

A blue banner with the text "KNOWLEDGE BYTES" in large, bold, white letters with a blue outline. The letter "O" is replaced by a yellow lightbulb. Three small human figures are interacting with the text: one is sitting on the "K", one is sitting on the "W", and one is standing next to the "S". A white ribbon banner on the right side of the blue banner contains the text "August 2026" in blue.

August 2026

CLASS 8





Aakash

Medical | IIT-JEE | Foundations

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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



Proportional and Reasoning-1

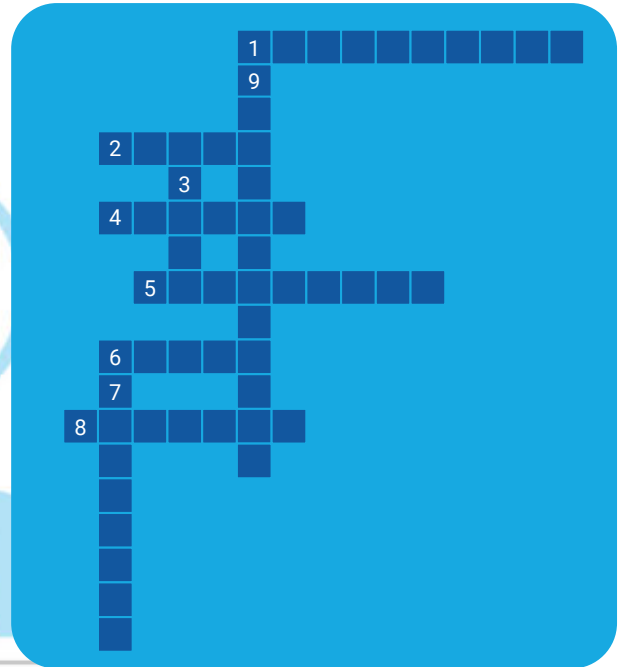
Crossword

Across

1. Two equal ratios are said to be in _____. (10)
2. A comparison of two quantities. (5)
4. Quantities in proportion change by the same _____. (6)
5. An image stretched or compressed is _____. (9)
6. Width and height of similar figures keep the same _____. (5)
8. Figures with the same shape but different sizes are _____. (7)

Down

3. Greatest Common Factor used to simplify a ratio. (3)
7. A ratio in its lowest terms is in its _____ form. (8)
9. Quantities changing by the same factor are _____. (12)





Two ratio are proportional If they have the same simplest form. Multiply or divide both terms by the same number to get an equivalent ratio.

Quick Examples

Q. Are 12:18 and 20:30 proportional?

Sol. $12 : 18 = 2 : 3$

$20 : 30 = 2 : 3$ both are proportional

Q. A recipe uses 8 cups of flour for 24 muffins. How many cups of flour are needed for 36 muffins?

Sol. $8 : 24 :: x : 36$

$36 \div 24 = 1.5$

$x = 8 \times 1.5 = 12$ cups

Q. Find the missing Number

(a) $7 : 14 :: 21 : \underline{\hspace{2cm}}$

(b) $16 : 20 :: 24 : \underline{\hspace{2cm}}$

(c) $5 : 9 :: 20 : \underline{\hspace{2cm}}$

Sol. (a) 42 (b) 30 (c) 36

Q. Which operation 12 : 18 and always produces an equivalent ratio?

(a) Adding the same number

(b) Multiplying both terms by the same number

(c) subtracting the same number

(d) Multiplying only one term

Sol. (b)

KEY RESULTS

1

Ratio

$$\text{Ratio} = a : b = \frac{a}{b}$$

2

Simplest form of a ratio divide both terms by their highest common factor (HCF).

$$a : b = \frac{a \div \text{HCF}(a, b)}{b \div \text{HCF}(a, b)}$$

$$\text{e.g. } 60 : 40 = 3 : 2$$

3

Proportion: Two ratio are in proportion if their simplest forms are the same.

$$a : b :: c : d$$

or

$$\frac{a}{b} = \frac{c}{d}$$

4

Equivalent Ratio: Multiply or divide both terms by the same non-zero number.

$$a : b = (a \times k) : (b \times k)$$

or

$$a : b = (a \div k) : (b \div k) \quad \text{where } k \neq 0$$

5

Finding a Missing term in a proportion

$$\text{If } a : b :: c : x \text{ then } x = \frac{b \times c}{a}$$

6

Cross multiplication Rule

$$a : b :: c : d \text{ then}$$

$$a \times d = b \times c$$

7

Scale Factor: If every dimension is multiplied by the same number,

$$\text{New Length} = \text{Original Length} \times \text{Scale Factor}$$

- 8 **Direct Proportion:** If one quantity increases by a factor k, the other also increases by the same factor.

