IAS WITH DR RAVI
AIM. PREPARE. ACHIEVE

Day 33

Concept revision and practice

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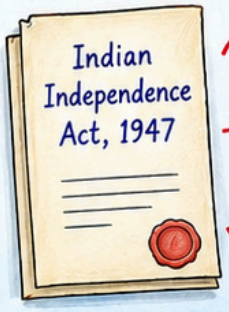
English and Telugu notes and MCQs are supplied separately.

Integration of the Princely States (1947–49)

In 1947, British paramountcy over the princely states lapsed. The States Department under Vallabhbhai Patel pursued political integration through accession, administrative agreements, persuasion and mergers.

A LEGAL BREAK

Indian Independence Act, 1947: British suzerainty lapsed; treaties and agreements with the rulers ended. Paramountcy did not automatically pass to India.

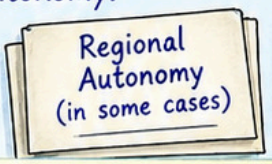


THREE CONSIDERATIONS

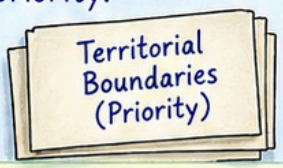
- Most people of the princely states wanted to join the Indian Union.



- The government was willing to accommodate some regional autonomy.



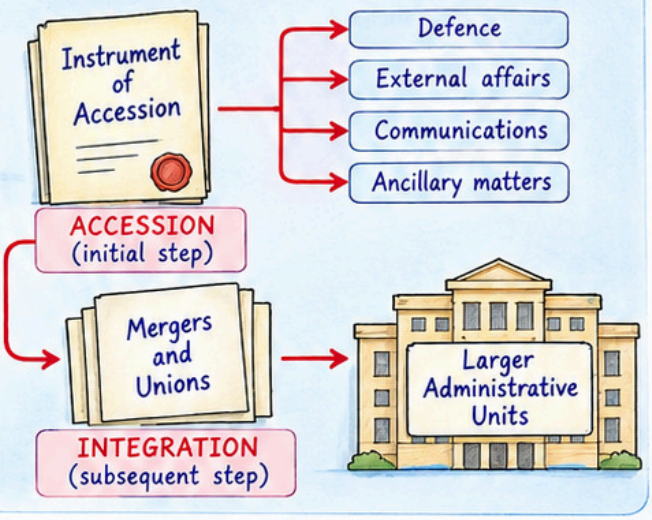
- After Partition, settling India's territorial boundaries was a priority.



TWO DISTINCT STEPS

ACCESSION: the ruler signed an Instrument of Accession. Defence, external affairs. and communications, with ancillary matters, came within Dominion authority.

INTEGRATION: subsequent mergers and unions reorganised the states into larger administrative units.

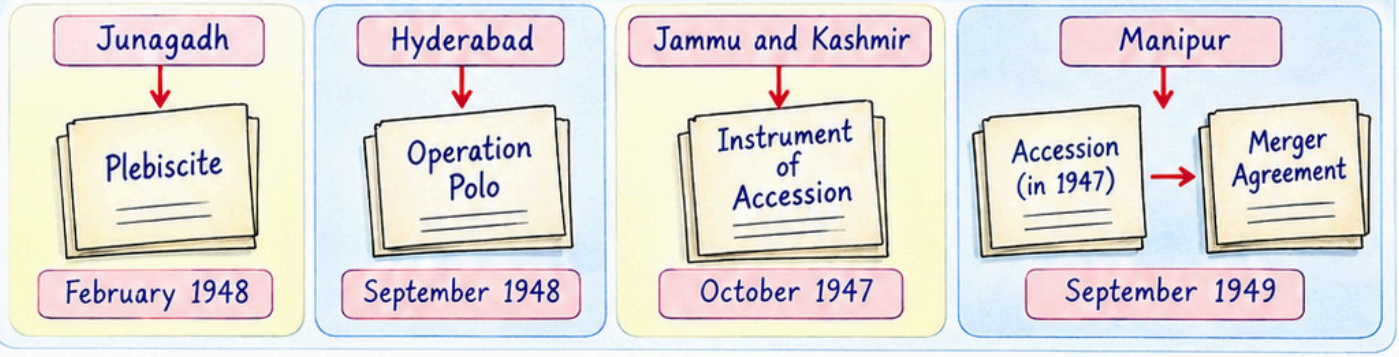


NOT THE SAME

A Standstill Agreement temporarily continued existing administrative arrangements. It was not an Instrument of Accession.



