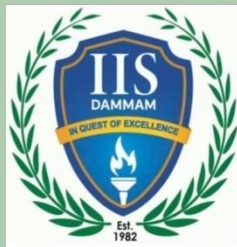


INTERNATIONAL INDIAN SCHOOL DAMMAM



STUDY MATERIAL

CLASS VIII



“ Genius is seldom recognized for what it is: a great capacity for hard work.”- Henry Ford

Organized by Girls Middle Section

PREFACE

In the eloquent words of Arthur Schopenhauer, "Talent hits a target no one else can hit, genius hits a target no one else can see." These profound words encapsulate the essence of our annual Talent Search Exam (TSE) at the International Indian School Dammam (IISD). Each year, this event serves as a beacon, illuminating the path for middle school students to discover and showcase their exceptional abilities.

The primary objective of the Talent Search Exam is to unearth and celebrate the preeminence among our students. It is a platform that not only recognizes raw intelligence but also nurtures and hones academic skills, encouraging students to set ambitious goals for themselves. The TSE is more than just an examination; it is an inspiring journey that propels young minds toward intellectual excellence.

Our vision for the TSE goes beyond conventional assessments. We aspire to cultivate creative thinking, fortify reasoning power, sharpen mathematical abilities, and foster analytical thinking among our students. The world is dynamic, and to thrive in such an environment, it is imperative for our students to stay abreast of current events globally. The TSE equips them with this awareness, instilling in them the courage and confidence to navigate the path to excellence.

This Talent Search Study Material is crafted as a comprehensive manual, meticulously designed to be a guiding light for our young minds. It encompasses the detailed syllabus of all five subject areas, providing students with an invaluable resource to prepare for the challenges that lie ahead. The material is not just a compilation of facts and figures; it is a roadmap that empowers students to face the competition fearlessly, armed with knowledge and understanding.

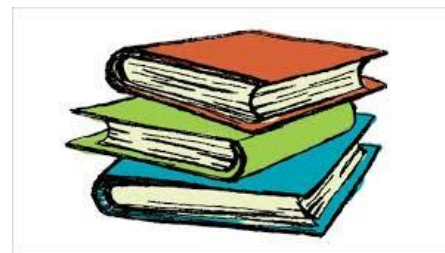
As we embark on this intellectual odyssey with our students, we are confident that the TSE will serve as a catalyst for their growth and development. We extend our heartfelt gratitude to the educators, parents, and students whose collective efforts make this endeavor possible. May this journey be one of discovery, learning, and the realization of untapped potential.

Let the pursuit of excellence begin!

**Shema Anas
Headmistress
Girl's Middle Section (Chief Organizer)**

SYLLABUS @ A GLANCE

1. 40% of the questions will be from the given portions including study material.
2. 60% of the question will be general related to the subject.

**CLASS 8, TALENT SEARCH EXAMINATION PORTION 2023-24**

SUBJECT	WEIGHTAGE	CLASS VIII - SYLLABUS
ENGLISH	15	Tenses (Present and Past), Active and Passive voice, Reported Speech(Statement and Interrogatives), Conditionals(I,II,III) (Idioms/ expressions/ Collocations and vocabulary from all the lessons taught till December) and from the uploaded study material.
MATHS	25	L – 8 Comparing Quantities, L – 9 Algebraic Expressions, L – 11 Mensuration, L – 12 Exponents and powers, Mental Math, Puzzles, Logical Reasoning, Patterns, Odd one out, Geometrical concepts, Math related GK and from the uploaded study material.
SCIENCE & TECH	25	L - 9 Reproduction in Animals, L – 10 Reaching the Age of Adolescence, L – 13 Sound, L – 15 Some Natural Phenomena, L – 16 Light. General questions from Science & Technology and from the uploaded study material.
SOCIAL SCIENCE	15	History L-5 When People Rebel, L-7 Women, Caste and Reforms. Geography L-4 Agriculture, L-5 Industries. Civics L-5 Judiciary and from the uploaded study material.
ENV/GK/ CUR. AFFAIRS	20	Awards, Events (Sports), Natural Disasters, People in News, Books and Authors, Nobel Prize, Inventions and Discoveries related to Computer Technology, Current Affairs (Who’s Who) and from the uploaded study material.

SUBJECT- ENGLISH

1. Tenses – Present, Past (All Eight forms)

Tense is a form of the verb generally used to denote the time of an action.

Present Tense- is used to denote an action that happens now.

Past Tense- denotes an action that took place earlier.



Simple Present Tense --- **verb +s /verb- s**

Present Continuous Tense-- **am/is/are + verb + ing**

Present Perfect Tense--- **has /have + verb in past participle form**

Present Perfect Continuous Tense--- **has /have + been + verb + ing**



Simple Past Tense--- **verb in past**

Past Continuous Tense---**was/were + verb + ing**

Past Perfect Tense--- **had + verb in past participle form**

Past Perfect Continuous Tense--- **had + been + verb + ing**

Examples: (Present Tense- all four forms with Singular and Plural subjects.)

1. Sneha **wakes** up early every morning. (wake) (Simple Present Tense)
2. The soldiers **exercise** daily. (exercise) (Simple Present Tense)
3. I **am playing** guitar now so, don't disturb me. (play) (Present Continuous Tense)
4. We **are staying** at Taj Hotel this week. (stay) (Present Continuous Tense)
5. Reena **has** just **finished** her food. (finish) (Present Perfect Tense)
6. They **have carried** that heavy stone. (carry) (Present Perfect Tense)
7. The patient **has been waiting** for the doctor for three hours. (wait) (Present Perfect Continuous Tense)
8. The laborers **have been painting** the building since morning. (paint) (Present Perfect Continuous Tense)

Examples: (Past Tense- all four forms with Singular and Plural subjects.)

1. The bird **flew** away long back. (fly) (Simple Past Tense)
2. Shahjahan **built** the Taj Mahal long ago. (build) (Simple Past Tense)
3. The king **was fighting** against the enemies. (fight) (Past Continuous Tense)
4. The ships **were sailing** in the direction of the wind. (sail) (Past Continuous Tense)
5. Sagarika **had left** the house when I reached her place. (leave) (Past Perfect Tense)
6. The flight **had landed** when the announcement was made. (land) (Past Perfect Tense)
7. Ramees **had been collecting** seashells since he was a child. (collect) (Past Perfect Continuous Tense)
8. Three policemen **had been catching** the thief for three hours. (catch) (Past Perfect Continuous Tense)

2. Active and Passive Voice

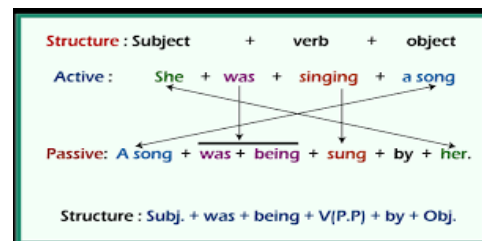
We use the **Active Voice** to say what the subject does.

We use the **Passive Voice** to say what happened to the subject.

Examples:

The Children saw a rainbow in the sky.

A rainbow in the sky was seen by the children.



RULES TO BE FOLLOWED

- first find out where is the verb (action word) in the given question.
- before the verb is **'subject'** / after the verb is **'object'**
- Passive Voice begins with object
- check whether the object brought to the beginning side is **singular or plural**
- verb changes to **Past Participle Form** in every answer
- **'by'** is used in every answer as the object receives the action

am/is/are/was/were + ing----- use 'being'

has/have/had + V (Past Participle Form) ----- use 'been'

any future word----- use 'be'

TENSE	ACTIVE	PASSIVE
Present Simple	I do my homework.	My homework is done.
Present Continuous	I'm doing my homework.	My homework is being done.
Past Simple	I did my homework.	My homework was done.
Past Continuous	I was doing my homework.	My homework was being done.
Present Perfect	I have done my homework.	My homework has been done.
Past Perfect	I had done my homework.	My homework had been done.
Future Simple	I will do my homework.	My homework will be done.
Future Be going to	I'm going to do my homework.	My homework is going to be done.
Modal	I must do my homework.	My homework must be done.
Modal Perfect	I should have done my homework.	My homework should have been done.

Examples:

AV – Ridhma eats biscuits every morning.

PV – Biscuits are eaten by Ridhma every morning. **(Simple Present Tense)**

AV - The workers built the wall.

PV - The wall was built by the workers. **(Simple Past Tense)**

AV - The government will distribute old blankets.

PV - The old blankets will be distributed by the government. **(Simple Future Tense)**

AV – Saroj is calling Geeta to the garden.

PV – Geeta is being called by Saroj to the garden. **(Present Continuous Tense)**

AV – The carpenter was cutting wood.

PV – Wood was being cut by the carpenter. **(Past Continuous Tense)**

AV - The factory workers have declared a strike for a week.

PV - A strike for a week has been declared by the factory workers. **(Present Perfect Tense)**

AV - The owner had issued a termination letter.

PV - A termination letter had been issued by the owner. **(Past Perfect Tense)**

3. Direct and Indirect Speech (Statements and Interrogatives)

Direct speech - is a word-to-word repetition of what the speaker or writer has conveyed.

Indirect speech - is a report on what someone else said without using that person's exact words.

Interrogatives:

*Read the question carefully and check the answer orally.

* All 'wh'+ 'how' question's answer will be a sentence. If the answer is a sentence, then use same question word.

*If the answer is 'yes' or 'no' then no need to use same question word instead use, 'whether' or 'if'.

Reported speech: Wh-questions	
introductory verb in the past	
Direct speech	Reported speech
I: "Where are you?"	He asked where she was.
Q + P + S	Q + S + P
II: "Where do you go?"	He asked where she went.
Q + Aux + S + P	Q + S + P

Grammar structure:

If the answer is a sentence → Who asked whom + 'wh' word + subject + verb in past tense + remaining sentence.

If the answer is in 'yes or no' → who asked whom + whether/if + subject + verb in past tense + remaining sentence.

Examples:

1. The mother said to the daughter, "Do you know where John is?"

The mother asked the daughter whether she knew where John was.

2. The Principal asked the candidate, "May I know your name?"

The Principal asked the candidate whether/if he might know his/her name.

3. The teacher said to me, "What is your name?"

The teacher asked what my name was.

4. He said to her, "Where do you live?"

He asked her where she lived.

5. Mary said to him, "Are you going to India?"

Mary asked him whether/if he was going to India.

Reported speech: Yes/no-questions	
introductory verb in the past	
Direct speech	Reported speech
I: "Are you ok?"	He asked if/whether she was ok."
P + S + rest	i/w + S + P + rest
II: "Do you go home?"	He asked if/whether she went home.
Aux + S + P + rest	i/w + S + P + rest

4. Conditional Clauses (I, II & III)

A clause consists of a subject and a verb and is the smallest grammatical unit that expresses a thought. We make conditional clauses with 'if'. These clauses usually express a condition – something which must happen first so that something else can happen.

The First Conditional:

The first conditional if clause is used to talk about a situation that is likely to happen.

(if + present simple, ... will + infinitive)

If it rains tomorrow, we'll go to the cinema.

The Second Conditional:

The second conditional is used to talk about a situation that is unlikely to happen or is imaginary.

(if + past simple, ... would + infinitive)

If I had a lot of money, I would travel around the world.

The Third Conditional:

The third conditional if clause refers to an unreal condition in the past. It implies that if things had happened differently in the past, the results would have been different.

(if + past perfect, ... would + have + past participle)

If I had gone to bed early, I would have caught the train.

Examples:

1. God **will reward** us, If we **help** the poor. {1st conditional}
2. If we **study** well, we **will do** well. {1st conditional}
3. If we **had** a daughter, I **would dress** her in pink. {2nd conditional}
4. If I **had** surplus funds, I **would sanction** the loan. {2nd conditional}
5. If we **had taken** the initiative, we **would have constructed** the bridge over the river. {3rd conditional}
6. If she **had performed** well, she **would have been selected** for the competition. {3rd conditional}

5. List of idioms and expressions, collocations and vocabulary.

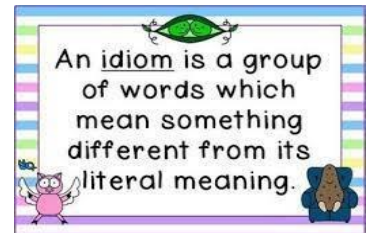
Idiomatic expressions are group of words with established meaning unrelated to the meanings of individual words.