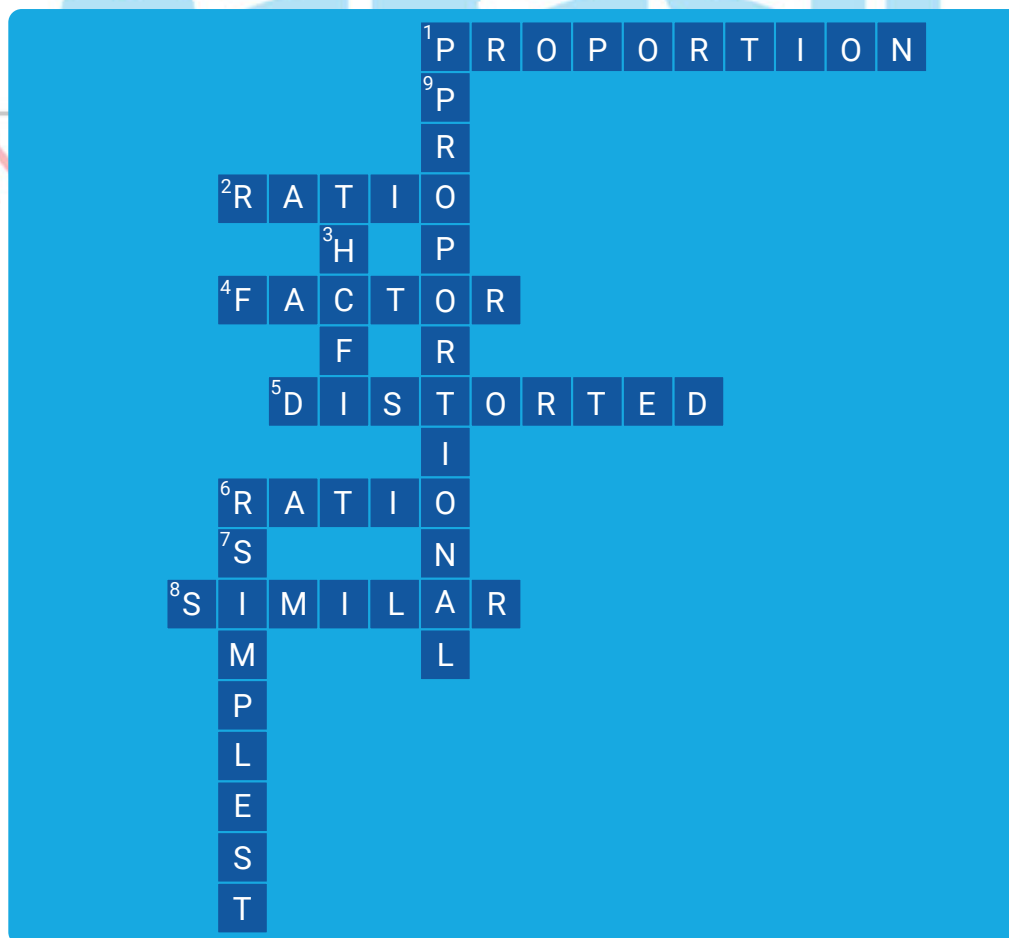
$$\frac{a_1}{a_2} = \frac{b_1}{b_2}$$

- 9 **Similar Figure** $\frac{\text{Width}}{\text{Height}} = \text{Constant}$

- 10 **Recipe/Speed/Cost Formula**
For proportional quantities

Required Quantity = Original Quantity $\times$ New Value/Original Value

Answer (Crossword)



Pressure, Winds , Storms and Cyclones

● MATCH THE FOLLOWING ●

Column A	Column B
Wind	High pressure to low pressure
Cyclone	Calm centre of cyclone
Eye of cyclone	Blows from sea to land during day
Lightning conductor	Moving air
Sea breeze	Blows from land to sea during night
Land breeze	Large rotating storm
Air flows	Protects buildings from lightning

Cyclones

There are two types of cyclones:

Tropical cyclones

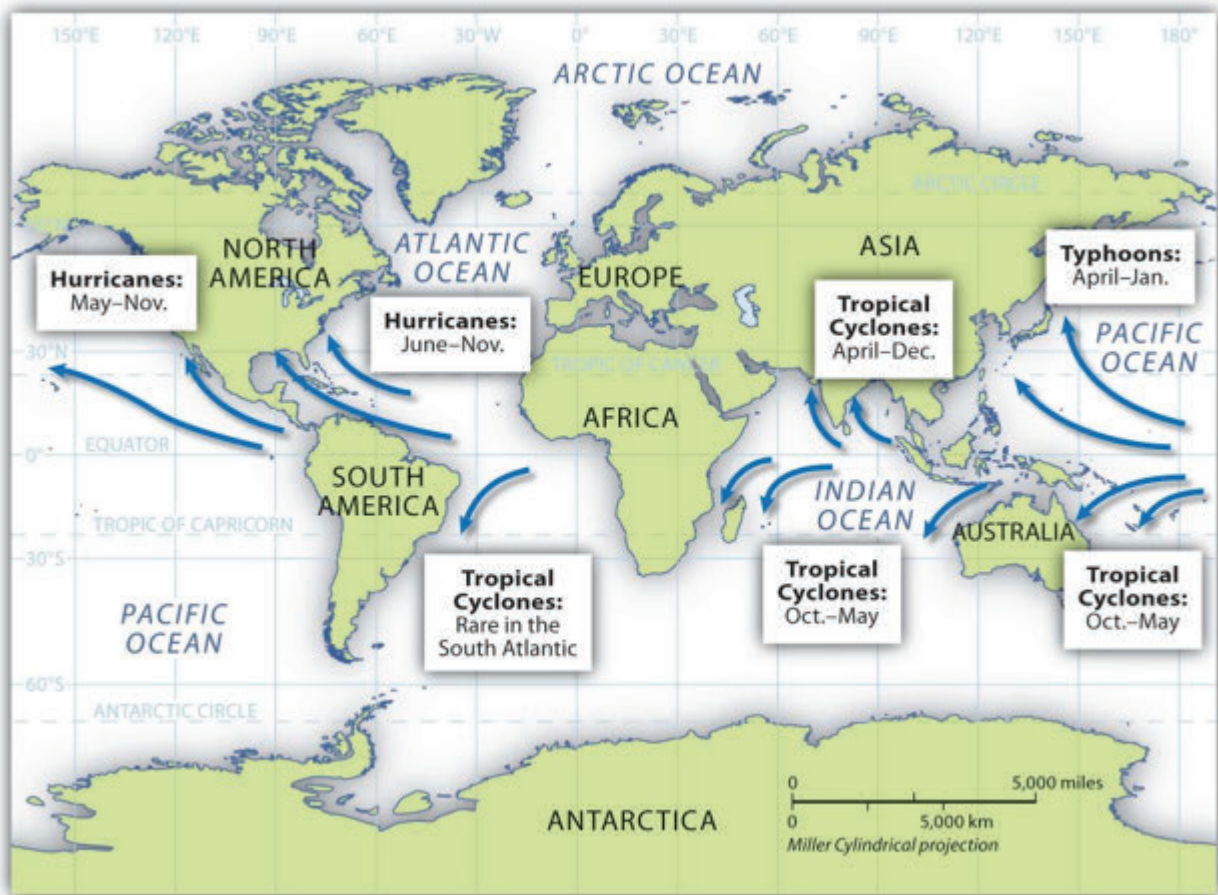
Extra Tropical cyclones (also called Temperate cyclones or middle latitude cyclones or Frontal cyclones or Wave Cyclones).

Tropical cyclones develop in the region between the Tropics of Capricorn and Cancer. They are large-scale weather systems developing over tropical or subtropical waters, where they get organized into surface wind circulation.

Extra tropical cyclones occur in temperate zones and high latitude regions, though they are known to originate in the Polar Regions

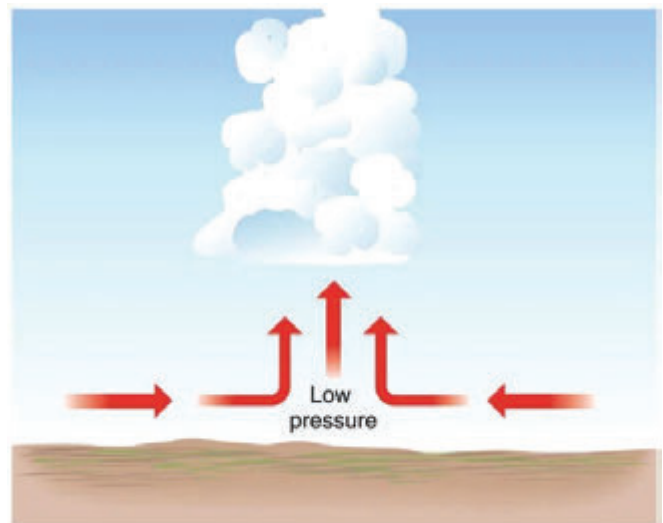


Distribution of cyclones in different regions



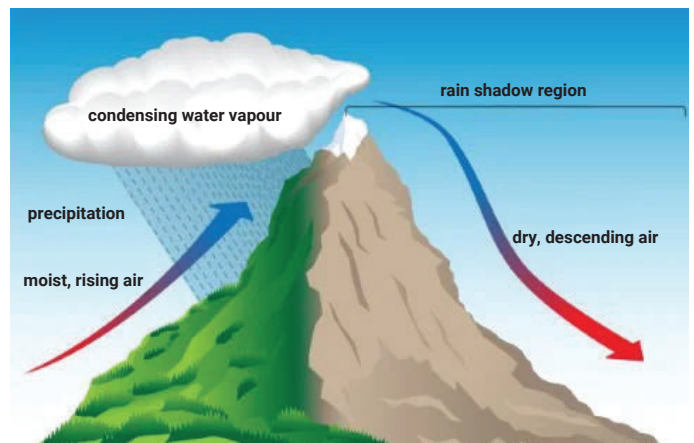
Types of Thunderstorms

- 1. Thermal Thunderstorm:**
Caused due to intense heating of ground during summer.



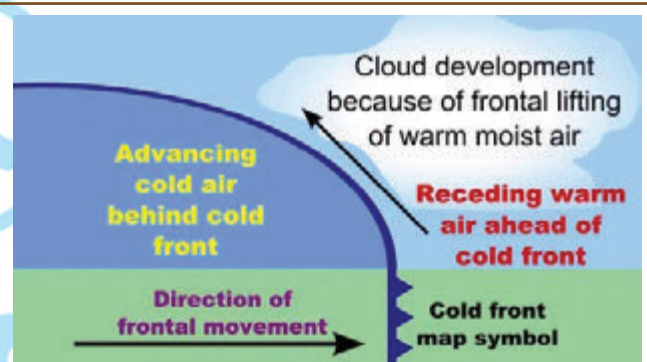
2. Orographic Thunderstorm:

Forceful upliftment of warm moist air parcel when it passes over a mountain barrier creates cumulonimbus cloud causing heavy precipitation on the windward side.