COMPARE THE CASES



Accession is not a standstill agreement

STATES DEPARTMENT

- Established: 5 July 1947.
- Political head: Vallabhbhai Patel.
- Secretary: V. P. Menon (1947–1951).

Patel combined firm negotiation with diplomacy. Menon provided administrative support and helped formulate the accession arrangements.

INSTRUMENT OF ACCESSION



A ruler accepted accession to the Dominion of India.

Transferred subjects:

1. Defence
2. External affairs
3. Communications

Ancillary matters accompanied these subjects.

Subjects not transferred remained with the ruler at this stage.

STANDSTILL AGREEMENT



- Existing agreements and administrative arrangements continued temporarily.
- It maintained continuity while political negotiations continued.
- It did NOT itself mean accession.

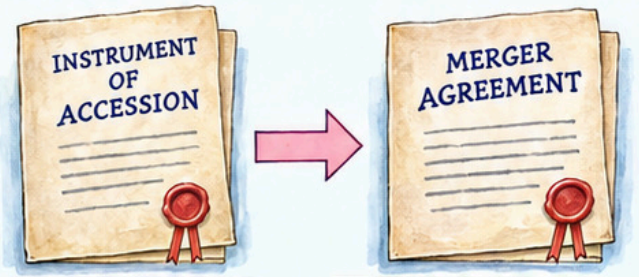
Example: Hyderabad signed a Standstill Agreement with India in November 1947, for one year.



LATER INTEGRATION

Accession did not always immediately end a state's separate administration. Merger agreements, unions of states and central administration reorganised the political units.

Example: Manipur acceded in August 1947; its Merger Agreement followed in September 1949.



Accession (specified subjects transferred)

Later merger (separate administration reorganised)

RECALL

- Accession → specified subjects transferred.
- Standstill → existing arrangements continued.
- Merger → separate administration reorganised.

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Three routes of administrative integration

1. MERGER INTO A NEIGHBOURING PROVINCE

State (Princely State) → Province (Neighbouring Province)

A princely state ceased to exist as a separate administrative unit and became part of a neighbouring province.

Examples: Mayurbhanj, Kolhapur, Baroda, Rampur, Tehri-Garhwal, Benaras and Cooch-Behar.

2. UNION OF STATES

State
State
State
⋮
State

→ Union (Larger Administrative Unit)

Several princely states combined to form a larger administrative unit.

Examples: Saurashtra, Madhya Bharat, PEPSU, Rajasthan and Travancore-Cochin.

PEPSU means Patiala and East Punjab States Union. It brought together eight princely states and was formally inaugurated on 15 July 1948.

Rajasthan emerged in stages. Bikaner, Jaipur, Jodhpur and Jaisalmer joined the reconstituted United State of Rajasthan.

3. CENTRAL ADMINISTRATION

State
State
State



Central Administration

Some states became centrally administered units.

Examples: Bhopal, Tripura and Manipur.

Vindhya Pradesh began as a union of states and later became a centrally administered Chief Commissioner's State.

A FURTHER STEP

In May 1948, Rajpramukhs signed new Instruments of Accession. These extended Dominion legislative authority to matters in the Seventh Schedule of the Government of India Act, 1935, beyond the original three subjects.

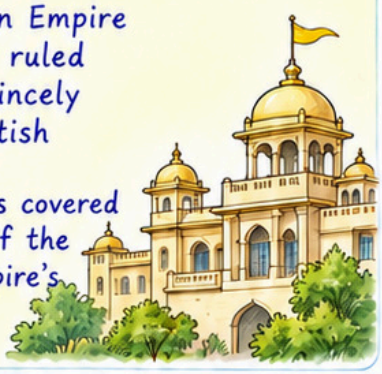
REMEMBER

Accession established the constitutional link; mergers and unions changed the administrative structure.

