



Aakash

Medical | IIT-JEE | Foundations

KNOWLEDGE BYTES

MAY 2026

CLASS 8





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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

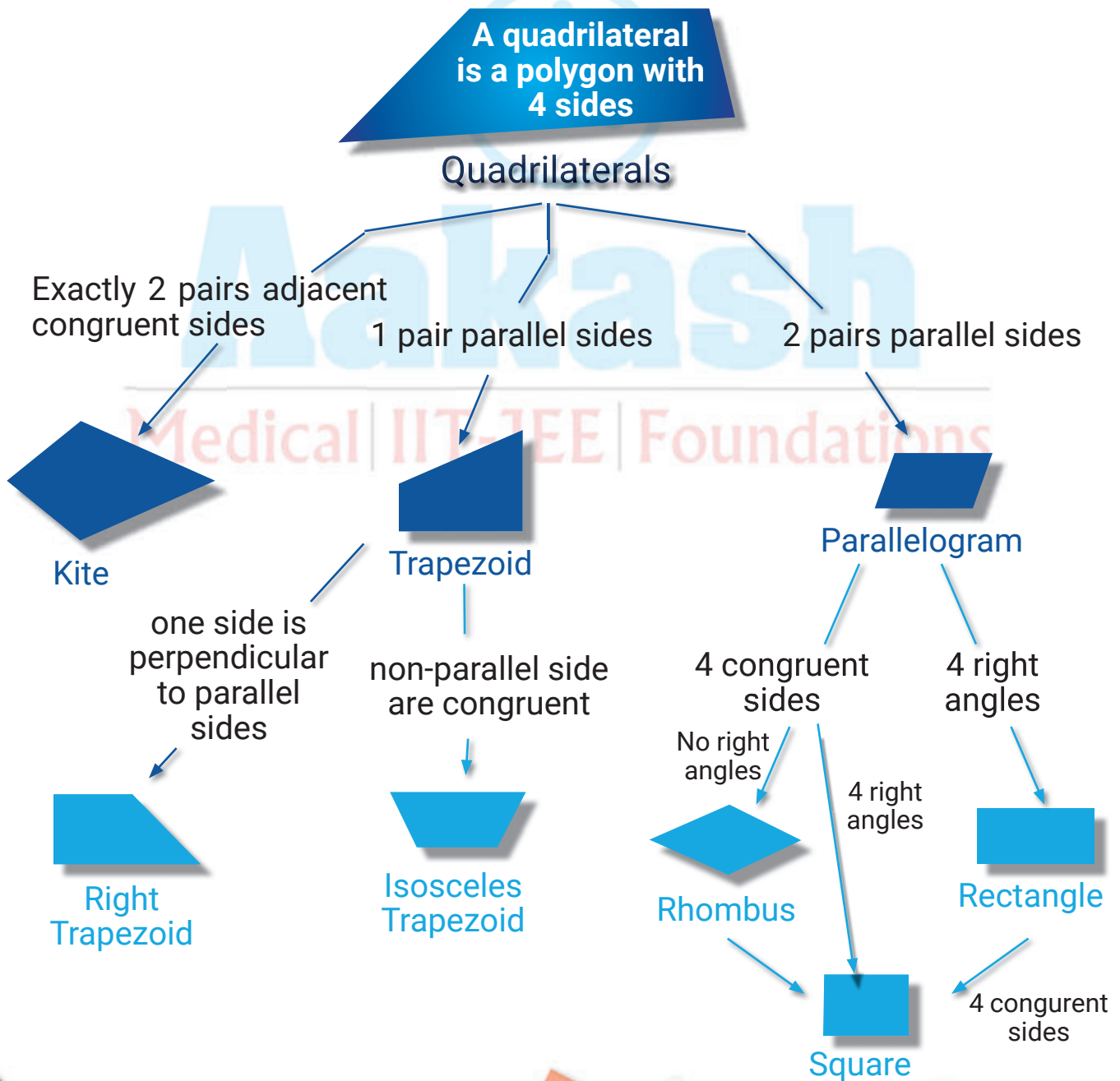
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Quadrilaterals