3. Frontal Thunderstorm:

Thunderstorms occurring along cold fronts.



Answer: Match the Following | Foundations

Column A

Wind
Cyclone
Eye of cyclone
Lightning conductor
Sea breeze
Land breeze
Air flows

Column B

Moving air
Large rotating storm
Calm centre
Protects buildings from lightning
Blows from sea to land during day
Blows from land to sea during night
High pressure to low pressure



Nature of Matter: Elements, Compounds and Mixtures

The Incredible Journey of Iron

Born in the Hearts of Stars



Deep inside a massive star, intense heat and pressure fuse atoms together. In the final moments of a star's life, it creates Iron (Fe). When the star explodes in a supernova, it scatters iron across the universe. This iron eventually became part of the dust that formed our Earth!

The Earth's Strong Core



Fast forward billions of years. Most of the Earth's iron sank to its center because it is so heavy. This molten iron core acts like a giant magnet, creating a magnetic field that protects our planet from harmful solar radiation. Without iron, life on Earth might not exist!

Gifts from the Sky



Early humans first discovered iron not by digging, but by looking at the stars! They found “Meteoric Iron” that fell from space. Because it was stronger than bronze, they called it the “Metal from Heaven” and used it to make the world’s first iron daggers and tools.

The Iron Age Revolution



Once humans learned to “smelt” iron (extracting it from rocks called ores using high heat), everything changed. Farmers made iron plows to grow more food, and builders made stronger saws and hammers.

The Iron Age paved the way for modern civilization.

The Architect of the Modern World



Today, we mix iron with a little bit of carbon to make Steel. From the tallest skyscrapers and longest bridges to the cars we drive and the pans we cook with, iron is the “heavy lifter” of the elements. It is strong, recyclable, and essential to our future!

The Iron in our Body



Iron isn't just in buildings; it's inside YOU! In your blood, a protein called hemoglobin uses iron to grab oxygen from your lungs and carry it to every part of your body. If you feel tired, you might need more iron-rich foods like spinach or beans!





Guess Who Am I ?

- 1 I am a mixture of metals like iron, chromium, and nickel, used to make utensils.
- 2 I support combustion and make a candle flame glow brighter.
- 3 I am formed when iron and sulfur are heated together and I am no longer attracted by a magnet.
- 4 I turn milky when exposed to carbon dioxide in air.
- 5 I am the lightest material on Earth and can absorb oil spills.

Answers



Guess Who AM I ?

- | | | |
|-------------------|--------------------|----------------|
| 1 Stainless steel | 2 Oxygen | 3 Iron sulfide |
| 4 Lime water | 5 Graphene aerogel | |



Ecosystem

Ecosystem – Components

An **ecosystem** consists of **abiotic** and biotic components. **Abiotic components** are the non-living factors of the environment and include **climatic factors** (temperature, water, light, wind, humidity, air currents), **edaphic factors** (soil properties), and **topographic factors** (slopes, valleys, mountains, and plains).

Biotic components include all living organisms and are classified into **producers, consumers, and decomposers**. Producers are green plants (autotrophs) that prepare food by photosynthesis. **Consumers** are heterotrophs that depend on producers and are of four types: **primary consumers (herbivores)**, **secondary consumers (primary carnivores)**, **tertiary consumers (secondary carnivores)**, and **top carnivores**, which are not eaten by other animals. **Decomposers**, mainly bacteria and fungi, break down dead organic matter and recycle nutrients back into the ecosystem.

Jumbled Words

Unscramble the following letters to form meaningful words related to **Ecosystem – Components**.

Jumbled Word Answer

1

IOTABIC

2

HIDPACE

3

RSPUODCER

4

OMSDPEECRO

5

RATOPGHOPIC

6

SMONCURES

7

TRUAOTPHOS

Pollination

Pollination is the transfer of pollen grains from the anther to the stigma of a flower.

It is the first step towards fertilization and leads to the formation of seeds and fruits.

Types of Pollination

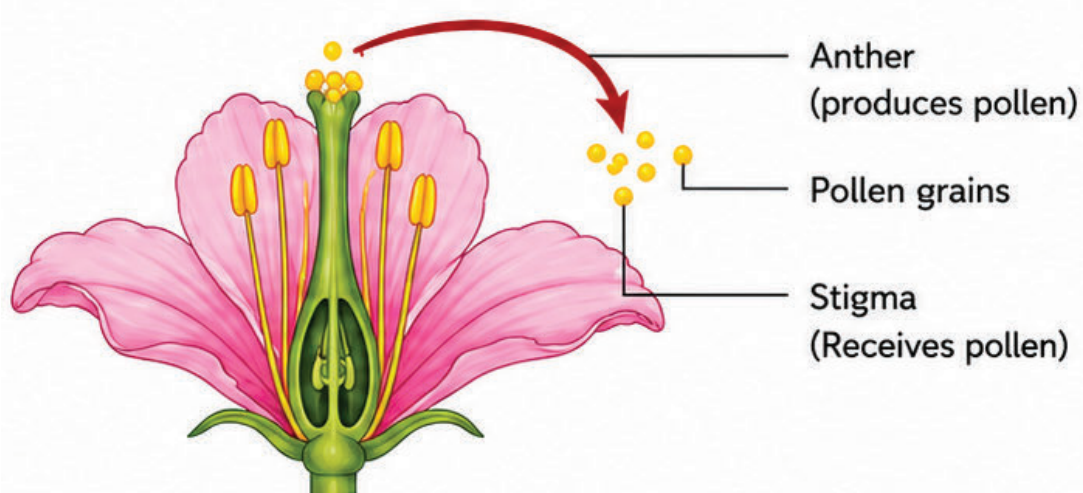
◆ Self-Pollination

Transfer of pollen grains from the anther to the stigma of the same flower or another flower on the same plant.