NOTE: Tense can be changed according to the sentence.

Idiom/Expression

Meaning

- | | |
|------------------------------|--|
| 1.To get under one's skin | -annoy or irritate someone intensely |
| 2.have a thick skin | -not sensitive to insults |
| 3.walk on air | -to be very happy |
| 4.have one's nose in the air | -to be very proud of oneself or aloof |
| 5.a nip in the air | -the air is cold |
| 6.look up to someone | -to admire and respect |
| 7.put up with | -tolerate something or someone |
| 8.let someone down | -to fail or disappoint someone |
| 9.turn down | -to reject or refuse to consider an offer |
| 10.draw up | -prepare a plan, agreement, or other document in detail. |



Examples:

- 1.His constant boasting was beginning to get under my skin.
- 2.He was thick-skinned enough to cope with her taunts.
- 3.The boys are walking on air because their team won the game.
- 4.I felt a little nip in the air when I opened the window.
- 5.*He's a snob and always has his nose in the air when he's around us.*
- 6.If you look up to someone then you respect and *admire* them.
- 7.I have to put up with my noisy neighbours every night.
- 8.I was counting on John to come, but he let me down.
- 9.*He turned down the job because it involved too much travelling.*
- 10.The architect showed us the house plans that she had drawn up.

Collocations:

A collocation is a sequence of words that regularly occur together.

Examples:

- 1.The vehicles in lanes two and three slow down because of heavy traffic.
2. There was a strong smell of cigarette smoke.
3. To achieve the right balance in such an area we each of us need deep thought and an inner quietness.
4. They were in a panic and in utter confusion over their rights of citizenship and settlement.
5. The book is well-produced and copy-edited to an unusually high standard.
6. I announced my decision to leave with a heavy heart.
7. Fragrant flowers in a full range of rich colours make a stunning display.
8. Researchers have confirmed that chilly weather really does make you more likely to catch a cold.

9. Lying on the beach, we have to get up again to avoid being swept out to sea at high tide.
 10. A strong breeze made scoring difficult on the first morning.

Vocabulary: (Learn vocabulary only from the given list.)

<u>Words</u>	<u>Meanings</u>
1.elusive	-difficult to find or catch
2.uncanny	-strange or mysterious
3.contemplating	-meditating, thinking deeply
4.dart	-move or run somewhere suddenly or rapidly
5.prance	-to walk or move in a lively and proud way
6.loiter	-to stand or wait around without any aim or purpose
7.amble	-walk or move at a slow, relaxed pace
8.resplendent	-very rich and grand
9.ransom	-the money paid to free someone
10.creep	-move slowly and carefully in order to avoid being heard or noticed
11.offended	-upset or angry
12.viable	-capable of working successfully
13.resuscitate	-to bring someone or something back to life
14.staggered	-stood unsteadily
15.venerable	-deserving great respect

SUBJECT- MATH'S

CHAPTER – 8 – COMPARING QUANTITIES

(NOTE: For more details, refer class VIII mathematics text book.)

- **RATIO**: Ratios are used to compare numbers in quantitative terms in real-world situations. A ratio can be used to determine the size of one quantity in relation to another.
- **PERCENTAGE**: Percentage is a number or ratio expressed as a fraction of 100. It is often denoted using the percent sign (%).
- **Converting ratios to percentage**:
 To convert a ratio into percentage, first make the ratio into fractional form and convert it into %.
Example: Concert the ratio 3:4 into percentage.
 Answer
 Fraction of 3:4 = $\frac{3}{4}$.
 Percentage = $\frac{3}{4} \times 100\% = 75\%$
- **DISCOUNT**: Discount is the reduction given on the Marked price (MP) of the article. Discount = Marked price (MP) – Sales price (SP).
 Discount% = $\frac{\text{discount}}{MP} \times 100\%$
- **SALES TAX (ST)/ VALUE ADDED TAX (VAT) / GOODS AND SERVICE TAX (GST)**: These taxes are charged by the Government on the sale of an item. It is collected by the shopkeeper from the customer and given to the government. This is always on the selling price of an item and is added to the value of the bill.

- **COMPOUND INTEREST (CI):** Compound interest is interest accumulated from a principal sum and previously accumulated interest.

$$A = P \left(1 + \frac{R}{100}\right)^n$$

In the above expression, A is the Amount, P is the principal, R is the rate of interest and n is the time period.

$$CI = A - P$$

- **DEPRECIATION:** Depreciation is the reduction of value due to use and age of the item.

$$A = P \left(1 - \frac{R}{100}\right)^n$$

- **EXAMPLES:**

1. Seema bought a hair dryer for Rs.3300, including a tax of 10%. The price of the hair dryer before value added tax was added is:
(A) Rs. 2000 (B) Rs. 3000 (C) Rs. 2500 (D) Rs. 2800.
Answer: (B) Rs.3000
2. The value of a machine depreciates every year by 10%. What will be its value after 2 years if its present value is Rs.50,000?
(A) Rs. 40,500, (B) Rs.40,050, (C) Rs.40,000, (D) Rs.45,000.
Answer: (A) Rs.40,500
3. After allowing a discount of 12% on the marked price of an article, it is sold for Rs. 880. Find its marked price.
(A) Rs.892, (B) Rs.900, (C) Rs.1,000, (D) Rs.990.
Answer: (C) Rs.1000.
4. The compound interest on Rs. 10,000 for 3 years at 2% per annum is
(A) Rs. 600, (B) Rs. 610.20, (C) Rs.612.08, (D) None of these.
Answer: (C) Rs.612.08.

CHAPTER – 9 – ALGEBRAIC EXPRESSIONS

(NOTE: For more details, refer class VIII mathematics text book.)

- **ADDITION:** For adding two or more algebraic expressions the like terms of both the expressions are grouped together. The coefficients of like terms are added together using simple addition techniques and the variable which is common is retained as it is.

- **Example:** Add: $5xy - 3x^2 - 12y + 5x$, $xy - 3x - 12yz + 5x^3$ and $y - 6x^2 - zy + 5x^3$.

Step 1: Write the given algebraic expressions using an additional symbol.

$$(5xy - 3x^2 - 12y + 5x) + (xy - 3x - 12yz + 5x^3) + (y - 6x^2 - zy + 5x^3)$$

Step 2: Open the brackets

$$5xy - 3x^2 - 12y + 5x + xy - 3x - 12yz + 5x^3 + y - 6x^2 - zy + 5x^3$$

Step 3: Now, combine the like terms.

$$(5xy + xy) + (-3x^2 - 6x^2) + (-12y + y) + (5x - 3x) + (-12yz - zy) + (5x^3 + 5x^3)$$

Step 4: Add the coefficients. Keep the variables and exponents on the variables the same.

$$6xy - 9x^2 - 11y + 2x - 13yz + 10x^3$$

- **SUBTRACTION:** To subtract an algebraic expression from other expression, add the additive inverse of the second expression to the first expression.

- **Example:** Subtract $x^2y - 2x^2 - zy + 5$ and $-3x^2 + 3x^3$ from $y^3 + 3x^2y - 6x^2 - 6zy + 7x^3$

Step 1: Write the given algebraic expressions using an additional symbol.

$$(y^3 + 3x^2y - 6x^2 - 6zy + 7x^3) - [(x^2y - 2x^2 - zy + 5) + (-3x^2 + 3x^3)]$$

Step 2: Open the brackets and multiply the signs.

$$y^3 + 3x^2y - 6x^2 - 6zy + 7x^3 - x^2y + 2x^2 + zy - 5 + 3x^2 - 3x^3$$

Step 3: Now, combine the like terms.

$$y^3 + (3x^2y - x^2y) + (-6x^2 + 2x^2 + 3x^2) + (-6zy + zy) + (7x^3 - 3x^3) + (-5)$$

Step 4: Add the coefficients. Keep the variables and exponents on the variables the same.

$$y^3 + 2x^2y - x^2 - 5zy + 4x^3 - 5$$

- **MULTIPLICATION:** The multiplication of algebraic expressions is a method of multiplying two given expressions consisting of variables and constants.
- **Multiplication of monomials:**
Example: $5a \times 4a^2 = 5 \times 4 \times a \times a^2 = 20a^3$
- **Multiplication of a monomial by a polynomial:**
Example: $3y^2(12y^3 - 6y^2 + 5y - 1)$
 $= 3y^2(12y^3) - (3y^2)(6y^2) + (3y^2)(5y) - (3y^2)(1)$
 $= (3)(12)y^{2+3} - (3)(6)y^{2+2} + (3)(5)y^{2+1} - (3)(1)y^2$
 $= 36y^5 - 18y^4 + 15y^3 - 3y^2.$
- **Multiplication of a polynomial by a polynomial:**
Example: $(x^2 - 2)(3x^2 - 3x + 7)$
 $= x^2(3x^2 - 3x + 7) - 2(3x^2 - 3x + 7)$
 $= x^2(3x^2) - x^2(3x) + x^2(7) - [2(3x^2) - 2(3x) + 2(7)]$
 $= 3x^4 - 3x^3 + 7x^2 - 6x^2 + 6x - 14$
 $= 3x^4 - 3x^3 + (7 - 6)x^2 + 6x - 14$
 $= 3x^4 - 3x^3 + x^2 + 6x - 14$
- **EXAMPLES:**
 1. Add $ab - bc + cd$ and $2ab - 2bc - cd$.
(A) $ab + 2cd$ (B) $3ab + bc$ (C) $2ab - 2bc$ (D) $3ab - 3bc$
Answer: (D) $3ab - 3bc$.
 2. Find the product of $5a^2b$, $(-3b^2c)$ and $(-4ac^2)$
(A) $100abc$ (B) $60ab^2c$ (C) $60a^3b^3c^3$ (D) $60a^2b^2c^2$
Answer: (C) $60a^3b^3c^3$
 3. If we subtract $4a - 7ab + 3b + 12$ from $12a - 9ab + 5b - 3$, then the answer is:
(A) $8a + 2ab + 2b + 15$ (B) $8a + 2ab + 2b - 15$ (C) $8a - 2ab + 2b - 15$ (D) $8a - 2ab - 2b - 15$
Answer: (C) $8a - 2ab + 2b - 15$.

CHAPTER – 11 – MENSURATION

(NOTE: For more details, refer class VIII mathematics text book.)

- Area of a trapezium = $\frac{h(a+b)}{2}$, a and b are the parallel sides of the trapezium and h is the distance between the parallel sides a and b.
- Area of a general quadrilateral = $\frac{d(h_1+h_2)}{2}$, d is one of the diagonals of the quadrilateral and h_1 and h_2 are the length of the perpendiculars from the opposite vertices to the diagonal d.
- Area of a Rhombus = $\frac{d_1 \times d_2}{2}$, d_1 and d_2 are the length of the diagonals of the rhombus.
- Area of a polygon: To find the area of the polygon, divide the polygon into triangles and quadrilaterals by dropping perpendiculars from opposite vertices to one of the diagonals of the polygon. Find the areas of these triangles and quadrilaterals separately and add these areas to get the area of the polygon.

