-25

(Group A & B)

49
NSEA*

(Group A & B)

229
NSEB*

(Group A & B)

70
NSEC*

(Group A & B)

38
NSEP*

34
NSEJS*

Aakashians Qualified for INO-2025



Krishna Agrawal
NSEA | NSEP | NSEC



Mohit Shekher Shukla
NSEA | NSEP | NSEC



Utkarsh Awadhya
NSEB | NSEP | NSEC



Rupayan Pal
NSEC | NSEP | NSEP



Devansh Garg
NSEJS



Aaron Thakkar
NSEJS

and many more...

*NSEA-National Standard Examination in Astronomy | NSEB-National Standard Examination in Biology | NSEC-National Standard Examination in Chemistry
NSEP-National Standard Examination in Physics | NSEJS-National Standard Examination in Junior Science | INO-Indian National Olympiad

Aakashians Qualified for RMO 2024

899

Classroom Students

Qualified
in IOQM
2024



Joish Achyuta
Class - VIII



Dhanush Damu
Class - IX



Arnav Singh
Class - X



Pranit Goel
Class - XI



Aayush Agarwal
Class - XII

and many more...

Aakashians Qualified for INMO 2025

161

Classroom Students

Qualified
in RMO 2024-25



Kotha D Reddy
Reg. No. 00006657265



Abhipraya Verma
Reg. No. 00010407513



Aditya Singh
Reg. No. 00012631688



Rujul Garg
Reg. No. 00005153903



Mohit Shekher Shukla
Reg. No. 00006093814

and many more...

Aakashians Qualified for OCSC/IMOTC-2025

25

Classroom Students

Qualified
in INOs 2025



Pranit Goel
Qualified INMO



Harshit Singh
Qualified INJSO



Subhrojit Paul
Qualified INBO



Mohit Shekher Shukla
Qualified INChO



Rujul Garg
Qualified INPhO



Aditya Singh
Qualified INAO Jr

and many more...

Aakashians Qualified for Merit Certificate

1019

Classroom Students

Qualified
in IMO (Level-I)
2023-24



Intl.
Rank
1

Prisha Miglani
Class - IX



Intl.
Rank
2

Sushant Agarwal
Class - X



Intl.
Rank
4

Ekaashar Gupta
Class - IX



Intl.
Rank
7

Harshit Singh
Class - VIII

438

Classroom Students

Qualified
in IMO (Level-II)
2024

and many more...

Aakashians Qualified for Merit Certificate

4902

Classroom Students

Qualified
in NSO (Level-I)
2024-25



Intl.
Rank
2

Meghav Ladani
Class - X



Intl.
Rank
2

Anubhab Manna
Class - VIII



Intl.
Rank
3

Arnav Gupta
Class - IX



Intl.
Rank
7

Parshti Bajpai
Class - IX



Intl.
Rank
10

Shreya
Class - VIII

and many more...