Quadrilateral Family Tree



Quadrilaterals and Their Properties

Property		Rectangle	Square	Parallelogram	Rhombus	Trapezium
Sides	All sides are equal	✗	✓	✗	✓	✗
	Opposite sides are equal	✓	✓	✓	✓	✗
	Opposite sides are parallel	✓	✓	✓	✓	only 1 pair of opposite sides are parallel
Angles	All interior angles are equal	✓	✓	✗	✗	✗
	Opposite angles are equal	✓	✓	✓	✓	✗
	Sum of any two adjacent angles is 180°	✓	✓	✓	✓	sum of only two pairs of adjacent angles is 180 degrees
Diagonals	Bisect each other	✓	✓	✓	✓	✗
	Bisect perpendicularly	✗	✓	✗	✓	✗
Formulas	Area	$l \times b$	a^2	$l \times h$	$\frac{1}{2} \times d_1 \times d_2$	$\frac{1}{2}$ (sum of parallel sides) height
	Perimeter	$2 \times (l + b)$	$4a$	$2 \times (l + b)$	$4a$	sum of all the sides

Quiz Time

Quiz - 1

Which one of the following is always a regular quadrilateral ?

- (a) Square (b) Trapezium (c) Kite (d) Rectangle

Quiz - 2

The perimeter of a parallelogram whose parallel sides have lengths equal to 12 cm and 7 cm is

- (a) 21 cm (b) 42 cm (c) 19 cm (d) 38 cm

Quiz - 3

Which of the following quadrilaterals have only two pairs of adjacent sides equal and its diagonals intersect at 90 degrees ?

- (a) Square (b) Kite (c) Rhombus (d) Rectangle

Quiz - 4

Which one of the following is not a quadrilateral ?

- (a) Square (b) Rectangle (c) Triangle (d) Parallelogram

Answer (Quiz Time)

Solution - 1

Ans. (a) : Square

Explanation : A square has all its sides equal and angles equal to 90 degrees.

Solution - 2

Ans. (d) : 38 cm

Explanation : Perimeter of parallelogram = 2 (sum of parallel sides)

$$P = 2 (12 + 7)$$

$$P = 2 (19)$$

$$P = 38 \text{ cm}$$

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Solution - 3

Ans. (b) : Kite

Solution - 4

Ans. (c) : Triangle

Explanation : A quadrilateral is a four-sided polygon but triangle is a three-sided polygon.

Exploring Forces

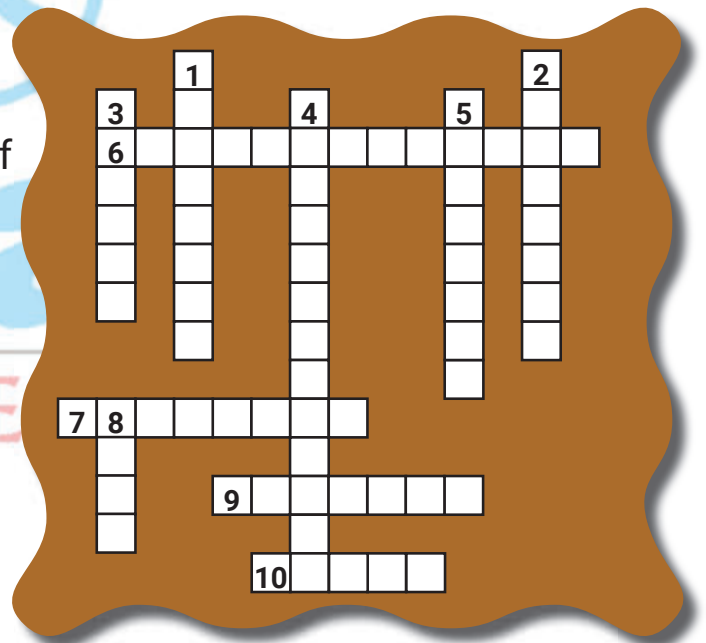
Crossword

ACROSS

- 6 Force between two charged objects. [13]
- 7 The force acting between two poles of a magnet. [8]
- 9 Force applied by direct touching an object. [7]
- 10 Collective term used for liquids and gases. [5]