- **TOTAL SURFACE AREA (TSA):** The total surface area of a solid shape is the sum of the areas of its faces.
 1. TSA of a cuboid = $2[lb + bh + hl]$, l is the length, b is the breadth and h is the height of the cuboid.
 2. TSA of a cube = $6l^2$, l is the length of the side of the cube.
 3. TSA of a cylinder = $2\pi r(r + h)$, r is the radius of the base of the cylinder and h is the height of the cylinder.
- **LATERAL SURFACE AREA (LSA):** The lateral surface area of a solid is the sum of the areas of the side faces excluding the top and bottom faces. The LSA of a cylinder is also known as CURVED SURFACE AREA (CSA).
 1. LSA of a cuboid = $2h(l + b)$, l is the length, b is the breadth and h is the height of the cuboid
 2. LSA of a cube = $4l^2$, l is the length of the side of the cube.
 3. LSA (CSA) of a cylinder = $2\pi rh$, r is the radius of the base and h is the height of the cylinder.
- **VOLUME (V):** Amount of space occupied by a three-dimensional object is called its Volume.
 1. Volume of a cuboid = lbh
 2. Volume of a cube = l^3
 3. Volume of a cylinder = $\pi r^2 h$
- **VOLUME AND CAPACITY**
- Volume refers to the amount of space occupied by an object.
- Capacity refers to the quantity that a container holds.
- **CONVERSIONS**
 1. $1 \text{ ml} = 1 \text{ cm}^3$
 2. $1 \text{ L} = 1000 \text{ cm}^3$
 3. $1 \text{ m}^3 = 1000000 \text{ cm}^3$
 4. $1 \text{ m}^3 = 1000 \text{ L}$
- **EXAMPLES:**
 1. If the parallel sides of a trapezium are 2 cm apart and their sum is 10 cm then its area is:
(A) 20 cm^2 (B) 5 cm^2 (C) 10 cm^2 (D) none of these.
Answer: (C) 10 cm^2
 2. If base area of a room 12 m^2 and height is 3 m then its volume is:
(A) 4 m^3 (B) 36 m^3 (C) 12 m^3 (D) none of these.
Answer: (B) 36 m^3
 3. The radius and height of a cylinder are 14 cm and 5 cm respectively. The CSA of the cylinder is _____
(A) 220 cm^2 (B) 440 cm^2 (C) 1232 cm^2 (D) none of these.
Answer: (B) 440 cm^2 .
 4. Area of a rhombus whose diagonals are of length 10 cm and 8.2 cm is _____
(A) 41 cm^2 (B) 82 cm^2 (C) 410 cm^2 (D) 820 cm^2 .
Answer: 41 cm^2

CHAPTER – 12 – EXPONENTS AND POWERS

(NOTE: For more details, refer class VIII mathematics text book.)

- Exponent refers to the number of times a number is used in a multiplication. Power can be defined as a number being multiplied by itself a specific number of times. Exponent is the number to which a number is raised so as to define its power as a whole expression.
Example: $5^3 = 5 \times 5 \times 5 = 125$
- **NEGATIVE EXPONENTS:** For any non - zero integer a, $a^{-m} = 1/a^m$, where m is a positive integer.
Example: $2^{-3} = 1/2^3 = 1/2 \times 1/2 \times 1/2 = 1/8$
- **MULTIPLICATIVE INVERSE:** a^{-m} is the multiplicative inverse of a^m .

Example: 10^{-5} is the multiplicative inverse of 10^5

• **LAWS OF EXPONENTS:**

Product Rule	$a^m \times a^n = a^{m+n}$
Quotient Rule	$a^m \div a^n = a^{m-n}$
Power of a Power Rule	$(a^m)^n = a^{mn}$
Power of a Product Rule	$(ab)^m = a^m b^m$
Power of a Quotient Rule	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$
Zero Exponent Rule	$a^0 = 1$

- **STANDARD FORM:** Standard form may refer to a way of writing very large or very small numbers by comparing the powers of ten. It is also known as scientific notation. Numbers in standard form are written in this format: $a \times 10^n$, where a is a number, $1 \leq a < 10$ and n is an integer.

Example:

1. The standard form of 6005200 is 6.0052×10^6
2. The standard form of 0.00000756 is 7.56×10^{-6}

- **USUAL FORM:** To convert standard form to usual form,

1. Convert the power of ten to an ordinary number.
2. Multiply the decimal number by this power of ten.
3. Write your number as an ordinary number.

Example:

1. The usual form of 7.92×10^7 is 79200000
2. The usual form of 5.34×10^{-5} is 0.0000534

- **EXAMPLES:**

1. The value of 2^{-2} is:

(A) 4 (B) $\frac{1}{4}$ (C) 2 (D) $\frac{1}{2}$.

Answer: (B) $\frac{1}{4}$

2. The multiplicative inverse of 7^{-2} is:

(A) 7^2 (B) 7 (C) $\frac{1}{7^2}$ (D) $\frac{1}{7}$.

Answer: (A) 7^2

3. If $(-3)^{m+1} \times (-3)^5 = (-3)^7$, then the value of m is:

(A) 5 (B) 7 (C) 1 (D) 3.

Answer: (C) 1

4. What is the value of $(2^2 + 3^2 + 4^2)^0$?

(A) 9 (B) 0 (C) 1 (D) 14.

Answer: (C) 1

5. $3^{-2} \times 3^{-5}$ is equal to:

(A) 3^{-7} (B) 3^{-3} (C) 3^{-10} (D) 3^7 .

Answer: (A) 3^{-7}

PATTERNS IN MATHS

In Mathematics, a pattern is a repeated arrangement of numbers, shapes, colours and so on. The Pattern can be related to any type of event or object. If the set of numbers are related to each other in a specific rule, then the

rule or manner is called a pattern. Sometimes, patterns are also known as a sequence. Patterns are finite or infinite in numbers.

Finite Patterns

A finite pattern is a finite sequence in which we know the first term and the last term.

For example: In pattern 3, 6, 9, 12, 15, the first term is 3 and the last term is 15.

Infinite Patterns

An infinite pattern is a sequence in which we know the first term, but we don't know the last term.

For example: In the pattern 3, 6, 9, 12, 15, 18,; the first term is 3 but we don't know where the pattern is going to stop.

Types of Patterns

There are 3 types of patterns:

- **Shape Pattern**

When a group of shapes are repeated, the pattern or sequence is known as a shape pattern. Shape patterns follow a certain sequence or order of shapes, i.e., they are repeated. The shapes can be simple shapes like circles, squares, rectangles, triangles, etc., or other objects such as arrows, flowers, moons, and stars.



In the above pattern, the arrow rotates at 90° and changes its color. Or, we can say that each coloured shape is repeated after 2 shapes.

- **Letter Pattern**

A sequence that consists of letters or English alphabets is known as a letter pattern.

A letter pattern establishes a common relationship between all the letters.

For example: A, C, E, G, I, K, M...

In the above pattern, one letter has been removed after every alphabet.

- **Number Pattern**

There are different types of number patterns:

- **Arithmetic Pattern**

In such a pattern, the sequences are based on the addition or subtraction of the terms.

Example 1: In the pattern 65, 64, 63, 62, 61, we are subtracting the consecutive numbers by 1 or each number gets decreased by 1.

- **Geometric Pattern**

A sequence of numbers that are based on multiplication and division is known as a geometric pattern.

Example 2: In the pattern given below, each number is divided by 5.

3125, 625, 125, 25, 5

- **Fibonacci Pattern**

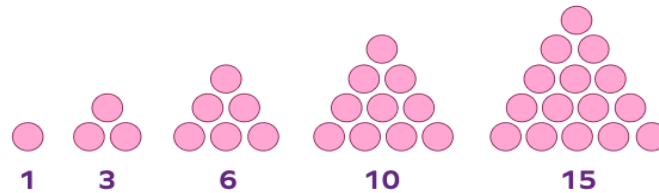
A sequence of numbers in which each number in the sequence is obtained by adding the two previous numbers together is known as the Fibonacci series or pattern. This sequence starts with 0 and 1. We add the two numbers to get the third number in the sequence.

The sequence 0, 1, 1, 2, 3, 5, 8, 13 is the Fibonacci pattern.

- **Triangular Number Pattern**

The representation of the numbers in the form of an equilateral triangle arranged in a series or sequence is known as a triangular number pattern.

Example 3:



The pattern can be described as $0 + 1 = 1$, $1 + 2 = 3$, $3 + 3 = 6$, $6 + 4 = 10$, $10 + 5 = 15$ and so on.

Example 4: Complete the pattern: AB, BC, CD, DE, _____, _____

Solution: The first term is the combination of the first and second alphabets. The second term is the combination of the second and third alphabets. The third term is the combination of third and fourth alphabets. The fourth term is the combination of fourth and fifth term.

Similarly, the next two terms will be EF and FG.

ODD ONE OUT

"Odd one out" is a phrase that is commonly used in mathematics where one number or value in a group is different from the others.

Picking the "Odd one out" is an activity designed to develop a learner's observation, application, and analytical skills.

A puzzle (generally images) for the students to find out, with four answer options and in that any three of the options would be similar and the remaining option would be different.

The answer options would vary on the basis of colour, shape, size, quantity, category (vegetables, fruits, various types of things, vehicles, animals, and it goes on...)

To identify the odd, one out follows the following pattern:

- Observe the objects carefully.
- Describe the objects.
- Identify the similarities.
- Identify the one which is different or dissimilar.

Example 1: Choose the odd number.

- (A) 4 (B) 6 (C) 9 (D) 10

Answer: 9 is the 'odd one out' as it is an odd number and 4, 6, and 10 are even numbers. **Example 2: Choose the odd option.**



Answer: 'S' is the 'odd one out' as it is written using a curved line and the other three letters are written using straight lines.

Example 3: Circle the odd one out in the following



Answer: Option C is the ‘odd one out’. In the other 3 images, the number of sides of the image is equal to the number of equal parts drawn inside the circle of the same image. Only in option C, the bigger image [Pentagon] has 5 sides but the circle inside the Pentagon has 4 equal parts.

Example 4: Choose the odd option.

- (A) $9 - 4$ (B) $6 - 1$ (C) $8 - 3$ (D) $7 - 1$

Answer: $7-1$ is the ‘odd one out’ as the result of subtraction fact $7 - 1$ is 6. All the other 3 subtraction facts give a result as number 5.

GEOMETRICAL CONCEPTS

Geometry is the branch of mathematics that deals with shapes, angles, figures, dimensions, and sizes of a variety of things we see in everyday life.

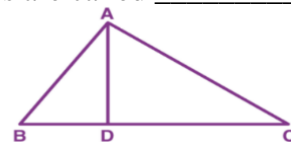
The word Geometry is derived from the Greek word ‘geometron’ is made of two words – ‘Geo’ means ‘Earth’ and ‘Metron’ means ‘measurement’.

In a plane geometry two dimensional shapes such as triangles, squares, rectangles, circles are also called flat shapes. In solid geometry, three dimensional shapes such as cube, cuboid, cylinder, cone etc are also called solid shapes.

Basic Geometry terms: Point, line, line segment, ray, angle, collinear points, non collinear points, intersecting lines, parallel lines, perpendicular lines.

Answer the following

1. A line segment is formed by joining _____. (two points)
2. ____ are created when two lines make an angle. (Rays)
3. _____ polygon has 10 sides. (Decagon)
4. The sum must be equal to _____ when two angles are classified as complementary angles. (90^0)
5. _____ has no equal angles and no equal sides. (scalene triangle)
6. If two or more points lie on the same line, they are called _____.(collinear points)
7. The lines that are equidistant from each other and never meet at any point are called _____.(parallel lines)
8. Two different lines in a plane having a common point are called _____.(Intersecting lines)
9. A collection of circles that has same centre but different radius are called _____.(concentric circles)
10. How many triangles in the given figure? (Ans-3)



GENERAL KNOWLEDGE

1. Who is the father of Mathematics? (Archimedes)
2. Who discovered zero? (Aryabhata)
3. Father of Geometry (Euclid)
4. Who invented equal sign (=) ? (Robert Recorde)
5. Who invented unknown or variable quantities x,y,z ? (Rene Descartes)
6. Who is known as the king of mathematics in India? (Srinivasa Ramanujan)
7. Who is known as Human Computer? (Shakuntala Devi)
8. Who discovered an easy method to find all the prime numbers? (Eratosthenes)

9. National Mathematics Day is celebrated in India on _____. (22nd December)
10. The theme for International Day of Mathematics 2023 is _____. (Mathematics for everyone).

LOGICAL REASONING

Logical reasoning is a useful tool in many areas, including solving math problems. Logical reasoning is the process of using rational, systemic steps, based on mathematical procedure, to arrive at a conclusion about a problem. You can draw conclusions based on given facts and mathematical principles. Once you master the skill in solving math problems, you can use logical reasoning in a wide array of real-world situations.