The political problem in 1947

565 PRINCELY STATES

The British Indian Empire included directly ruled provinces and princely states under British paramountcy.
The princely states covered about one-third of the British Indian Empire's land area.



15 AUGUST 1947: PARAMOUNTCY LAPSED

- British suzerainty and treaties with the rulers ended. Paramountcy was not transferred automatically to either successor Dominion.
- The decision on accession was left to the rulers, not directly to their people.

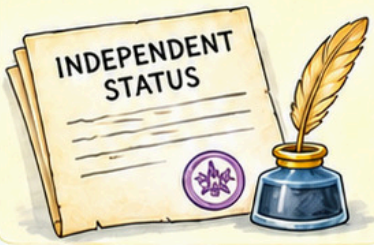


EARLY RESISTANCE

- **TRAVANCORE:** announced a plan for independence. Its Dewan was Sir C. P. Ramaswami Iyer. The plan was abandoned after an attempt on his life.



- **HYDERABAD:** the Nizam sought independent status.

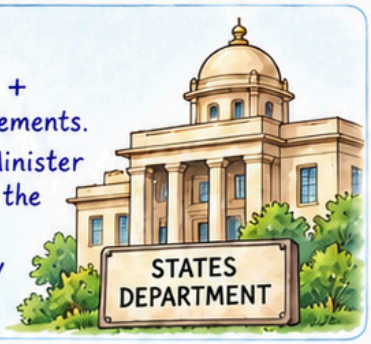


- **BHOPAL:** the Nawab was initially averse to joining the Constituent Assembly; the state subsequently acceded and later became centrally administered.



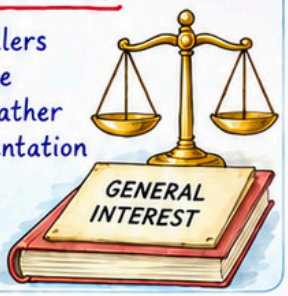
PATEL'S APPROACH

- Firm negotiation + diplomacy + practical administrative arrangements.
- Patel served as Deputy Prime Minister and Home Minister and headed the States Department.
- V. P. Menon was its Secretary and administrative head.



A SHARED WARNING

Patel urged the rulers to cooperate in the general interest rather than allow fragmentation and disorder.



FOLLOW THE DIFFERENCE

- End of British paramountcy ≠ automatic accession.
- Accession ≠ immediate merger.

Legal transition: Three-way process



Junagadh: from disputed accession to plebiscite

THE RULER

Nawab Muhammad Mahabat Khanji III.



WHY THIS CASE MATTERS

- The ruler's choice of accession and the people's preference were not the same issue.
- The plebiscite addressed the people's desire to join India.
- Administrative takeover, plebiscite and subsequent merger were separate steps, not one event.

A SEQUENCE OF DISTINCT EVENTS

15 August 1947: accession to Pakistan announced.



→

13 September 1947: Pakistan accepted the accession.



→

The Nawab later fled to Karachi.

9 November 1947: India took over the administration.



→

February 1948: a plebiscite confirmed the people's wish to join India.



→

Junagadh was subsequently merged into Saurashtra; the merger was completed in January 1949.



MATCH THE CORRECT METHOD

Junagadh	→	plebiscite.
Hyderabad	→	Operation Polo.
Jammu and Kashmir	→	Instrument of Accession.
Manipur	→	Merger Agreement in September 1949.

AVOID THE TRAP

- Do not give Junagadh Manipur's September 1949 Merger Agreement.
- Junagadh's Nawab had left for Karachi in 1947.

Hyderabad: standstill, struggle and Operation Polo

THE NIZAM'S POSITION

Hyderabad was the largest princely state and was surrounded by Indian territory. The Nizam wanted independent status.



NOVEMBER 1947: STANDSTILL AGREEMENT

- India and Hyderabad agreed to continue existing administrative arrangements for one year.
- This was a standstill agreement, not accession.



TWO OPPOSING SIDES

RAZAKARS

- the Nizam's paramilitary force, led by Kasim Razvi, also spelt Qasim Razvi.