DOWN

- 1 Force applied per unit area. [8]
- 2 The force necessary for our smooth motion. [8]
- 3 Unit of force. [6]
- 4 Force with which Earth revolves around the sun. [13]
- 5 The net resultant of forces acting on an object is zero, the forces are [8]
- 8 Pressure depends upon thrust and [4]



Group Them Accordingly To Application

Knife, Camel's foot, Saw, Wide bag pad, Iron nail, Spade, Studs on shoes, Skies on snow, Injection needle, High heel, More tyre truck, Railway track on wooden block

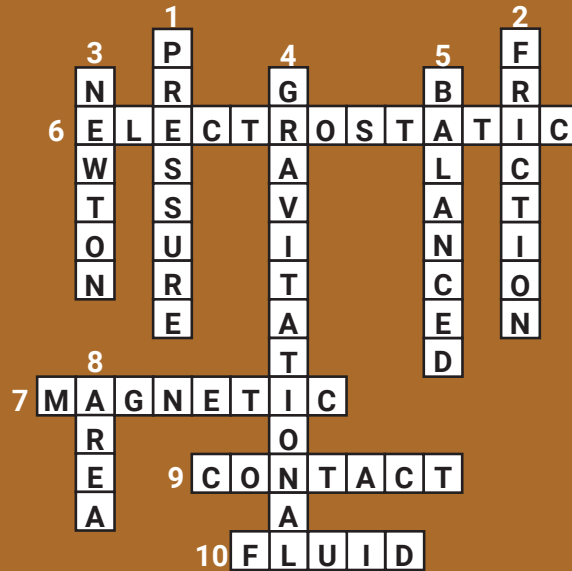
S.No.	Pressure is more area is less	Pressure is less area is more
1.		
2.		
3.		
4.		
5.		
6.		
7.		

Answer (Group Them Accordingly To Application)

S.No.	Pressure is more area is less	Pressure is less area is more
1.	Knife	Camel's foot
2.	Saw	Wide bag pad
3.	Iron nail	Skies on snow
4.	Spade	More tyre truck
5.	Studs on shoes	Railway track wooden block
6.	Injection needle	
7.	High heel	



Answer (Crossword)



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INTERESTING FACT

Why cycling uphill feels harder?



When you go uphill, gravity pulls you **downwards**, so you need **extra force** to move forward.

Why is slipping easy on wet floors?



Water reduces **friction**, so there is less grip between your feet and the floor.

Why do you feel "weightless" on a swing?



At the highest point, your body momentarily experiences **less gravitational pull effect**, giving a floating feeling.

Why do vehicles stop even without brakes?



Due to **friction + air resistance**, which continuously slow them down.

Not all rocks sink!



Pumice rock can float because it has tiny air pockets, making it less dense than water.



Magnets can push too!



Magnets don't just attract—they can repel also.

Balloons can repel each other!



Rubbing balloons creates **static electricity**, and similar charges **repel**.

You weigh less on the Moon!



Your weight becomes **1/6th** because gravity on the Moon is weaker.

Air also creates friction!



Objects moving in air face air resistance, which is why parachutes work.

Why does a bottle float in water?



Water pushes it upward with **buoyant force (upthrust)**.



Where are Our Important Non-Metals?

Occurrence of Important Non-Metals

In the Atmosphere

- Oxygen (O_2) – ~21% of air, essential for breathing and burning.
- Nitrogen (N_2) – ~78% of air, important for plant growth.
- Noble gases (Helium, neon and argon) – present in small amounts.

In Water

- Water (H_2O) contains hydrogen and oxygen.
- Dissolved oxygen supports aquatic life.