STEPS TO SOLVE LOGICAL REASONING BASED QUESTIONS

1. Read and understand the information carefully.
2. Analyse critical logical information.
3. Think of all the possible solutions.
4. Compare the answer obtained with other possibilities.
5. Come to a correct logical conclusion.

EXAMPLES

1. A and B can do a work together in 18 days. A is three times as efficient as B. In how many days can B alone complete the work?
(A) 60 days (B) 72 days (C) 54 days (D) 64 days
Answer: B) 72 days
2. If 11 (170) 16, 11 (203) 19, then the value of (?) in 17 (?) 18 will be ____
(A) 200 (B) 300 (C) 400 (D) None of these
Answer: B) 300
3. 4 years hence, the ratio of ages A and B will be 5: 7 and 6 years hence, the ratio of ages will be 11: 15, then and their present ages.
(A) 20 yrs, 26 yrs (B) 18 yrs, 28 yrs (C) 16 yrs, 24 yrs (D) 12 yrs, 18 yrs
Answer: C) 16 years, 24 years
4. What will come at the place (?) in the given series?
BZA, DYC, EXE, (?), JVI.
(A) HAG (B) HGJ (C) HWG (D) HYG
Answer: C) HWG

MENTAL MATHS:

Mental math is a group of skills that allow people to do math “in their head” without using pencil and paper or a calculator. It is useful in school and in everyday life. Mental math can help kids understand math concepts better and get to the answer faster. As the learner’s progress, they will be expected gradually to solve more and more complex problems. So, it is important that the techniques and skills that they use to achieve this are mastered at an early age.

EXAMPLES

1. The product of two numbers is 100 and their difference is 15. What are the numbers? (A) 20 and 5 (B) 25 and 10 (C) 30 and 9 (D) 10 and 50.
Answer: (A) 20 and 5.
2. What is the greatest remainder if the divisor is 7?
(A) 1, (B) 5, (C) 4, (D) 6.
Answer: (D) 6
3. 11:121::9: (?)

(A) 18, (B) 81, (C) 27, (D) 45.

Answer: 81

PUZZLES

A maths puzzle is based on mathematical or numerical facts, rules, and objects, or whose solution requires strong mathematical reasoning, thought or consideration.

MATHS PUZZLES TRICKS

There are some tricks and tips that help in solving different types of puzzles. The below steps will help you in solving any type of puzzles in maths.

Step 1: Take a quick look at the question.

Step 2: Analyse the statements and patterns given in the puzzle

Step 3: Develop a general idea regarding the theme of the problem.

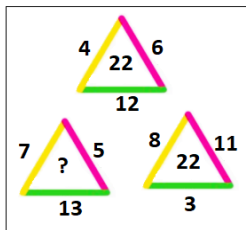
Step 4: Select the data that is giving you some concrete or accurate information out of complete details given.

Step 5: Apply the possibilities to the given conditions of the puzzle

Step 6: The best possibility that satisfies the given conditions will be the solution to the puzzle

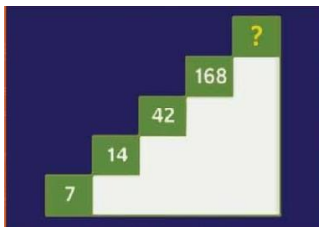
EXAMPLES

1. Solve the following puzzle.



Answer: 25

2. Analyse the staircase and find the missing number.



Answer: 840

3. If you multiply me by any other number, the answer will always be the same. What number am I?

Answer: 0 (zero)

SUBJECT :SCIENCE & TECHNOLOGY

1. Sonic Levitation:

- Description: Utilizes Acoustic radiation pressure from intense sound waves to counteract gravity, allowing small objects to float. This phenomenon occurs because sound waves carry momentum and can exert force on objects, enabling them to be suspended in mid-air when precisely controlled.
- Application: Material science, Medicine.

2. **Sound Insulation Materials:**

- Description: Materials that work by absorbing, reflecting, or damping sound waves. Acoustic impedance determines resistance to sound wave propagation. Effective sound insulators have properties that allow them to convert sound energy into heat or block its transmission.
- Application: Building acoustics, noise control, audio quality enhancement.

3. **Bioacoustics in Ecosystem Monitoring:**

- Description: The study of sound in animal communication, is increasingly used in ecosystem monitoring. By recording and analyzing natural soundscapes, scientists can monitor biodiversity, track animal populations, and assess ecological health.
- Application: Ecosystem monitoring, conservation efforts.

4. **Ultrasound Technology in Medicines:**

- Description: Uses high frequency sound waves to create images of the body. It's a critical diagnostic tool, particularly in prenatal care.
- Application: The advancement of ultrasound like High-Intensity Focused Ultrasound (HIFU) for non-invasive targeted treatment.

LIGHT

1. **Quantum Dot Technology:**

- Description: Tiny semiconductor particles a few nanometers in size, having unique optical and electronic properties due to their quantum mechanics. They are used in display screens to produce pure, saturated colors, significantly enhancing display brightness and color range.
- Application: TVs, smartphones, electronic devices.

2. **Photonic Crystals:**

- Description: Materials structured on a scale comparable to the wavelength of light, allowing them to control the flow of light. By creating a photonic band gap, they can block specific wavelengths while allowing others to pass, enabling applications in optical fibers, lasers, and efficient LEDs.
- Application: Quantum computing and telecommunications.

3. **Aurora Borealis:**

- Description: Natural light displays predominantly seen in high-latitude regions. This phenomenon occurs due to solar wind (streams of charged particles from the sun) interacting with Earth's magnetic field and atmosphere. The collision of solar particles with atmospheric gases produces vivid colors in the sky, offering a stunning visual display and insights into solar-terrestrial interactions.

4. **Organic Light-Emitting Diodes (OLEDs):**

- Description: Light-emitting diode in which the emissive layer is an organic compound. They offer significant advantages over traditional LEDs, including flexibility, thinner displays, and a broader viewing angle.
- Application: TVs, smartphones, and wearable technology.

5. **Photovoltaic Energy Advances:**

- Description: Advancements in photovoltaic technology to convert sunlight into electricity, leading to more sustainable and affordable solar energy solutions.
- Application: New materials, innovative cell designs, and manufacturing techniques.

SOME NATURAL PHENOMENA

1. **Climatic Change and Weather Patterns:**

- Description: Climate change significantly impacts weather patterns, leading to increased frequency and severity of extreme weather events. Changes in the Earth's

atmosphere due to increased greenhouse gases result in alterations to temperature, precipitation patterns, and increased occurrence of events like hurricanes, heatwaves, and floods.

2. Geophysical Fluid Dynamics:

- Description: Studies the flow of natural fluids like air in the atmosphere and water in the oceans. This field is crucial in understanding phenomena like ocean currents, weather patterns, and climate change. It combines principles from physics and mathematics to model and predict complex systems in Earth's environment.

3. Black Holes and Neutron Stars:

- Description: Black holes and neutron stars are among the most intriguing objects in astrophysics. Black holes, with gravity so strong that not even light can escape, are detected through their interaction with surrounding matter, often emitting X-rays. Neutron stars, incredibly dense remnants of supernova explosions, offer insights into extreme physical conditions.

REPRODUCTION IN ANIMALS

Reproduction is a fundamental biological process essential for the continuity of life. In the animal kingdom, diverse strategies and mechanisms have evolved to ensure the production of offspring. Animal reproduction can be broadly categorized into two main types: sexual reproduction and asexual reproduction.

1. Sexual Reproduction:

a. Mating: Courtship and Pairing: Many animals engage in elaborate courtship rituals to attract mates, establishing a pairing before reproduction.

Mate Selection: Selection of mates is often based on various factors such as physical traits, behaviors, or displays of fitness.

b. Fertilization: Internal and External Fertilization: Animals may practice internal fertilization (occurs inside the body) or external fertilization (occurs outside the body, usually in aquatic environments).

Gametes: Specialized reproductive cells, sperm (male) and eggs (female), unite during fertilization to form a zygote.

c. Gestation and Development: Viviparity, Oviparity, and Ovoviviparity: Animals exhibit various reproductive strategies, including giving birth to live young (viviparity), laying eggs (oviparity), or a combination of both (ovoviviparity).

Gestation Period: The duration of pregnancy varies among species, ranging from a few days to several months.

2. Asexual Reproduction:

a) Budding: Simple Division: New individuals develop as outgrowths or "buds" from the parent organism.

Genetic Identicality: Offspring produced by budding are genetically identical to the parent.

b) Binary Fission: Cell Division: The parent organism divides into two genetically identical daughter organisms.

Common in Microorganisms: Binary fission is a prevalent form of reproduction in bacteria and certain protists.

c) Parthenogenesis: Development from Unfertilized Eggs: Offspring develop from unfertilized eggs, and genetic diversity is limited.

Common in Insects and Reptiles: Many insects and some reptiles employ parthenogenesis.

3. Specialized Reproductive Adaptations:

a. Migration: Long-Distance Travel: Some species exhibit migration to specific locations for optimal reproduction conditions.

Salmon Migration: A classic example is the migration of salmon to freshwater for spawning.

b. Parental Care: Investment in Offspring: Some animals provide care for their offspring

after birth or hatching.

Bird Nesting: Birds build nests, incubate eggs, and feed their young.

c. Social Structures: Cooperative Reproduction: In certain species, individuals work together to raise offspring.

Honeybee Colonies: Worker bees assist in caring for the queen's offspring.

Understanding the diverse reproductive strategies in the animal kingdom is crucial for ecological balance, species survival, and the continuation of genetic diversity. The evolution of these strategies is shaped by ecological pressures, environmental conditions, and the unique characteristics of each species.

REACHING THE AGE OF ADOLESCENCE

Adolescence is a critical and transformative period in human development, marking the transition from childhood to adulthood. This phase is characterized by physical, cognitive, emotional, and social changes. The onset of adolescence is influenced by biological factors, but the experience varies widely among individuals.

Biological Changes:

1. Puberty:

Hormonal Surge: The release of hormones, such as estrogen and testosterone, triggers physical changes like the development of secondary sexual characteristics.

Growth Spurt: Rapid growth in height and weight occurs during puberty.

2. Secondary Sexual Characteristics:

Boys: Deepening of voice, facial hair, and Adam's apple development.

Girls: Breast development, widening of hips, and the onset of menstruation.

3. Brain Development:

Prefrontal Cortex: Maturation of the prefrontal cortex, associated with decision-making and impulse control.

Synaptic Pruning: Elimination of unnecessary neural connections, enhancing cognitive efficiency.

Cognitive Changes:

1. Abstract Thinking:

Shift in Thinking: Adolescents develop the ability to think abstractly and consider hypothetical situations.

Critical Thinking: Enhanced critical thinking skills and the exploration of personal values.

2. Identity Formation:

Self-Exploration: Adolescents engage in self-discovery, questioning identity, values, and beliefs.

Peer Influence: Peers play a significant role in shaping identity.

Emotional and Social Changes:

1. Emotional Intensity:

Heightened Emotions: Adolescents often experience intensified emotions, including mood swings.

Identity Crisis: The search for identity can lead to emotional turbulence.

2. Peer Relationships:

Social Dynamics: Peer relationships become more influential, providing a sense of belonging.

Peer Pressure: Pressure to conform to social norms and expectations.

3. Family Dynamics:

Independence: Adolescents seek autonomy and challenge parental authority.

Parent-Child Conflict: Tensions may arise as adolescents assert independence.

Sexual Development:

1. Sexual Awareness:

Sexual Identity: Adolescents explore their sexual orientation and develop a sense of sexual identity.

Sexual Education: Importance of comprehensive sexual education in understanding reproductive health and relationships.

2. Risk-Taking Behavior:

Experimentation: Adolescents may engage in risky behaviors, such as substance use or unsafe sexual practices.

Impulse Control: Developing impulse control is crucial for navigating risks.

Education and Support:

1. Comprehensive Education:

Holistic Curriculum: Inclusion of topics related to physical and mental health, relationships, and decision-making.

Emphasis on Well-Being: Supporting mental health and well-being during this transformative period.