Nizam's paramilitary force

TELANGANA PEOPLE'S STRUGGLE

- peasants resisted the Nizam's oppressive rule. Communists and the Hyderabad Congress were prominent; women participated in large numbers.



Do not confuse the Razakars with the peasant movement.

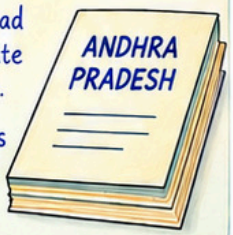
SEPTEMBER 1948: OPERATION POLO

- **13 September**: Indian military action began.
- **17 September**: the Nizam announced a ceasefire; Hyderabad's liberation is commemorated on this date.
- The police action ended the Nizam's resistance and integrated Hyderabad with India.



A LATER EVENT

- 1 November 1956: Telangana from Hyderabad State joined Andhra State to form Andhra Pradesh.
- This reorganisation was not Operation Polo.



KEEP THE DATES SEPARATE

1947
Standstill agreement.



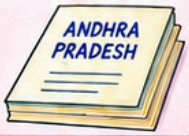
→

1948
Operation Polo.



→

1956
Andhra Pradesh formed.



Jammu and Kashmir: accession and acceptance

THE RULER

Maharaja Hari Singh.



THE IMMEDIATE CONTEXT

Tribal incursions created a military crisis. The Maharaja signed an Instrument of Accession to India.



TWO DATES, TWO STEPS

- 26 October 1947 → date on the Instrument of Accession signed by Hari Singh.
- 27 October 1947 → Governor-General Lord Mountbatten accepted it.

Indian troops were flown into Srinagar on 27 October 1947.



WHAT THE INSTRUMENT COVERED

- Defence, external affairs and communications, with ancillary matters.
- The accession instrument and its acceptance must not be confused with a standstill agreement or a plebiscite.

KEEP THE EVENTS DISTINCT

- 1947: accession.
- 2019: Article 370 changes and territorial reorganisation.
- 2023: Supreme Court judgment.

LATER CONSTITUTIONAL DEVELOPMENTS

5 and 6 August 2019

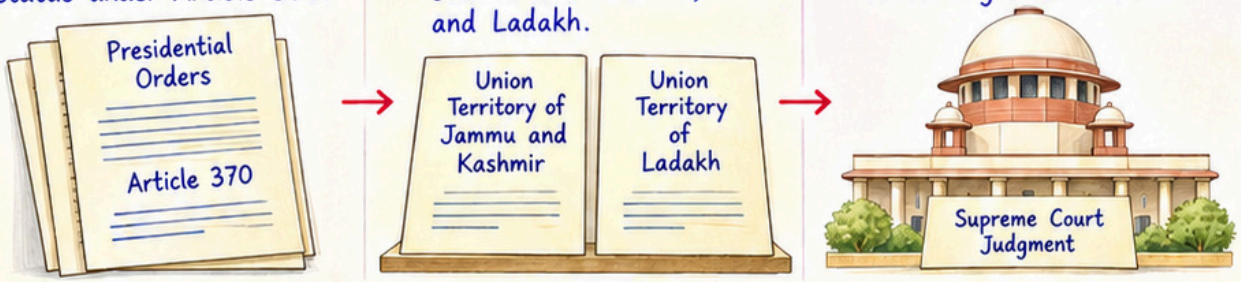
Presidential orders ended the special constitutional status under Article 370.

31 October 2019

The former state became the Union Territories of Jammu and Kashmir, and Ladakh.

11 December 2023

The Supreme Court upheld the constitutional change concerning Article 370.



1947 — Accession.

2019 — Article 370 changes and territorial reorganisation.

2023 — Supreme Court judgment.

Manipur: accession, election and merger

THE RULER

Maharaja Bodhachandra Singh.



11 AUGUST 1947: ACCESSION

- He signed the Instrument of Accession before independence, with an assurance that internal autonomy would be retained.
- Accession did not immediately abolish Manipur's separate internal administration.



JUNE 1948: ELECTIONS

- Elections based on universal adult franchise were held under public pressure.
- Manipur functioned as a constitutional monarchy with an elected Legislative Assembly.
- An election chooses representatives; it is not the same as a plebiscite on accession.