In the Earth's Crust

- Oxygen – found as oxides like silica.
- Sulfur – found as sulfides and sulfates.
- Phosphorus – found in phosphates.



In Living Organisms

- Carbon – present in all organic compounds.
- Nitrogen – present in proteins and DNA.
- Oxygen & Hydrogen – major components of cells.

Facts About Non-Metals

Oxygen is the most abundant non-metal in Earth's crust.

Nitrogen is the most abundant gas in air.

A solution of iodine, a non-metal, is applied on wounds as an antiseptic.

Carbon forms millions of compound.

Non-metals play a key role in biogeochemical cycles (carbon cycle, nitrogen cycle).

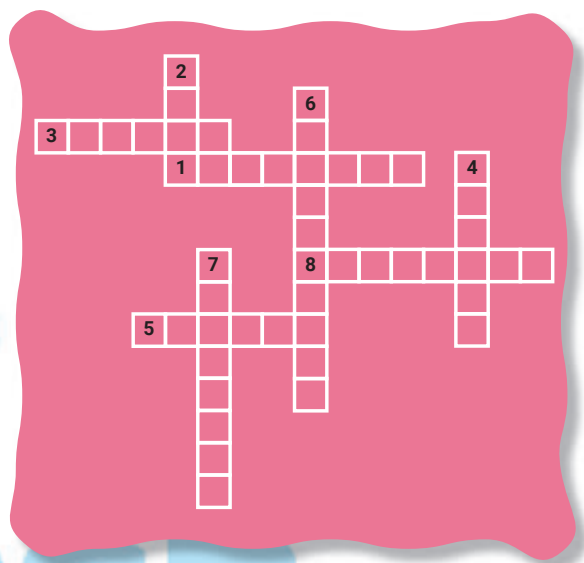
Most non-metals are poor conductors of heat and electricity.



Crossword

ACROSS

1. The most abundant gas found in the Earth's atmosphere. [8]
3. This non-metal is found in all living things and has allotropes like diamond and graphite. [6]
5. A yellowish non-metal often found near volcanoes, hot springs, and underground deposits. Historically referred to by ancient cultures as "brimstone." [6]
8. The most abundant element in the universe, found abundantly in water and stars. [8]



DOWN

2. A noble gas used in bright, glowing advertising signs, found in trace amounts in the air. [4]
4. The non-metal essential for respiration, making up about 21% of the atmosphere. [6]
6. Found in bones, teeth, and matchboxes, usually extracted from phosphate rock. [10]
7. The halogen widely used to purify swimming pool water, largely extracted from seawater. [8]



Find the Non-metal

1 ? Used in the manufacturing of fireworks and matchsticks.

2 ? Used in its liquid form as a high-energy fuel for space travel.