2. Community and Family Support:

Open Communication: Fostering open communication between adolescents and trusted adults.

Community Resources: Access to resources and support systems for addressing challenges.

Reaching the age of adolescence is a dynamic and multifaceted journey. Understanding and supporting adolescents through these changes contribute to their healthy development and the establishment of a foundation for adulthood. Education, open communication, and a supportive environment play key roles in navigating the challenges and opportunities of this crucial life stage.

ARTIFICIAL INTELLIGENCE (AI)

Introduction: Artificial Intelligence (AI) refers to the simulation of human intelligence in machines programmed to perform tasks that typically require human intelligence. It encompasses a wide range of technologies and applications, aiming to replicate cognitive functions such as learning, reasoning, problem-solving, perception, and language understanding.

Key Components of AI:

1. Machine Learning (ML):

Definition: ML enables systems to learn from data and improve performance over time without explicit programming.

Applications: Predictive analytics, image and speech recognition, recommendation systems.

2. Natural Language Processing (NLP):

Definition: NLP enables machines to understand, interpret, and generate human language. Applications: Chatbots, language translation, sentiment analysis.

3. Computer Vision:

Definition: Computer vision allows machines to interpret and make decisions based on visual data.

Applications: Facial recognition, object detection, autonomous vehicles.

Types of AI:

1. Narrow or Weak AI:

Description: Designed for a specific task, lacks general cognitive abilities.

Examples: Virtual personal assistants, speech recognition systems.

2. **General or Strong AI:**

Description: Possesses human-like cognitive abilities, can perform any intellectual task.

Challenges: Ethical concerns, technological limitations, and potential societal impacts.

AI in Various Domains:

1. **Healthcare:**

Applications: Disease diagnosis, personalized treatment plans, drug discovery.

Benefits: Enhanced diagnostics, improved patient care, optimized resource allocation.

2. **Finance:**

Applications: Fraud detection, algorithmic trading, customer service.

Benefits: Increased security, efficient financial operations, personalized financial advice.

3. **Education:**

Applications: Intelligent tutoring systems, adaptive learning platforms, automated grading.

Benefits: Customized learning experiences improved educational outcomes.

4. **Business and Industry:**

Applications: Supply chain optimization, predictive maintenance, customer service bots.

Benefits: Increased efficiency, cost savings, improved decision-making.

Challenges and Considerations:

1. **Ethical Concerns:**

Bias in Algorithms: AI systems may inherit biases present in training data.

Privacy Issues: Collection and use of personal data raise privacy concerns.

2. **Job Displacement:**

Automation Impact: AI's ability to automate tasks may lead to job displacement.

Upskilling Needs: The need for a skilled workforce capable of working alongside AI.

3. **Transparency and Accountability:**

Explain ability: Lack of transparency in AI decision-making poses challenges.

Regulatory Frameworks: Establishing ethical guidelines and regulatory frameworks.

Future Directions:

1. **Explainable AI (XAI):**

Focus: Enhancing the transparency and interpretability of AI systems.

Importance: Addressing the "black box" problem to build trust in AI applications.

2. **AI for Social Good:**

Initiatives: Leveraging AI to address societal challenges, such as climate change and healthcare disparities.

Collaboration: Encouraging interdisciplinary collaboration for positive impact.

3. **Continued Research and Development:**

Advancements: Research in areas like quantum computing, neuromorphic computing, and AI ethics.

Interdisciplinary Approach: Collaboration across disciplines to drive innovation.

Artificial Intelligence continues to evolve, shaping the way we live, work, and interact with technology. As AI systems become more integrated into society, responsible development, ethical considerations, and ongoing research are crucial for ensuring positive and equitable outcomes.

DEFICIENCY DISEASES

Beriberi:

Cause: Thiamine (Vitamin B1) Deficiency: Beriberi is primarily caused by a deficiency of thiamine, a crucial vitamin for energy metabolism.

Symptoms:

Weakness and Fatigue: Generalized weakness and tiredness.

Peripheral Neuropathy: Numbness, tingling, and pain in the extremities.

Cardiovascular Issues: Enlarged heart, rapid heart rate, and shortness of breath.

Muscle Wasting: Loss of muscle mass and strength.

Edema: Swelling, particularly in the lower limbs, due to fluid retention.

Glossitis:

Cause: Vitamin B12 Deficiency: Glossitis is often associated with a deficiency of vitamin B12, which is essential for red blood cell formation and neurological function.

Symptoms:

Red and Inflamed Tongue: Inflammation and changes in the color and texture of the tongue.

Pain and Discomfort: Tongue tenderness and discomfort while eating or swallowing.

Difficulty Speaking and Eating: Due to tongue swelling and discomfort.

Mouth Ulcers: Sores or ulcers in the mouth.

Impaired Taste: Changes in taste perception.

Pellagra:

Cause: Niacin (Vitamin B3) Deficiency: Pellagra is caused by a deficiency of niacin, a B-vitamin essential for cellular metabolism.

Symptoms:

Dermatitis: Inflammation and irritation of the skin, leading to a characteristic rash.

Diarrhea: Frequent and watery bowel movements.

Dementia: Cognitive impairment, including confusion and memory loss.

Photosensitivity: Increased sensitivity to sunlight.

Swollen, Bright Red Tongue: Inflammation and changes in the color and texture of the tongue.

Anaemia:

Cause: Iron Deficiency: Anemia is often caused by insufficient iron, a key component of hemoglobin, the oxygen-carrying protein in red blood cells.

Symptoms:

Fatigue: Generalized weakness and tiredness.

Pale Skin: Reduced red blood cells result in paleness.

Shortness of Breath: Difficulty breathing, especially during physical exertion.

Headaches: Due to decreased oxygen delivery to the brain.

Dizziness and Fainting: Insufficient oxygen reaching the brain.

Burning Feet (Peripheral Neuropathy):

Cause: Nerve Damage: Burning feet can result from nerve damage, often associated with diabetes or other metabolic disorders.

Symptoms:

Burning Sensation: Persistent burning or tingling sensation in the feet.

Numbness: Reduced sensation or loss of feeling in the feet.

Sharp or Shooting Pain: Intermittent or constant pain in the feet.

Sensitivity to Touch: Increased sensitivity or pain in response to touch.

Muscle Weakness: Loss of strength in the affected areas.

Nerve Disorders:

Cause: Various Causes: Nerve disorders can result from injuries, infections, autoimmune conditions, or genetic factors.

Symptoms:

Numbness and Tingling: Altered sensations, such as numbness or tingling.

Muscle Weakness: Reduced strength or difficulty moving limbs.

Pain: Sharp, shooting, or persistent pain.

Loss of Coordination: Impaired balance and coordination.

Paralysis: In severe cases, complete loss of movement in affected areas.

Scurvy:

Cause: Vitamin C Deficiency: Scurvy is caused by a lack of vitamin C, essential for collagen synthesis.

Symptoms:

Fatigue: Generalized weakness and tiredness.

Swollen and Bleeding Gums: Inflammation and bleeding from the gums.

Joint Pain: Pain and swelling in the joints.

Anemia: Reduced red blood cell production.

Skin Bruising: Easy bruising and skin discoloration.

Night Blindness:

Cause: Vitamin A Deficiency: Night blindness is often associated with a deficiency of vitamin A, crucial for vision.

Symptoms:

Difficulty Seeing in Low Light: Impaired vision in dimly lit environments.

Slow Adjustment to Darkness: Takes longer for eyes to adjust to darkness.

Dry Eyes: Insufficient tear production and dryness.

Increased Susceptibility to Infections: Compromised immunity affecting eye health.

Blind Spots: Reduced peripheral vision in low-light conditions.

Rickets:

Cause: Vitamin D, Calcium, or Phosphate Deficiency: Rickets is caused by a lack of essential nutrients for proper bone development.

Symptoms:

Softening of Bones: Weakening and softening of the bones, leading to deformities.

Delayed Growth and Development: Impaired growth and short stature.

Skeletal Deformities: Bowlegs, knock-knees, or spinal deformities.

Muscle Weakness: Weakness and pain in the muscles.

Delayed Closure of Fontanelles: Soft spots on the skull may take longer to close in infants.

Blood Clotting Disorders:

Cause: Various Causes: Blood clotting disorders can result from genetic factors, medications, or underlying health conditions.

Symptoms:

Excessive Bleeding: Prolonged bleeding after injuries or surgeries.

Easy Bruising: Spontaneous bruising with minimal trauma.

Heavy Menstrual Periods: Excessive bleeding during menstruation.

Frequent Nosebleeds: Unexplained and recurrent nosebleeds.

Hematomas: Formation of large bruises or hematomas.

Hemophilia:

Cause: Genetic Mutation: Hemophilia is a genetic disorder caused by mutations in genes responsible for producing blood clotting factors, leading to deficiencies in these clotting factors.

Symptoms:

Excessive Bleeding: Prolonged bleeding after injuries, surgeries, or minor cuts.

Bruising: Easy and spontaneous bruising, often without apparent cause. Joint Pain and Swelling: Bleeding into joints, particularly knees and elbows, causing pain and swelling.

Nosebleeds: Frequent and prolonged nosebleeds.

Blood in Urine and Stool: Bleeding in the urinary and gastrointestinal tracts.

Celiac Disease:

Cause: Autoimmune Reaction to Gluten: Celiac disease is an autoimmune disorder triggered by the consumption of gluten, a protein found in wheat, barley, and rye.

Symptoms:

Digestive Issues: Diarrhea, abdominal pain, bloating, and constipation.

Weight Loss: Unintended weight loss and malnutrition due to nutrient malabsorption.

Fatigue: Generalized weakness and tiredness.

Skin Rash: Dermatitis herpetiformis, an itchy skin rash with small blisters.

Joint Pain: Pain and inflammation in the joints, resembling arthritis.

INVENTIONS AND DISCOVERIES

S.NO	INVENTION / DISCOVERY	SCIENTIST NAME
1	Electric Lamp	Thomas Alva Edison
2	Blood groups	Landsteiner
3	Oxygen	Antoine Laurent Lavoisier
4	Proton, Nuclear model of atom	Ernest Rutherford
5	Mercury thermometer	Daniel Gabriel Fahrenheit
6	Electrons	J. J. Thomson
7	Neutrons	James Chadwick
8	Penicillin	Alexander Fleming
9	Smallpox Vaccine	Edward Jenner
10	Anthrax Vaccine	Louis Pasteur
11	X ray	Wilhelm Rontgen
12	Solar System	Nicolaus Copernicus
13	Raman Effect	Sir. C.V. Raman
14	Stethoscope	Rene Laennec
15	Radio	G. Marconi
16	Hydrogen	Henry Cavendish
17	DNA	Friedrich Meisher
18	Atomic Bomb	Robert Oppenheimer
19	Theory of Evolution	Charles Darwin
20	Seismograph	John Milne
21	Helicopter	Brequet
22	Insulin	F. Banting
23	Antibiotic	Alexander Fleming
24	Radioactive Element Radium	Marie curie
25	Hovercraft	C. Cockerell
26	Flying controllable Aeroplane	Wright brothers
27	Gramophone	Thomson Alva Edison
28	Telephone	Alexander Graham Bell
29	Thermometer	Galileo
30	Railway air brakes	George Westinghouse

HUMAN ANATOMY

Anatomy – The branch of science concerned with the bodily structure of humans, animals, and other living organisms.

Human anatomy – It is the study of the structures of the human body. An understanding of anatomy is key to the practice of medicine and other areas of health.