◆ Cross-Pollination

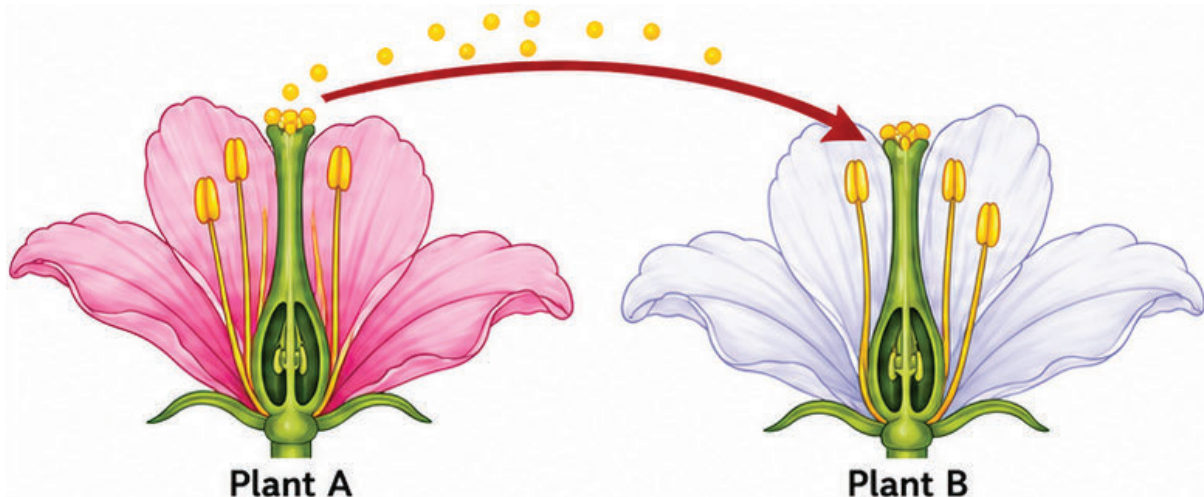
Transfer of pollen grains from the anther of a flower on one plant to the stigma of a flower on another plant of the same species.

Self-Pollination



Pollen moves within the same flower or same plant.

Cross-Pollination



Pollen moves from one plant to another plant of the same species.

Bharatpur

A Paradise for Migratory Birds

Keoladeo National Park, also known as the **Bharatpur Bird Sanctuary**, is located in **Rajasthan**. It is one of India's most important **wetland bird sanctuaries** and a **UNESCO World Heritage Site**. Every winter, thousands of migratory birds arrive here from



Siberia, Central Asia, Europe, and China to escape the cold and find food. The sanctuary is home to **more than 370 bird species**. Famous migratory birds include the **Bar-headed Goose, Demoiselle Crane, Greater Flamingo, Ruddy Shelduck**, and the **Siberian Crane**, which was once a regular winter visitor but is now rarely seen due to habitat loss and hunting.

Answers: Jumbled Words

	Jumbled Word	Correct Answer
1	IOTABIC	ABIOTIC
2	HIDPACE	EDAPHIC
3	RSPUODCER	PRODUCERS
4	OMSDPEECRO	DECOMPOSERS
5	RATOPGHOPIC	TOPOGRAPHIC
6	SMONCURES	CONSUMERS
7	TRUAOTPHOS	AUTOTROPHS

The Election Commission of India (ECI)

The Election Commission of India (ECI) is an independent constitutional authority responsible for conducting free and fair elections in India.

- **Established on:** 25 January 1950
- **Headquarters:** Nirvachan Sadan, New Delhi
- **Constitutional Provision:** Article 324 of the Indian Constitution

It ensures that democracy functions smoothly by organizing elections at various levels.

Constitutional Status

The ECI is a constitutional body, meaning it is mentioned in the Constitution itself (Article 324).

Composition:

- Chief Election Commissioner (CEC)
- Two Election Commissioners

They are appointed by the President of India.

Tenure:

- 6 years or until 65 years of age (whichever is earlier).

The Chief Election Commissioner enjoys security of tenure and cannot be removed easily.

Functions of the ECI

Conduct of Elections

The ECI conducts elections for:

- Lok Sabha
- Rajya Sabha
- State Legislative Assemblies
- State Legislative Councils
- President and Vice-President of India

Preparation of Electoral Rolls

- Ensures voter lists are updated.
- Prevents duplication and fraud.

Model Code of Conduct (MCC)

- Issues guidelines to political parties during elections.
- Ensures fair campaigning.