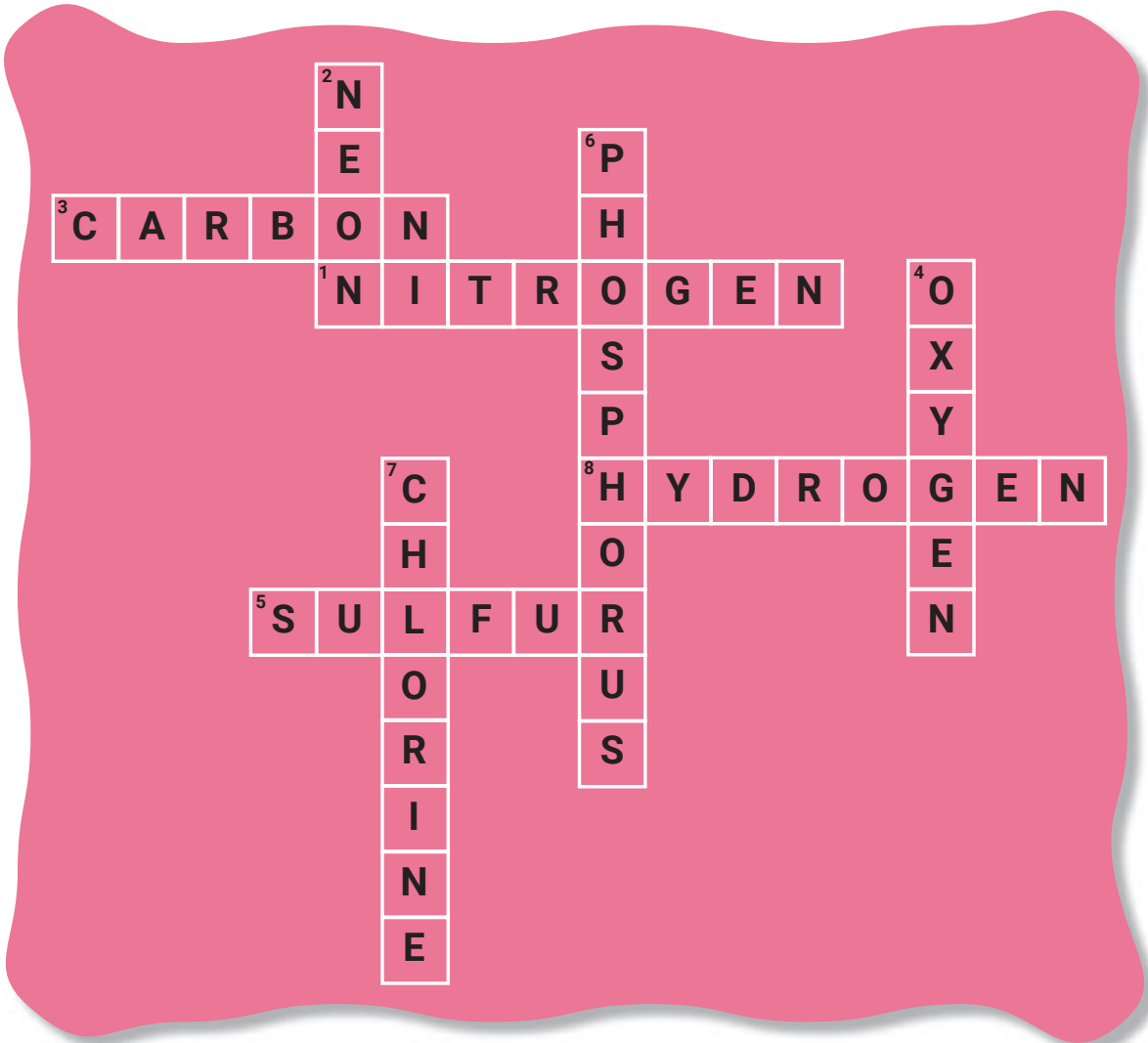
3 ? In its elemental form, it can be found as black soot, the graphite in your pencil, or mined as the hardest natural gemstone.

4 ? Found abundantly in the ocean's salt, the use of this reactive gas in water treatment plants helps keep our drinking water free from dangerous bacteria.

5 ? Extracted from the air, this non-metal provides the unreactive atmosphere inside standard incandescent lightbulbs to prevent the filament from burning up.



Answer (Crossword)



Answer (Find the Non-metal)

1

Phosphorus

2

Hydrogen

3

Carbon

4

Chlorine

5

Argon



Health: The Ultimate Treasure

Interesting Facts

- ✱ **Tetanus (Lock Jaw)** : It is caused by the bacterium *Clostridium tetani*. The first indications of this disease are irritability and restlessness, the neck becomes stiff and there is difficulty in chewing and swallowing. Subsequently spasms of jaw muscles and face take place and thus "Lock Jaw" occurs. There is severe pain and it is often a fatal disease.
- ✱ **Protein Energy Malnutrition (PEM)** : It is an important nutritional problem among pre-school children. It leads to various degrees of growth retardation. This is due to lack of adequate quantity of protein or carbohydrate or both, in the diet.

PEM is of two types : Kwashiorkor and Marasmus



Kwashiorkor



Marasmus

Quiz

1.