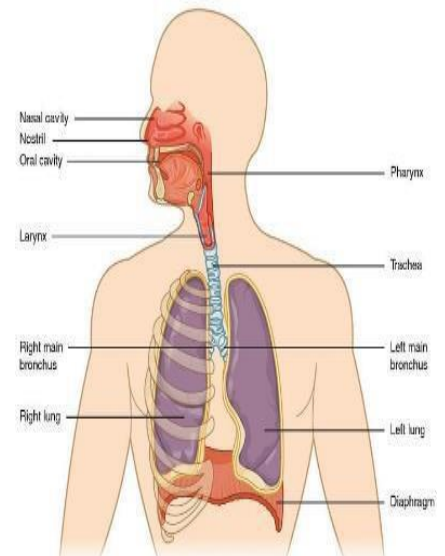
The Human Body Systems has 11 systems:

1. Nervous system

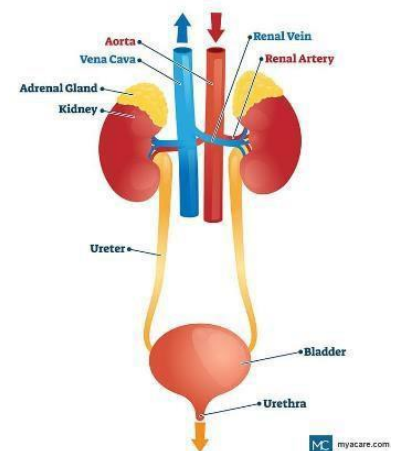
- The nervous system controls how we interact with and respond to our environment, by controlling the function of the organs in our other body systems.
 - The nervous system organs are the brain, spinal cord, and sensory organs.
 - These are connected by neurons, which act to transmit neural signals around the body.
 - The human nervous system has 2 main parts – Central nervous system (brain & spinal cord) and Peripheral nervous system (nerves that carry messages to and from the central nervous system).
 - The human brain consists of 3 main parts cerebrum, cerebellum, and medulla oblongata.
 - Study of nervous system is **Neurology**.

2. Respiratory system

- The respiratory system consists of a series of organs, the nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, and lungs.
- Function of respiratory system organs is to conduct air into the lungs aided by the muscles of respiration.
- Study of respiratory system is **Pulmonology**.



EXCRETORY SYSTEM



3. Urinary system:

- The urinary system is a body drainage system
- comprised of the group of organs that produce and excrete urine.
- It consists of the kidneys, ureters, urinary bladder, and urethra.
- The structural and functional unit of the

kidney is the nephron.

- Study of urinary system is **Urology**.
- The study of kidneys is called **Nephrology**.

4. Muscular system:

- The muscular system consists of all the body muscles.
- Tongue is the strongest muscle in our body.
- Largest muscle in the body is Gluteus Maximus in Buttocks.
- Smallest is Stapedius in Ear.
- The study of muscles is **Myology**.

5. Endocrine system:

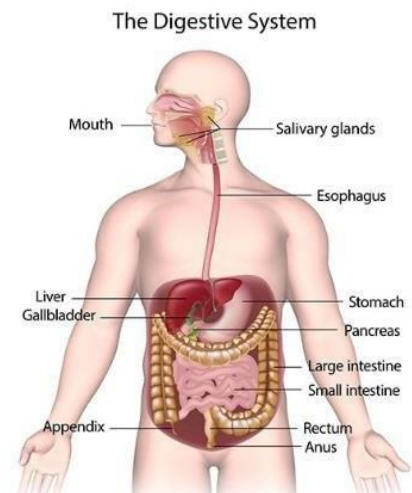
- The endocrine system is a collection of specialized organs (endocrine glands) scattered throughout the body that act to produce hormones.
- These organs are: Pineal gland, Pituitary gland, Thyroid gland, Thymus, Pancreas, Adrenal gland, Ovary and Testis.
- Endocrine glands secrete hormones directly into the circulatory system to regulate the function of distant target organs.
- The study of the endocrine system is **Endocrinology**.

6. Integumentary system:

- The integumentary system is the set of organs that forms the external covering of the body.
- It includes the skin, skin appendages, sweat glands and sensory receptors.
- The skin is the largest organ of the body.
- The integumentary system has various functions, such as it forms a continuous layer that protects the body from various damaging events, such as external injuries, loss of water and heat, and the carcinogenic effects of UV rays.
- It also excretes waste, contains sensory receptors to detect pain, sensation, pressure, and temperature, and provides for vitamin D synthesis.
- The study of integumentary system is called **Dermatology**.

7. Digestive system:

- The digestive system organs spread from the mouth to the anal canal known as alimentary canal.
- Alimentary canal is a tube consisting of the mouth, pharynx, esophagus, stomach, small intestine, large intestine, and anal canal.

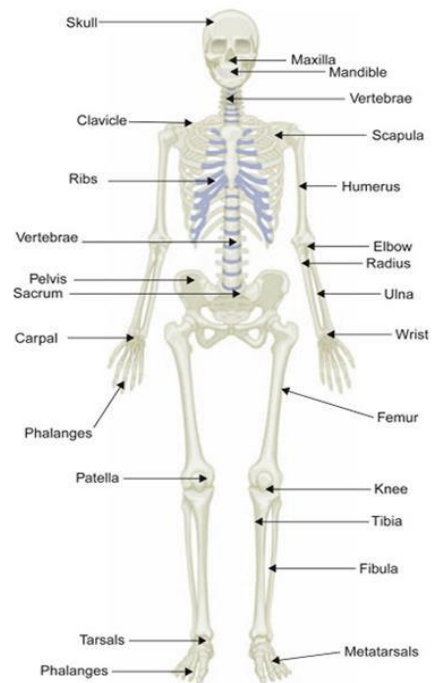


- Accessory digestive organs assist with mechanical and chemical food breakdown. These are the tongue, salivary glands, pancreas, liver and gallbladder.
- The largest gland is liver which produces bile temporarily and it is stored in gall bladder.
- The digestive system function is to degrade food into smaller and smaller compounds, until they can be absorbed into the body and used as energy.
- The study of this system is **Gastroenterology**.

8. Skeletal system:

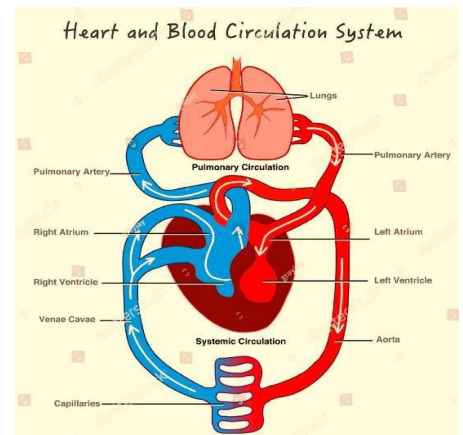
- Made up of bones, ligaments, tendons, joints, and cartilage.
 - Adult human skeleton has 206 bones.
 - Largest bone – Femur (in thigh)
 - Smallest bone – Stirrup (in middle ear).
- Elements of the skeletal system are adjusted to the function of the body part they support.
- Study of bones is **Orthopedics**.

Skeletal System



Circulatory or Cardiovascular system:

- It includes **the heart, blood, and blood vessels**.
- The human heart is a four chambered muscular pump situated in the thoracic cavity.
- Largest artery – **Aorta**, largest vein – **Vena cava**.
- Blood is a connective tissue which is made up of red blood cells, white blood cells, platelets, and plasma (fluid part).
- The study of circulatory system is **Cardiology**.



Reproductive system:

- The reproductive system, or genital system, is a system of internal and external sex organs which work together to contribute towards the reproduction process.
- Unlike other systems of organs, the genital system has significant differences among male and female.
- Study of male reproductive system is called **Andrology**, and female reproductive system is called **Gynecology**.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

9. Lymphatic (immune) system:

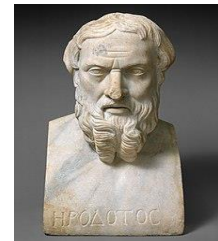
- The lymphatic system is a network of lymphatic vessels that drain excess tissue fluid (lymph) from the intercellular fluid compartment.
- The lymphatic system consists of lymph, lymphatic plexuses, lymphatic vessels, lymph nodes and lymphoid organs.
- The lymphatic system function is to convey and eliminate toxins and waste from the body, recirculate proteins and defend the body from microorganisms.

SUBJECT: SOCIAL SCIENCE

WHAT IS HISTORY?

History is derived from [Ancient Greek](#) (*historía*) 'inquiry; knowledge acquired by investigation is the systematic study and documentation of the human [past](#).

Sources of history have been divided broadly into two parts - Literary and archaeological. Archaeological sources consist of inscription, coins, monuments, remains of cities, pottery, ornaments, etc. The famous Greek historian, **Herodotus** recognized as the 'Father of history'.



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IMPORTANT HISTORICAL TERMS:

KEY TERM	DEFINITION
Chronological order	Listing events in the order that they happened.
Era/period	A period of time that is joined by cultural/historical factors. An example of an era is the Industrial era.
Decade	A unit of time that is equal to ten years
Century	A unit of time that is equal one hundred years / one of the hundred-year periods into which human history is divided.
Millennium	A unit of time that is equal to one thousand years.
B.C.E (Before the Common Era)/B.C (Before Christ)	Used to show that a year or century comes before the year 1 of the calendar used in

TALENT SEARCH STUDY MATERIAL –CLASS VIII

	much of the world, esp. in Europe and North and South America.
C.E (The Common Era)	Used when referring to a year after the birth of Jesus Christ when the Christian calendar starts counting years.
A.D (Anno Domini)	Used when referring to a year after Jesus Christ was born
Carbon Dating	Refers to the chemical analysis used to estimate the age of organic articles.
Inscriptions	The writings engraved on solid objects such as metals, rocks, pillars and walls of caves.
Edicts	The official order or royal command issued by rulers in ancient times.
Artifacts	The articles of archaeological value.
Epigraphy	The study of old inscriptions or epigraphs.
Numismatics	The study of coins.

IMPORTANT GEOGRAPHICAL TERMS:

- Geography - The study of the earth's surface.
- Geology - The study of earth's history, structure and make up.
- Palaeontology - The study of fossils.
- Meteorology - The scientific study of the atmosphere that focuses on weather processes and weather forecasting.
- Ecology - The study of how organisms interact with one another and with their physical environment.
- Anthropology - The scientific study of humans, human behavior and societies in the past and present.

DID YOU KNOW?

- Greenland is the largest Island.
- Sahara, the World's largest desert, covers about 9 million square kilometers.
- Nile is the longest river in the world. Two major tributaries of Nile – White Nile and Blue Nile.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- Amazon is the world's largest river. It is also known as 'The River Sea'.
- The dead sea is currently 429 Meters below the sea level and is sinking about 1 meter every year. The salinity of Dead Sea is 342 parts per thousand.
- Vatican City is the smallest country in the world.
- Canada has more than half of all the natural lakes in the world.
- Though Mount Everest is the highest peak, Mount Chimborazo in Ecuador is closer to the moon.
- Nauru, an island country located in the Pacific Ocean has no official capital.
- The Sargasso Sea is the only sea with no coast.
- Istanbul is the only city located over 2 continents (Asia & Europe)
- Lake Superior is the largest freshwater lake in the world by surface area.
- The smallest island with a county status is Pitcairn.

CIVICS

The constitution of India

- The **Constitution of India** is the supreme law of **India**.
- The Indian constitution is the lengthiest constitution in the world.
- Every year on November 26, India commemorates Constitution Day, a day dedicated to recognizing the adoption of the Indian Constitution in 1949.
- The Constituent Assembly met for the first time on December 5, 1946.
- The preamble of our constitution states that India a sovereign, socialist, secular, and democratic republic, assures its citizens justice, equality, and liberty, and endeavors to promote fraternity.
- The constitution of India has created a secular state. It means the state gives equal protection to all religions.
- Fundamental rights and duties are an important part of the Indian constitution.
- 6 Fundamental Rights in Indian Constitution are as- Right to equality, Right to freedom, Right against exploitation, Right to freedom of religion, Cultural and educational rights, Right to constitutional remedies.
- Directive Principles are classified under the following categories: Economic and Socialistic, Political and Administrative, Justice and Legal, Environmental, Protection of Monuments, Peace and Security.
- The Constitution provides for a Parliamentary form of government which is federal in structure with certain unitary features.
- Separation of Powers- Between Legislature, Executive, and Judiciary.
- There are 448 articles in the Indian Constitution (originally 395 articles were there).
- The Father of our Constitution is B.R. Ambedkar.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- Article 17 of Fundamental Rights abolishes untouchability
- Article 14, 15 and 16 establish principles of equality and social Justice.
- Article 14 proclaims equality before law and equal protection of law for all.
- Article 15(1) prohibits discrimination on grounds of race, caste, sex, religion or place of birth.