Supervision and Monitoring

- Monitors election expenses.
- Deploys observers.
- Ensures peaceful polling.

Use of Technology

- Uses Electronic Voting Machines (EVMs).
- Introduced VVPAT system for transparency.



Powers of the ECI

- Can postpone or cancel elections if malpractice occurs.
- Can disqualify candidates for violations.
- Controls political party recognition and election symbols.
- Advises the President or Governor on disqualification matters.

Importance of the ECI

- Protects democracy.
- Ensures free and fair elections.
- Maintains neutrality.
- Prevents electoral malpractices.
- Strengthens public confidence in the electoral process.

India conducts one of the largest elections in the world, and the ECI manages it efficiently.

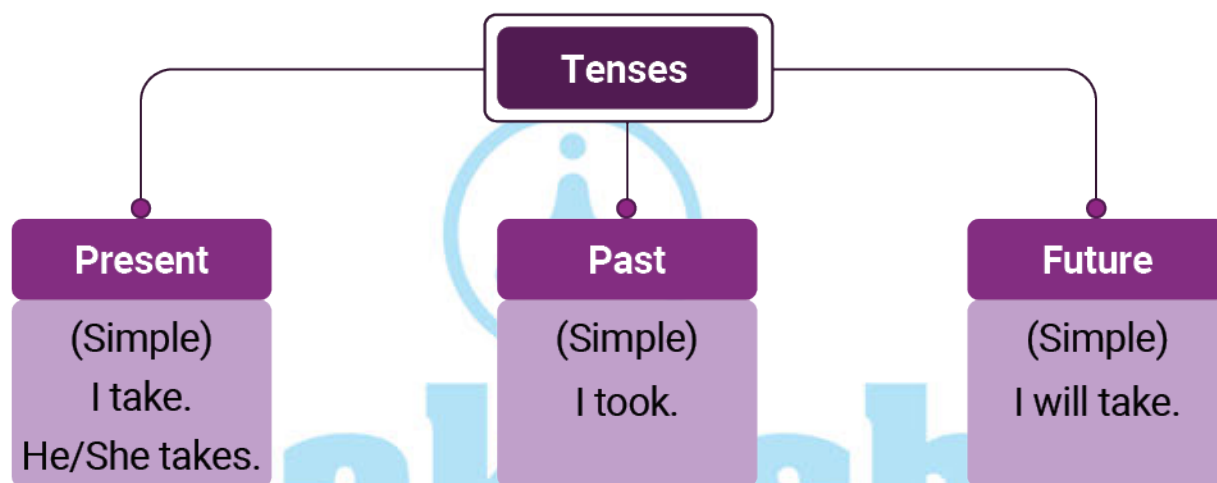
Challenges Faced by ECI

- Money power and vote buying.
- Fake news and misinformation.
- Criminalization of politics.
- Managing large voter population.
- Ensuring transparency in political funding.



Tenses

The tense of a verb tells us when the action is, was or will be carried out.



Simple Present/Present Indefinite Tense

- (i) To describe repeated actions and habits; as
 - (a) I go for a morning walk daily.
 - (b) Ishani reads the newspaper every day.
- (ii) To express facts which are true of all times; as,
 - (a) The Sun rises in the East.
 - (b) This road leads to Jaipur.
- (iii) To describe a future planned/scheduled action; as,
 - (a) The president arrives tomorrow at 10.00 a.m.
 - (b) The train leaves to Karnataka at 9.00 p.m.

- (iv) To express a fact of something which is true at present; as,
(a) All trains halt at Rampur.
(b) Priyanka teaches English in Hindu College, Sonapat.
- (v) To introduce quotations; as,
(a) Wordsworth says, "Nature heals our negative mood."
(b) Shakespeare says, "Frailty, thy name is a woman."
- (vi) In running commentaries on matches; as,
(a) Kumble runs up to the wicket. He bowls.
(b) The batsman steps forward and drives the ball to the boundary.
- (vii) In time and conditional clauses; as,
(a) We will wait until Murti *sings*.
(b) If he *works* hard, he will succeed.

Questions (Identify the correct tense form.)

1. The new Chief Minister will take vows today at Ramlila maidan.
2. The teacher said to the boys, "Slow and steady win the race."
3. If the government will be strict, corruption will definitely cease to exist.
4. The class will be starting at 8:00 am tomorrow.
5. If you will smuggle goods into the country, they will be confiscated by the customs authority.



Answers

1. 'takes' instead of 'will take'
2. 'wins' instead of 'win'
3. 'is' instead of 'will be'
4. 'starts' instead of 'will be starting'
5. 'smuggle' instead of 'will smuggle'