Out of the following diseases, which ones are caused due to bacterial infection?

- | | |
|---------------------|-------------------|
| (a) Typhoid | (b) Elephantiasis |
| (c) Cholera | (d) Tuberculosis |
| (1) a and b only | (2) b and c only |
| (3) a, c and d only | (4) a, b, c and d |

2.

HIV does not spread by

- (1) Sexual contact with infected persons
- (2) By transfusion of contaminated blood and blood products
- (3) Infected mother to her child through placenta
- (4) Sharing bedsheets, towels and combs with infected person

Answer (Quiz)

1.

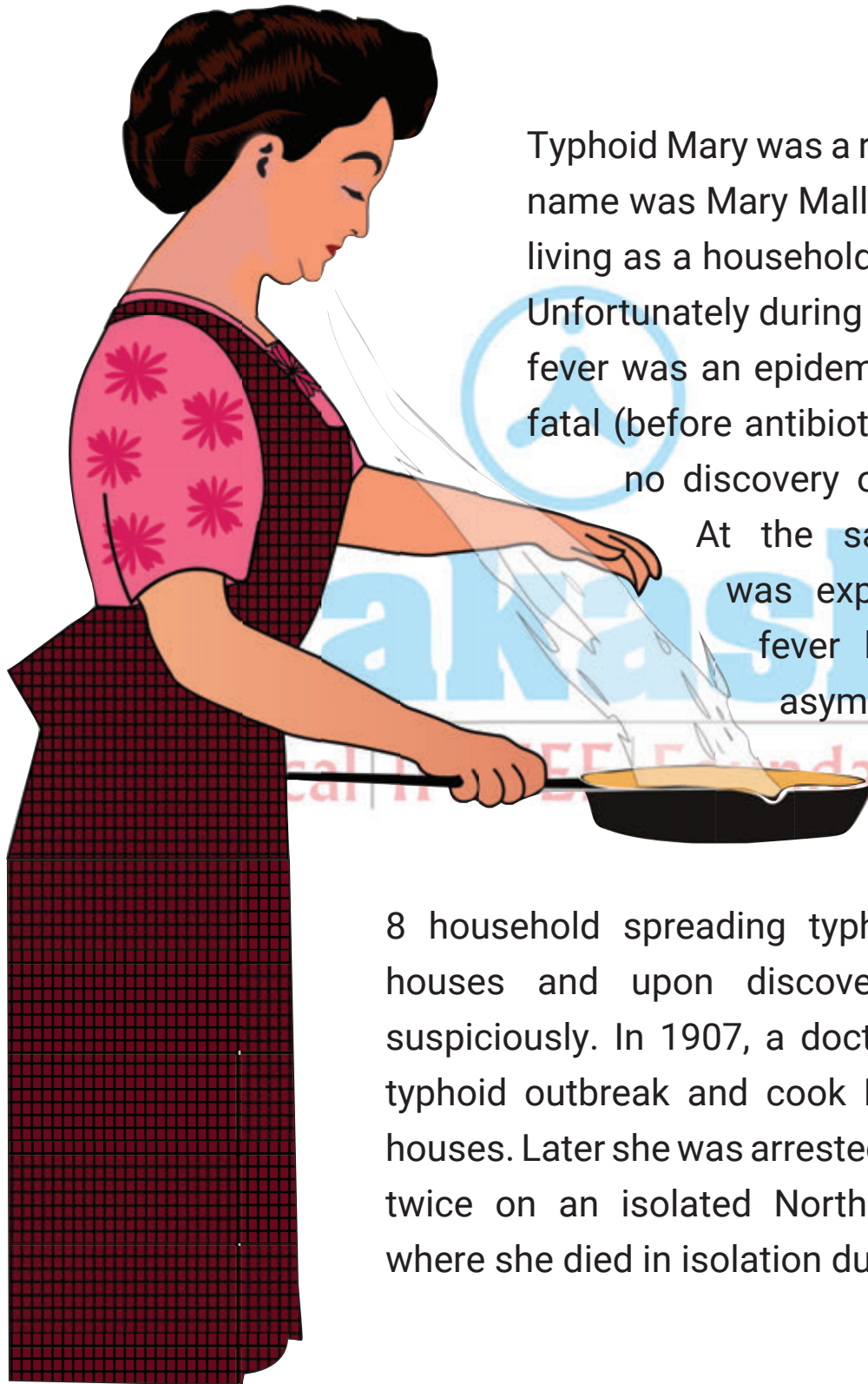
(3) a, c and d

2.