21 SEPTEMBER 1949: MERGER AGREEMENT

- The Maharaja signed the Merger Agreement under pressure from the Government of India.
- The popularly elected Legislative Assembly was not consulted.



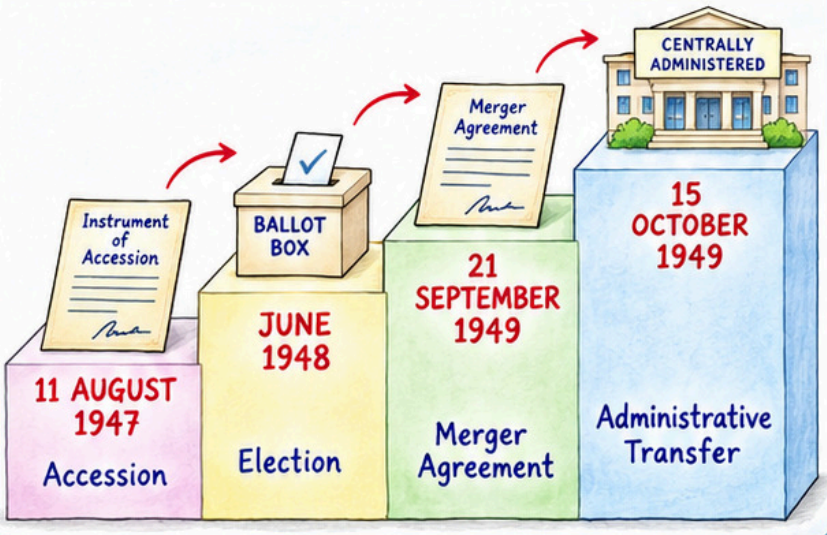
15 OCTOBER 1949: ADMINISTRATIVE TRANSFER

- The transfer of administration took effect. Manipur became centrally administered.
- Signing an agreement and its effective date were distinct events.



THE FOUR-STEP SEQUENCE

Accession → election → merger agreement → administrative transfer.



Election

choosing representatives



≠

Plebiscite

accession



An election chooses representatives; it is not the same as a plebiscite on accession.

COMPARE

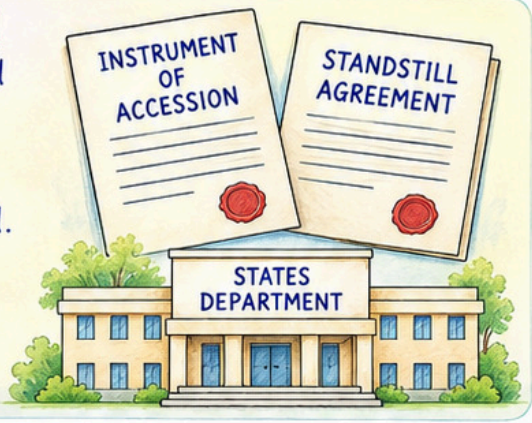
- Junagadh: plebiscite in February 1948.
- Manipur: elected assembly in 1948 and Merger Agreement in September 1949.
- Do not interchange these methods or dates.

Integration: dates and constitutional outcomes

1947

1947: ACCESSION AND NEGOTIATION

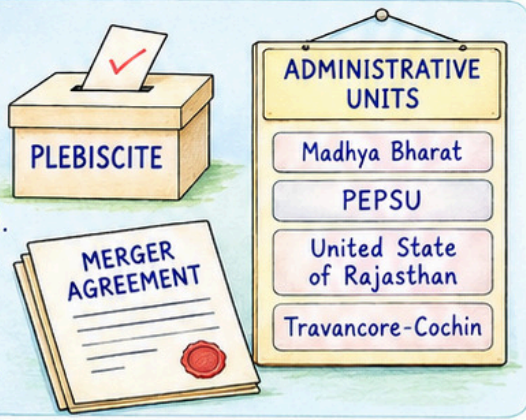
- 5 July: States Department established and Patel appealed to the princes.
- 11 August: Manipur's accession.
- 26-27 October: Jammu and Kashmir's Instrument of Accession dated and accepted.
- 9 November: India took over Junagadh's administration.
- November: Hyderabad's one-year Standstill Agreement.