Aakash
Medical Institutions

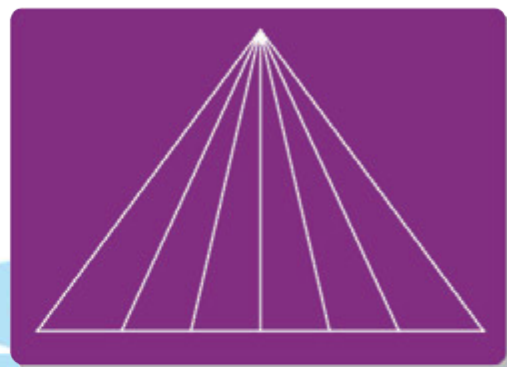


Diagrammatic Puzzles and Dice

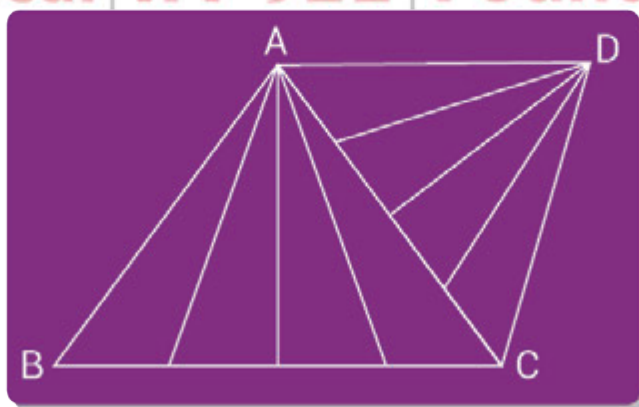
Counting of Figures

1. Find the number of triangles in the given figure.

- (A) 15
- (B) 22
- (C) 21
- (D) 25



2. Find the number of triangles in the given figure.

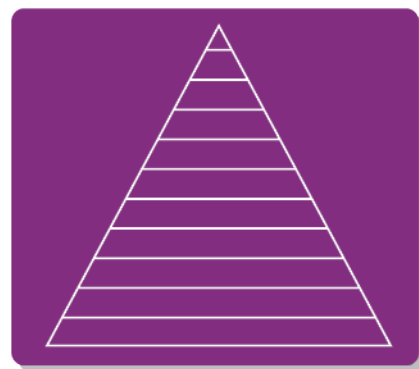


- (A) 22
- (B) 20
- (C) 18
- (D) 24

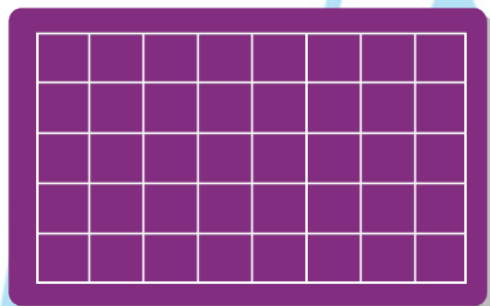


3. Find the total number of triangles in the given figure.

(A) 9
(B) 13
(C) 12
(D) 11



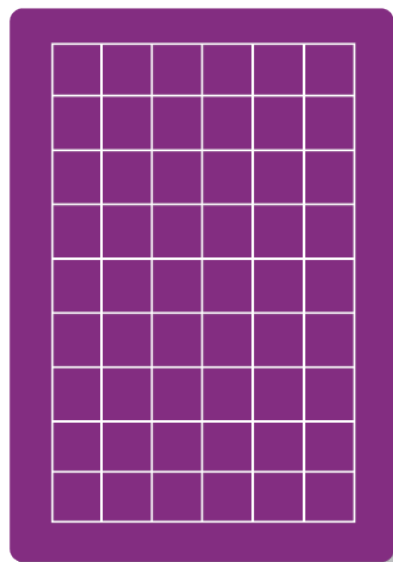
4. The total number of squares in the given figure is



(A) 95 (B) 100
(C) 102 (D) 101

5. The total number of squares in the given figure is

(A) 154
(B) 150
(C) 145
(D) 160

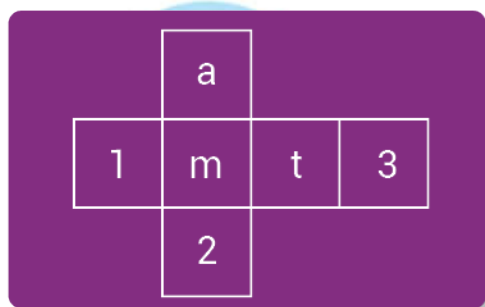


Dice

Open dice:

Alternate faces in the same vertical or horizontal row are opposite to each other.

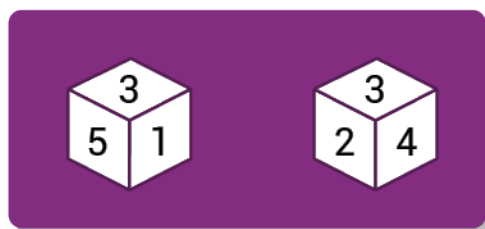
6. In the given figure an open dice is shown the correct pair of opposite faces is



- (A) 1 – 3 (B) m – 3
(C) a – t (D) a – 1

If only one face is common in different position of the same dice, then do either clockwise or anti-clockwise rotation starting from the common face.