(4) Sharing bedsheets, towels and combs with infected person



The Story of Typhoid Mary



Typhoid Mary was a real person whose name was Mary Mallon. She made her living as a household cook in the USA. Unfortunately during that time, typhoid fever was an epidemic and was often fatal (before antibiotics) as there was no discovery of antibiotics yet.

At the same time, Mary was exposed to typhoid fever but she was an asymptomatic carrier.

From 1900-1907, she worked for 8 household spreading typhoid in all these houses and upon discovery left the job suspiciously. In 1907, a doctor correlated the typhoid outbreak and cook Mary in all these houses. Later she was arrested and quarantined twice on an isolated North Brother's Island where she died in isolation due to pneumonia.



Members of Hepatitis Virus Family

Virus

Hepatitis A Virus

Genetic material : RNA
Mode of transmission : Contaminated Water



Hepatitis B Virus

Genetic material : DNA
Mode of transmission : Blood transfusion, Sexual contact



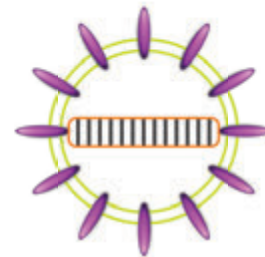
Hepatitis C Virus

Genetic material : RNA
Mode of transmission : Blood transfusion



Hepatitis D Virus

Genetic material : RNA
Mode of transmission : Blood transfusion (usually along with HBV)



Hepatitis E Virus

Genetic material : RNA
Mode of transmission : Contaminated water



The Marathas

The **Maratha Empire** was one of the most powerful empires in Indian history. It emerged in the 17th century under the leadership of **Shivaji Maharaj** and later became a major force that challenged the Mughal Empire.

- **Origin:** Western India (Maharashtra region)
- **Capital (initially):** Raigad
- **Motto:** Swarajya (self-rule)
- **Period of dominance:** 17th–18th century

The Marathas played a key role in weakening the Mughal Empire and later became the strongest Indian power before the British.

Shivaji Maharaj (1630–1680)

Early Life

- Born in 1630 at Shivneri Fort.
- **Father:** Shahaji Bhonsle.
- **Mother:** Jijabai (inspired him with stories of bravery and Hindu culture).



Achievements

- Captured several forts like Torna, Raigad, and Purandar.
- Used guerrilla warfare (Ganimi Kava).
- Built a strong navy to protect the Konkan coast.
- Crowned as Chhatrapati in 1674 at Raigad.

Administrative Reforms

- Established Ashtapradhan (Council of Eight Ministers).
- Divided kingdom into provinces.
- Promoted religious tolerance.
- Encouraged trade and agriculture.

Shivaji laid the foundation of a powerful and organized state.

Important Peshwas

Balaji Vishwanath

Baji Rao I

Balaji Baji Rao



Third Battle of Panipat (1761)

One of the most important events in Maratha history was the **Third Battle of Panipat**.

- Fought between Marathas and Ahmad Shah Abdali.
- Marathas suffered a heavy defeat.
- Thousands of soldiers died.
- Marked a temporary decline of Maratha power.

However, they recovered later under Madhavrao Peshwa.

Contribution and Legacy of the Marathas

- Challenged Mughal supremacy.
- Preserved Indian traditions during Mughal decline.
- Established a strong regional power.
- Laid groundwork for resistance against British rule.
- Promoted regional identity and administration.