1948-49

1948-49: CONSOLIDATION

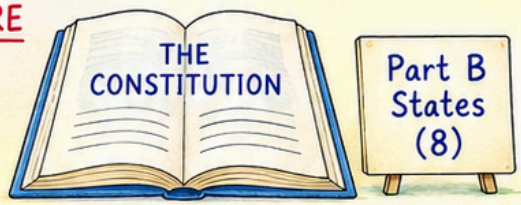
- February 1948: Junagadh plebiscite.
- 28 May 1948: Madhya Bharat formed.
- June 1948: Manipur elections.
- 15 July 1948: PEPSU formally inaugurated.
- September 1948: Operation Polo in Hyderabad.
- 15 May 1949: final stage of the United State of Rajasthan.
- 1949: Travancore-Cochin union formed.
- September 1949: Manipur's Merger Agreement.



1950

1950: A NEW CONSTITUTIONAL STRUCTURE

The Constitution recognised eight Part B states rather than the earlier multitude of princely units.



1971

1971: PRIVY PURSES ENDED

- Former rulers had received annual payments called privy purses.
- The 26th Amendment Act, 1971 abolished them and ended recognition of the former rulers.

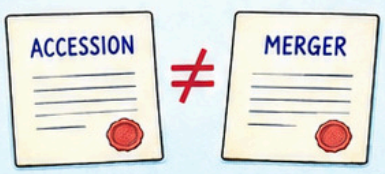


THREE DISTINCTIONS

- Accession is not a standstill agreement.



- Accession is not always immediate merger.



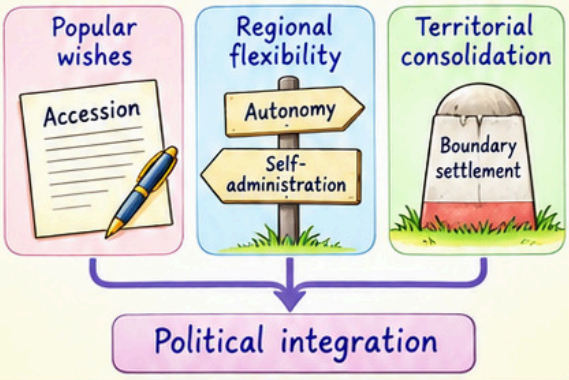
- A privy purse was a ruler's annual payment, not a tax.



Integration policy: unity with administrative flexibility

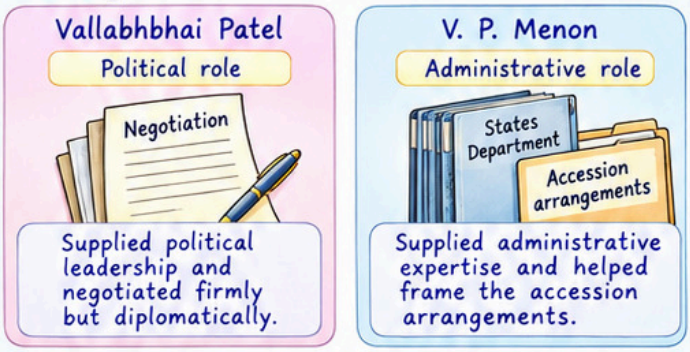
THREE CONSIDERATIONS

- Popular wishes: many people in the princely states wanted to join the Indian Union.
- Regional flexibility: the government was prepared to allow autonomy in some regions.
- Territorial consolidation: after Partition, settling the nation's boundaries was a central priority.



POLITICAL AND ADMINISTRATIVE ROLES

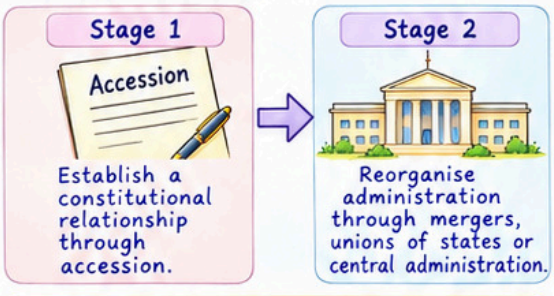
- Vallabhbhai Patel supplied political leadership and negotiated firmly but diplomatically.
- V. P. Menon, Secretary of the States Department, supplied administrative expertise and helped frame the accession arrangements.