7. Face opposite to 4 is



- (A) 1 (B) 6
(C) 5 (D) 3

Answers

1. (C) Number of triangles inside the main triangle (n) = 6

$$\begin{aligned}\text{So, Total number of triangles} &= \frac{n(n+1)}{2} \\ &= \frac{6 \times (6+1)}{2} = 21\end{aligned}$$

2. (B) Number of triangles in $\triangle ABC = (n_1) = 4$

$$\text{Number of triangles in } \triangle ACD = (n_2) = 4$$

$$\begin{aligned}\text{Total number of triangles in } \triangle ABC &= \frac{n_1(n_1+1)}{2} \\ &= \frac{4 \times (4+1)}{2} = 10\end{aligned}$$

$$\begin{aligned}\text{Total number of triangles in } \triangle ACD &= \frac{n_2(n_2+1)}{2} \\ &= \frac{4 \times (4+1)}{2} = 10\end{aligned}$$

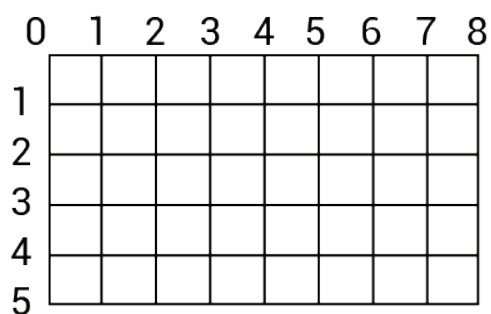
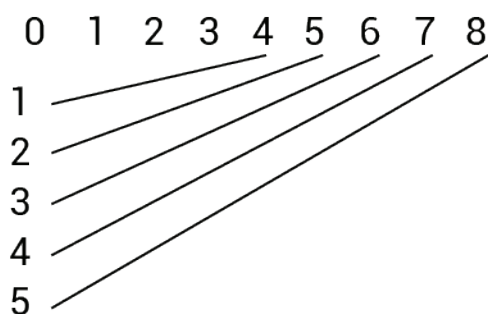
$$\begin{aligned}\text{Total number of triangles} &= 10 + 10 \\ &= 20\end{aligned}$$

3. (D) In such figure total possible

$$\begin{aligned}\text{Triangles} &= \text{Total number of horizontal lines} \\ &= 11\end{aligned}$$

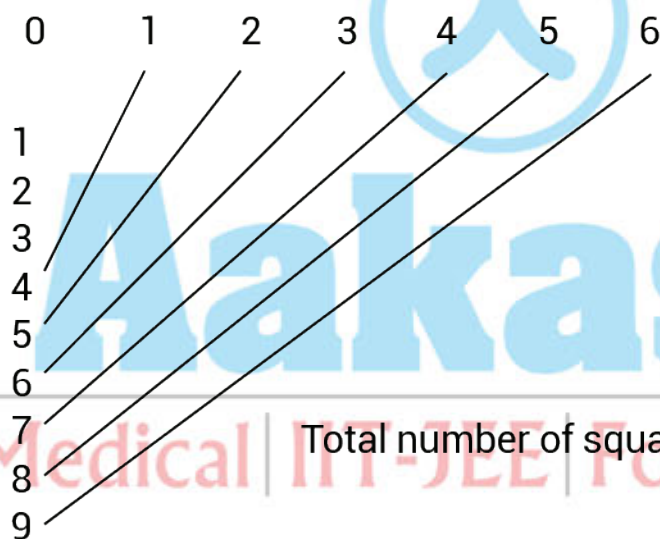


4. (B)



$$\text{Total square} = (5 \times 8) + (4 \times 7) + (3 \times 6) + (2 \times 5) + (1 \times 4) = 100$$

5. (A)



$$\begin{aligned} \text{Total number of squares} &= (6 \times 9) + (5 \times 8) + (4 \times 7) \\ &\quad + (3 \times 6) + (2 \times 5) + (1 \times 4) \\ &= 154 \end{aligned}$$

6. (B)

7. (A)



3 1 5
3 4 2
So, 1 is opposite to 4
5 is opposite to 2
3 is opposite to remaining 6.

FATHER OF NUCLEAR PHYSICS (NOBEL-1908)

Happy Birthday

Sir Ernest Rutherford

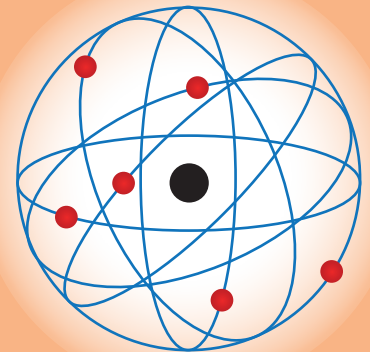
New Zealand English Chemist & Physicist



Born - 30 Aug 1871
Died - 19 Oct 1937

Rutherford's Nuclear Model of the Atom

- ☐ The nucleus is very small, dense, and positively charged.
- ☐ Electrons surround the nucleus.
- ☐ Most of the atom is empty space.



Ernest Rutherford publishes his discovery of two different kinds of Radiation (Alpha and Beta Particles)
Ernest Rutherford, 1st Baron Rutherford of Nelson, was a new zealand-born British physicist who came to be known as the father of nuclear physics.

In 1908 he was awarded the Nobel Prize for Chemistry

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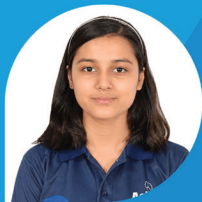
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Marks **499**
& above
20 Students

Marks **495**
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177 Students

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Our Top 100 AIR



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(Classroom Program Students)



Dhruv Advani

IBO 2023



Gold Medalists

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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 Awadhiya
NSEB | NSEP | NSEC



Rupayan Pal
NSEC | NSEP | NSEP



Devansh Garg
NSEJS



Aaron Thakkar
NSEJS

*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

and many more...

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...