Noun Clauses

A. Identify the Noun Clause in the following sentences.

1. She has to tell me why she did not go there.
2. Can you tell me if the banks are open today?
3. What she does is unknown to all of us.
4. I don't know what they do for a living.
5. I hope that it would be true.

B. Fill in the blanks with a suitable Noun Clause based on the clue given in the bracket.

1. I really don't know _____. (the place of my birth)
2. We didn't notice _____. (the flowers in his hands)
3. Our parents wish _____ this time at the exhibition. (we win a prize)



Answers-A

1. She has to tell me **why she did not go there.**
2. Can you tell me **if the banks are open today?**
3. **What she does** is unknown to all of us.
4. I don't know **what they do for a living.**
5. I hope **that it would be true.**

Answers-B

1. where I was born
2. that there were flowers in his hands
3. that we would win a prize

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Ranking Test

Quiz Time

- 1** Veer Das ranks 7th from the top and 28th from the bottom in a class. How many students are there in the class?
- (a) 32 (b) 33 (c) 34 (d) 35
- 2** During assembly the students are standing in a line. Salman is 21st in order from both the ends. How many students are there in the line?
- (a) 31 (b) 41 (c) 40 (d) 30
- 3** Hritik is 7 ranks ahead of Aamir in a class of 39. If Aamir's rank is 17th from the last. What is Hritik's rank from start?
- (a) 10th (b) 12th (c) 15th (d) 16th
- 4** Pariniti ranked 17th from the top and 28th from the bottom among those who made it to the final round of Miss India Contest. 7 girls did not participate in the competition and 7 failed in the previous round. How many girls enrolled in the contest?
- (a) 55 (b) 56 (c) 57 (d) 58



- 5 Raji is 5 ranks ahead of Raj in a class of 46 students. If Raj's rank is 12th from the last, what is Raji's rank from the start?
- (a) 29th (b) 31st (c) 28th (d) 30th
- 6 Reshma and Praveena are ranked ninth and thirteenth from the top in a class of 57 students respectively. What will be their respective ranks from the last in the class?
- (a) 48th, 44th (b) 49th, 45th (c) 45th, 49th (d) 47th, 43rd
- 7 Naresh is twenty second from the left end in a row of 47 boys. What is his position from the right end?
- (a) 24th (b) 25th (c) 23rd (d) 26th
- 8 Shakti ranks eleventh from start in a class of 54 students. What is her rank from last?
- (a) 43rd (b) 44th (c) 42nd (d) 40th
- 9 Kanani ranked sixteenth from the top and twenty ninth from the bottom among those who passed an examination. Six boys did not participate in the examination and five failed in it. How many students were there in the class?
- (a) 35 (b) 45 (c) 50 (d) 55
- 10 In a row of girls, Nithya and Suganya occupy ninth place from the right end and tenth place from the left end, respectively. If they interchange their places, then Nithya and Suganya occupy seventeenth place from the right end and eighteenth place from the left end respectively. How many girls are there in the row?

(a) 22

(b) 25

(c) 26

(d) 28



Answer (Quiz Time)

1 (c) 34

2 (b) 41

3 (d) 16th

4 (d) 58

5 (d) 30th

6 (b) 49th, 45th

7 (d) 26th

8 (b) 44th

9 (d) 55

10 (c) 26



Happy Birthday

Ronald Ross

“Science is the Differential Calculus of the mind. Art the Integral Calculus; they may be beautiful when apart, but are greatest only when combined.”



Born - 13 May 1857
Died - 16 Sep 1932

Ronald Ross was born on May 13, 1857, in Almora, India. At the age of 14, Ross won a prize in mathematics and was presented the book *Orbs of Heaven*, which sparked his interest in the field of mathematics. Ross is known for his outstanding research work on malaria-causing parasites in mosquitoes. He discovered malarial parasites in the salivary glands of mosquitoes.

Nobel Prize in Physiology or Medicine (1902), The James Tait black Memorial Prize - Biography (1923).

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...