Do not exchange the minister's political role with the Secretary's administrative role.

A TWO-STAGE PROCESS

- Stage 1: establish a constitutional relationship through accession.
- Stage 2: reorganise administration through mergers, unions of states or central administration.

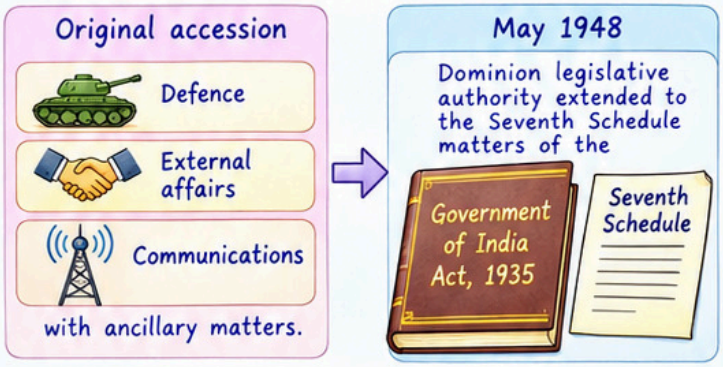


These stages did not always occur on the same date. Manipur's accession in 1947 and merger in 1949 illustrate the distinction.



LEGISLATIVE AUTHORITY EXPANDED

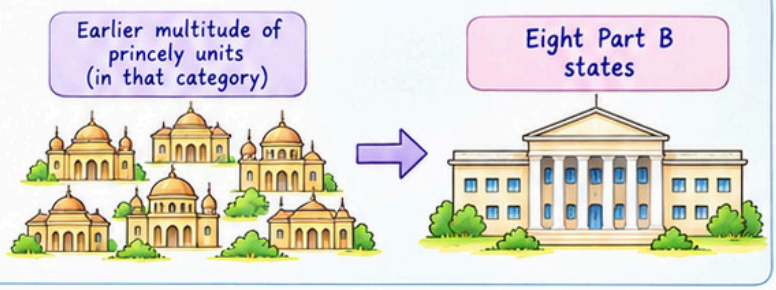
- Original accession: defence, external affairs and communications, with ancillary matters.
- May 1948: Rajpramukhs of state unions signed fresh Instruments of Accession, extending Dominion legislative authority to the Seventh Schedule matters of the Government of India Act, 1935.



Do not add finance as a fourth original accession subject.

THE CONSTITUTIONAL OUTCOME

- By the Constitution's commencement in 1950, the administrative landscape had been transformed. Eight Part B states replaced the earlier multitude of princely units in that category.
- Integration involved negotiation and institutional restructuring as well as the exceptional difficult cases. It was not one uniform military campaign.



Integration: counts, covenants and commencement

COUNT THE SAME KIND OF UNIT

565: the standard count used for princely states at independence.

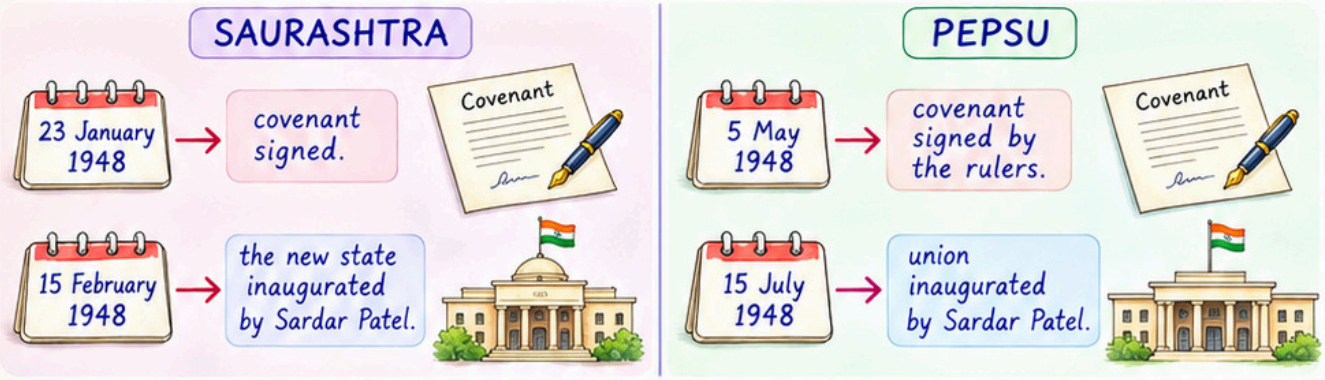
562: units counted by the Butler Committee and Simon Commission.