Important abbreviations

- **ASEAN:** Association of South-East Asian Nations
- **PSC :** Public Service Commission.
- **IAS :** Indian Administrative Services
- **UPSC:** Union Public Service Commission.
- **UNICEF:** United Nations Children's Fund
- **UNESCO: UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANIZATION**
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HISTORY

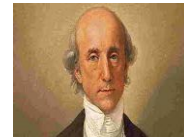
What is the modern Indian history?

The term “modern Indian history” refers to the history of India from the middle to late eighteenth century to the present time.

The sources of modern history of India were the literary sources like manuscripts, scrolls, books, important documents, etc. The second would be archaeological sources and monuments and the third would be other sources like printing, reports, radio, broadcast.

First in India:

- First British Governor General – Warren Hastings
- First Viceroy – Lord Canning
- First Governor General of Indian Union – C Rajagopalachari
- First President of India Dr Rajendra Prasad
- Deputy Prime Minister – Sardar Vallabhai Patel
- First President of Indian National Congress – W.C. Banerjee
- First Education Minister of India – Maulana Abdul Kalam Azad
- First Nobel Prize Winner – Rabindra Nath Tagore
- First Chairman of Rajya Sabha – Dr S Radhakrishnan
- First Indian Woman to win the Booker prize – Arundhati Roy
- First Indian in the British Parliament – Dadabhai Naoroji



Decline of the Mughal Empire

The Mughal Empire, once a symbol of opulence and power, began to decline in the late 17th century. Factors such as Aurangzeb's religious policies, administrative inefficiencies, and external invasions contributed to its downfall. This marked the beginning of a new chapter in Indian history.

Emergence of the British as the Central Controlling Authority

The 18th century witnessed the growing influence of the British East India Company in India. With the Battle of Plassey in 1757 and the Treaty of Buxar in 1764, the British established themselves as the central controlling authority in India. This marked the onset of British colonial rule.

Significant Events in History of Modern India:

Indian Rebellion of 1857



The Indian Rebellion of 1857, also known as the Sepoy Mutiny, was a pivotal moment in India's struggle against British rule. It marked the first widespread uprising against colonial oppression.

Birth of the Indian National Congress (INC) in 1885

The formation of the Indian National Congress in 1885 marked the beginning of organized political resistance against British rule. INC played a crucial role in the fight for independence.

Partition of Bengal in 1905

The partition of Bengal in 1905 by the British sparked widespread protests and was eventually reversed. It highlighted the divisive tactics employed by the colonial rulers.



Jallianwala Bagh Massacre of 1919

The Jallianwala Bagh Massacre in Amritsar, where British troops opened fire on a peaceful gathering, was a brutal incident that galvanized the Indian freedom movement.

Non-Cooperation Movement in 1920

Under Gandhi's leadership, the Non-Cooperation Movement aimed to boycott British institutions and products, emphasizing non-violence as a powerful tool of resistance.

Civil Disobedience Movement in 1930

The Civil Disobedience Movement, marked by the famous Salt March, was another significant step towards freedom. Indians refused to obey certain laws, taxes, and restrictions imposed by the British as per the history of modern India!

Government of India Act 1935

The Government of India Act of 1935 granted some degree of autonomy to India and paved the way for constitutional reforms.

World War II

In the history of modern India's involvement in World War II had profound implications.

The Quit India Movement of 1942 sought immediate British withdrawal from India during the war.



Indian Independence Act of 1947

The Indian Independence Act of 1947 led to the partition of India into two independent nations,

India and Pakistan, marking the end of British colonial rule.



Partition of India in 1947

The partition of India and Pakistan resulted in one of the largest mass migrations in history and left a lasting impact on the subcontinent's history.

India-China War 1962

The India-China War of 1962 was a brief but significant conflict over border disputes in the Himalayan region.

Green Revolution of the 1960s and 1970s

The Green Revolution, led by scientists like Norman Borlaug, brought about agricultural innovations that significantly increased food production in India.

Indian Nuclear Program in 1974

In the history of modern India, the successful nuclear test in 1974 marked its entry into the group of nuclear-armed nations.

The Emergency in 1975

The period of the Emergency saw a suspension of civil liberties and political dissent, raising concerns about democracy in India.



Assassination of Indira Gandhi in 1984

The assassination of Prime Minister Indira Gandhi in 1984 had far-reaching consequences and led to a wave of violence.

Economic Liberalization in 1991

The economic reforms of 1991, initiated by Manmohan Singh, unleashed India's economic potential and set the stage for rapid growth.



Rise of Right-wing Politics from the Late 1990s

The late 1990s saw the rise of right-wing politics in India, with the Bharatiya Janata Party (BJP) coming to power.

Kargil War of 1999

As per the history of modern India, the Kargil War with Pakistan in 1999 highlighted the ongoing tensions between the two nations.



2014 General Election

The 2014 general election witnessed the rise of Narendra Modi and the BJP to power, signaling a shift in Indian politics.

Demonetization in 2016

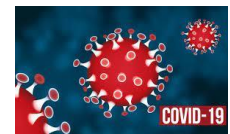
The demonetization of high-denomination currency notes in 2016 aimed to curb black money and promote digital transactions.

Abrogation of Article 370 in 2019

In the history of modern India, the abrogation of Article 370 in Jammu and Kashmir in 2019 was a significant political development with far-reaching implications.

COVID-19 Pandemic

The COVID-19 pandemic, which began in 2019, posed unprecedented challenges to India's healthcare system and economy.



GEOGRAPHY

- There are three main cropping seasons in India – Kharif, Rabi, and Zaid.
- The Kharif season started with Southwest Monsoon.
- Kharif Crops : Example: rice, sorghum, maize, tea, rubber, coffee, guar, Sesame, cereals such as Arhar Dhal, pearl millet, soybeans, cotton, oilseeds, etc.
- Rabi Crops - Sowing between October and November
- Harvest – February to April
- Example: wheat, oats, barley, pulses, cereals, oilseeds, linseed, etc.
- *Zaid Crops- Sowing between March and June (between Kharif and Rabi)
- Requires warm & dry weather for growth and a longer day-length for flowering.
- Example: Seasonal fruits and vegetables- Pumpkin, Cucumber, Bitter Gourd.
- Agriculture is the single largest employer in the world, employing 40 per cent of the global population.
- Agronomy is the science of soil management and crop production.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- Hay Farming: Hay farms produce grass and other forage crops that are used for livestock feed.
- TISCO- Established in 1907, it is India's largest private-sector steel company and the first to be set up in Asia.
- Tata Iron and Steel Company (TISCO) was founded by Jamsetji Nusserwanji Tata.
- The three-sector model in economics divides economies into three sectors of activity: extraction of raw materials (primary), manufacturing (secondary), and service industries which exist to facilitate the transport, distribution and sale of goods produced in the secondary sector (tertiary).
- Primary sector includes mining and quarrying, poultry farming, fishing, animal husbandry, agriculture, forestry. Secondary sector includes manufacturing activities. Tertiary sector activities include insurance, services, tourism, health, education, banking, communication, transport, trade.

CIVICS

- Minimum age required to contest for Presidentship is 35 years.
- Chief Justice of India acts as the President of India when neither the President nor the Vice President is available.
- The first general election held in India in 1951,-52
- The president of India is the head of state and the commander-in-chief of the Indian Armed Forces.
- India is a federal union comprising twenty-nine states and 8 union territories
- The President is responsible for appointing the governors of the 28 states; the chief justice; other judges of the court. According to the Constitution, the Supreme Court can have 1 Chief Justice and 34 other judges.
- The vice president is the second-highest constitutional position in India after the president.
- The Supreme Court is the highest judicial forum and final court of appeal under the Constitution of India.
- The Finance minister of India usually presents the annual union budget in the parliament on the last working day of February.
 - Lord Cornwallis is considered as the 'Father of Indian Civil Services'.

SUBJECT: GENERAL KNOWLEDGE AND CURRENT AFFAIRS

NOBEL PRIZES 2023

The Nobel Prize is considered the most prestigious prize in the world. This prize is given in 6 fields' i.e, Physics, Chemistry, Medicine, Literature, Economics, and Peace Prize.

Alfred Nobel (1833-1896) was **born in Stockholm, Sweden, on October 21, 1833.** He is known for inventing dynamite.. Agency responsible for selection is specifically designated by Alfred Nobel .

§ The Royal Swedish Academy of Sciences selects the Nobel Laureate in Physics and Chemistry,

§ Karolinska Institute selects Nobel Laureate in the field of Physiology or Medicine,

TALENT SEARCH STUDY MATERIAL –CLASS VIII

§ the Swedish Academy for the Nobel Prize selects Nobel Laureate in Literature,

§ a Committee of five persons elected by the Norwegian Parliament selects for the Nobel Peace Prize.

§ Marie Curie is the only one woman who has been honoured twice, with the 1903 Nobel Prize in Physics and the 1911 Nobel Prize in Chemistry.

§ John Bardeen is the only Nobel Laureate who has been awarded the Nobel Prize in Physics twice, in 1956 and 1972.

§ Despite being nominated five times, Mohandas Karamchand Gandhi(Mahatma Gandhi) never won the Nobel Prize

§ **John B. Goodenough is the oldest recipient of this prize in Chemistry 2019 at the age of 97yrs.**

§ **The first Indian to receive the Nobel Prize was Rabindra Nath Tagore.**

§ Malala Yousafzai is the youngest Nobel Laureate to get the Peace Prize in 2014 at the age of 17 yrs.

- **Nobel Prize in Physics 2023-**Pierre Agostini ,Ferenc Krausz ,Anne L’Huillier“for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter”
- **Nobel Prize in Chemistry 2023-** Mounji G. Bawendi, Louis E. Brus ,Aleksey Yekimov“for the discovery and synthesis of quantum dots” that added colour to nanotechnology-
- **Nobel Prize in Physiology or Medicine 2023-**Katalin Karikó,Drew Weissman “for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19”,contributed to an unprecedented rate of vaccine development
- **Nobel Prize in Literature** -Jon Fosse “for his innovative plays and prose which give voice to the unsayable” His immense oeuvre written in Norwegian Nynorsk and spanning a variety of genres consists of a wealth of plays, novels, poetry collections, essays, children’s books and translations. While he is today one of the most widely performed playwrights in the world, he has also become increasingly recognised for his prose.
- **The Nobel Peace Prize -Narges Mohammadi** “for her fight against the oppression of women in Iran and her fight to promote human rights and freedom for all”
- **Nobel Prize / The Sveriges Riksbank Prize in Economic Sciences** in Memory of Alfred Nobel 2023-Claudia Goldin “for having advanced our understanding of women’s labour market outcomes”
- **Miss Universe 2023** Sheynnis Palacios from Nicaragua won the 2023 title at the international competition's 72nd final in San Salvador.
- **Shital Mahajan:** First Woman to Skydive from 21,500 ft Near Mt Everest November 15, 2023. Mahajan is a well-known Indian skydiver who holds several skydiving records and is the **recipient of the fourth highest civilian award, the Padma Shri in 2001.**
- **Savitri Jindal-** India's richest woman Savitri Jindal now 7th wealthiest Indian
- **Katrina Kaif** has become the brand ambassador for clothing brand Uniqlo
- **Sultan AlNeyadi** became the first Arab astronaut to complete a spacewalk mission outside the ISS, as part of the 69th mission last April, which lasted about 7 hours.This historic achievement is also added to the record of the Arab world’s contributions to outer space exploration.He conducted pioneering scientific experiments that contribute to serving humanity and the scientific community.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- The **2023 G20 New Delhi summit** was the eighteenth meeting of G20 (Group of Twenty). It was held in Bharat Mandapam International Exhibition-Convention Centre, Pragati Maidan, New Delhi on 9–10 September 2023. It was the first G20 summit held in India.
- In September 2023, at the 18th G20 Summit, Indian PM Narendra Modi announced that **the African Union has been included as a member of the G20, making it the 21st member.**
- **The Ramon Magsaysay Award** (Filipino: Gawad Ramon Magsaysay) is an annual award established to perpetuate former Philippine President Ramon Magsaysay’s example of integrity in governance, courageous service to the people, and pragmatic idealism within a democratic society. Magsaysay Award is often called the Nobel Prize of Asia
- **Magsaysay Award 2023** -Dr. Ravi Kannan R. of IndiaImmense commitment to medicine emphasizing holistic care and patient-first treatment.

SPACE MISSION

- Chandrayaan-3 is the third mission in the Chandrayaan programme , a series of lunar-exploration missions developed by the Indian Space Research Organisation (ISRO).The mission consists of a lunar lander named Vikram and a lunar rover named Pragyan , similar to those launched aboard Chandrayaan-2 in 2019.
- Chandrayaan-3is now happily sleeping on the Moon, it was unlikely to revive.
- Indian Space Research Organisation Chief S Somanath
- The Indian Space Research Organisation (ISRO) has been honored with the distinguished Leif Erikson Lunar Prize for its pioneering Chandrayaan-3 mission, a significant milestone in lunar exploration.

BOOKS AND AUTHORS

- Booker Prize (2023) was won by Irish author Paul Lynch for Prophet Song, a dystopian vision of Ireland in the grips of totalitarianism.
- Pulitzer Prize 2023 -Barbara Kingsolver won the 2023 Pulitzer Prize for Fiction for 'Demon Copperhead', which is a moder retelling of Charles Dickens' classic 'David Copperfield'.
- most read book in 2023 is the novel “Happy Place” by Emily Henry
- Greatest Book Ever Written
- Anna Karenina -Leo Tolstoy,
- To Kill a Mockingbird-Harper Lee,
- The Great Gatsby -F. Scott Fitzgerald
- One Hundred Years of Solitude-Gabriel García Márquez
- A Passage to India -E.M. Forster
- Invisible man- H G Wells
- Don Quixote-Miguel de Cervantes
- Beloved -Toni Morrison
- Mrs. Dalloway-Virginia Woolf

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- Things Fall Apart-Chinua Achebe
- Jane Eyre-Charlotte Brontë
- The Color Purple-Alice walker
- Most popular reads of 2023
- Happy place-Emily Henry
- Forth wing-Rebecca Yarros
- Yellow face-R. F. Kuang
- Spare- Prince Harry
- The Midnight Library-Matt Haig
- Age of Vice-Deepti Kapoor
- Hello Beautiful-Ann Napolitano
- The wager- David Grann
- Birnam wood -Eleanor Catton

THE 54TH INTERNATIONAL FILM FESTIVAL OF INDIA (IFFI) 2023

- Best Film: Endless Borders
- Best Actor-Male: Pouria Rahimi Sam for Endless Borders
- Best Actor (Female): Melanie Thierry for Party of Fools
- Best Director: Stephan Komandarev for Blaga's Lessons
- Special Jury Award: Rishab Shetty For Kantara
- Best Debutant Director: Reger Azad Kaya for his Syrian-Arab Republic film When the Seedlings Grow
- Best Web Series: Panchayat Season 2
- Satyajit Ray Lifetime Achievement Award: Michael Douglas.

69TH NATIONAL FILM AWARDS (2023) FILM AWARDS

- 69th National Film Awards 2023: President Droupadi Murmu conferred the 69th National Film Awards 2023 in New Delhi
- Dadasaheb Phalke Award- Waheeda Rehman
- Best Feature Film - Rocketry
- Best Director - Nikhil Mahajan for Godavari
- Nargis Dutt Award for Best Feature Film on National Integration - The Kashmir Files
- Best Actor - Allu Arjun for Pushpa
- Best Popular Film Providing Wholesome Entertainment - RRR

TALENT SEARCH STUDY MATERIAL –CLASS VIII

- Best Actress - Alia Bhatt for Gangubai Kathiawadi, and Kriti Sanon for Mimi
- Best Film on Environment Conservation/Preservation: Aavasavyuham (Malayalam)
- Best Film on Social Issues: Anunaad - The Resonance (Assamese)

SPORTS

CRICKET

- National Sports day is observed on 29th August every year.
- **ICC ODI Player Of the Year 2023**: Pakistan Skipper Babar Azam
- BCCI President – Roger Binny
- **Team India men's captain** - Rohit Sharma
- **Team India women's captain** - Harmanpreet Kaur
- Team India Head Coach – Rahul Dravid

FOOTBALL

- **FIFA**- The Federation International de Football Association
- **FIFA President** – Giovanni Vincenzo Infantino
- **FIFA Player of the Year 2022** - Lionel Messi
- Lionel Messi clinched his eighth **Ballon d'Or award** for Argentine.
- **COPA America 2022** winners – Argentina won their first title in 28 years by defeating Brazil in the final.
- **Premier League Golden Boot- Manchester** City star Erling Haaland won the 2022/23 Premier League Golden Boot with a new Premier League single-season record of 36 goals.

HOCKEY

- IIHF (International Ice Hockey Federation) The US women's National Team claimed gold at the 2023 IIHF Women's world Championship in Brampton, Ontario, with a win over Canada to capture USA Hockey's first medal since 2019.
- **The 2023 Men's FIH Hockey World Cup** was the 15th edition of the Men's FIH Hockey world cup, the quadrennial world championship for men's national field Hockey team organized by the International Hockey Federation. It was held at the Kalinga stadium in Bhuvanewar and at Birsa Munda International Hockey Stadium in India from 13 to 29 January 2023.
- **The 2023 Men's FIH Hockey World Cup** - Germany won against Belgium.

BADMINTON

- **BWF** World Ranking is the official ranking of the Badminton World Federation.
- It is used to determine the qualification for the World Championships and Summer Olympic Games, BWF World Tour tournaments
- South Korean badminton stars **An Se-young and Seo Seung-jae** have been named the world's best players for the year 2023
- **BWF Korean Open 2023**- Anders Antonsen beats Loh Kean Yew in men's final, An Seyoung wins women's title at home.
- P.V.Sindhu -The first Indian to win gold in the Badminton World Championship.

KABBADI

- Asian Kabbadi championship 2023- The **Indian men's kabaddi team** beat Iran in the final to win the gold medal while the Indian women defeated Chinese Taipei to reclaim the crown.

TALENT SEARCH STUDY MATERIAL –CLASS VIII

Athletics

- World Para Athletics Championships in France. Two world records for Brazil's Rodrigues at World Para athletics Championships.

BILLIARDS

- Pankaj Advani won World Billiards Championship for record 26th time.

MOTOR RACING

- 2023 Formula One World Championship/Winner- **Max Verstappen**
- The **2023 United States Grand Prix** (officially known as the **Formula 1 Lenovo United States Grand Prix 2023**) was a Formula One motor race that took place on October 22, 2023, at the Circuit of the Americas IN Austin, Texas, United States. It was the eighteenth round of the 2023 Formula One World Championship and the fifth Grand Prix weekend of the season to utilize the sprint format. **Max Verstappen** won both races.
- Japanese Grand Prix - **Max Verstappen**
- World Constructors' Championship- Red Bull

CHESS

- The Chess World Cup 2023 Venue – Baku, Azerbaijan
- Magnus Carlsen (NOR, 2835) emerged as the Winner of the FIDE World Chess Cup.
- India's Youngest Chess Grandmaster- R Praggnanandhaa

LAWN TENNIS

- **DAVIS CUP- Italy won** the title, defeating Australia in the final.
- **AUSTRALIAN OPEN 2023- Novak Djokovic** defeated Stefanos Tsitsipas in the final.
- **FRENCH OPEN** - Novak Djokovic wins his 23rd Grand Slam title by beating Casper Ruud in the French Open final. **Novak Djokovic** makes history with his 23rd Grand Slam singles title and third at Roland-Garros - 'The pinnacle of his career'.
- **ATP - Novak Djokovic** won the ATP Finals for a record seventh time by defeating Jannik Sinner.
- **US OPEN-** Novak Djokovic defeated Daniil Medvedev in the final, to win the men's singles tennis title at the 2023 US Open. It was his fourth US Open title and record-extending 24th men's singles major title overall.
- Coco Gauff won the women's singles title, defeating Aryna Sabalenka.

LIST OF NATIONAL SPORTS AWARDS 2023

- **Major Dhyan Chand Khel Ratna Award 2023: Shri Rankireddy Satwik Sai Raj and Shri Chirag Chandrashekhar Shetty for Badminton**
- The award is conferred for the most outstanding performance in sports by a sportsperson over the time period of the last four years.
- **Arjuna Award:** Ms. Aditi Gopichand Swami (Archery), Shri Ojas Pravin Deotale (Archery), Ms. Parul Chaudhary (Athletics), Shri. Sreeshankar M (Athletics), Shri Mohameed

TALENT SEARCH STUDY MATERIAL –CLASS VIII

Hussamuddin (Boxing), Shri Mohammed Shami (Cricket), Ms. R Vaishali (Chess), Ms Divyakriti Singh (Equestrian Dressage), Shri Anush Agarwalla (Equestrian), Ms. Diksha Dagar (Golf), Ms. Pukhrambam Sushila Chanu (Hockey), Shri Krishan Bahadur Pathak (Hockey), Ms. Ritu Negi (Kabaddi), Shri Pawan Kumar (Kabaddi), Ms. Nasreen (Kho-Kho), Ms. Pinki (Lawn Bowls), Ms. Esha Singh (Shooting), Shri. Aishwarya Pratap Singh Tomar (Shooting), Shri. Harinder Pal Singh Sandhu (Squash), Ms. Ayhika Mukherjee (Table Tennis), Ms. Antim (Wrestling), Shri. Sunil Kumar (Wrestling), Ms. Naorem Roshibina Devi (Wushu), Ms. Sheetal Devi (Para Archery), Shri Illuri Ajay Kumar Reddy (Blind Cricket) and Ms. Prachi Yadav (Para Canoeing).

- **Dronacharya Award (Regular category):** Shri Lalit Kumar (Wrestling),
- R. B. Ramesh (Chess), Shriveer Prasad Saini (Para Athletics), Shivendra Singh (Hockey) and Shri Ganesh Prabhakar Devrukhkar (Mallakhamb)
- **Dronacharya Award (Lifetime Category):** Shri. Jashkirat Singh Grewal (Golf), Shri. Bhaskaran E (Kabaddi) and Shri. Jayanta Kumar Pushilal (Table Tennis)
- **Dhyan Chand Award: (Lifetime Category):** Ms. Manjusha Kanwar (Badminton), Shri. Vineet Kumar Sharma (Hockey) and Ms. Kavitha Selvaraj (Kabaddi)



Emily Henry



Waheeda Rehman



Aditi Gopichand S.



R Pragnanandhaa



Pankaj Advani



Satwik sairaj Rankireddy



Chirag Shetty



Novak Djokovic



Chandrayaan -3

TALENT SEARCH STUDY MATERIAL –CLASS VIII



Max Emilian Verstappen
F1 World Champion



Lionel Messi- 2023 Ballon d'Or winner (8th Ballon d'Or)



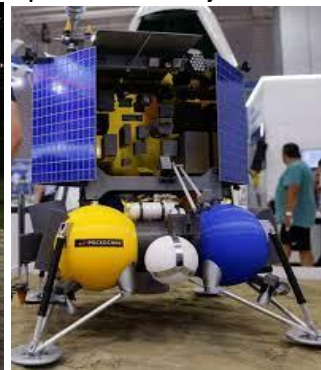
FIFA World Cup 2023 in Qatar



Neeraj Chopra- Olympic champion and World
champion in Men's javelin throw



OceanGate Titan Submersible



Russia's Luna 25

TALENT SEARCH STUDY MATERIAL –CLASS VIII



India's new parliament building



The Nobel Peace Prize for 2023
Was awarded to Narges Mohammadi



Droupadi Murmu
President of India



Sharath Kamal receives Khel Ratna



Best Original Song Oscar Academy
Awards at the 2023 for the song "Naatu Naatu."



Open AI GPT-4 was released in
March of 2023



Brendan Fraser wins best actor in oscars 2023



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