600: units referred to by the Joint Parliamentary Committee on Indian Constitutional Reforms.

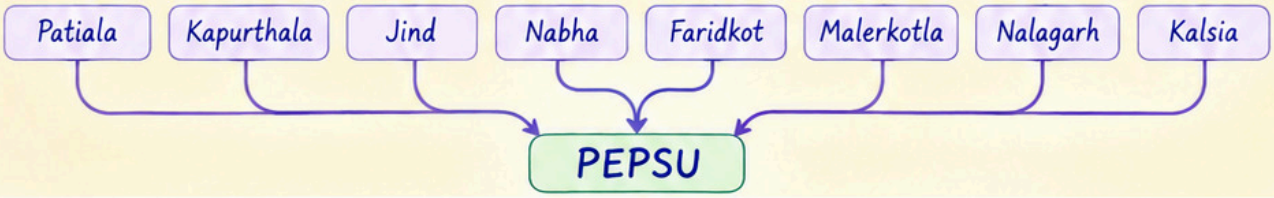


These historical counts used different classifications. Do not treat them as identical totals from one census.

COVENANT IS NOT INAUGURATION



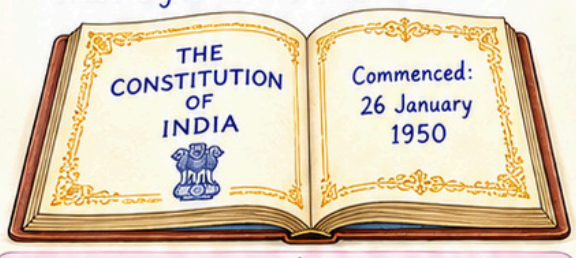
Eight states: Patiala, Kapurthala, Jind, Nabha, Faridkot, Malerkotla, Nalagarh and Kalsia.



A COMMON CONSTITUTIONAL START

26 January 1950: the Constitution commenced.

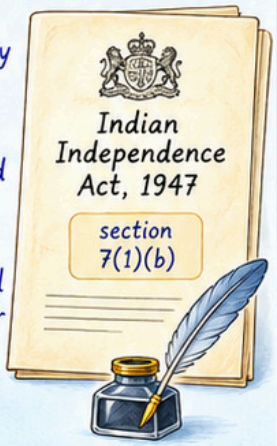
The new constitutional arrangement included eight Part B states.



A union's agreement date, inauguration date and the Constitution's commencement are different milestones.

READ THE LEGAL CHANGE

- Indian Independence Act, 1947, section 7(1)(b): British suzerainty over the Indian states lapsed.
- The original accession subjects were defence, external affairs and communications, with ancillary matters.
- Accession created a constitutional link; a covenant united states under common institutions.



Great Living Chola Temples: three sites, three patrons

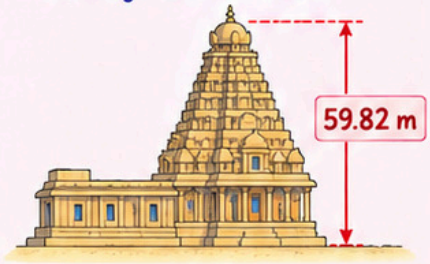
The temples express Chola achievements in architecture, sculpture and bronze casting. Worship and ritual traditions. continue: these are living temples.

REMEMBER THE PAIRS

- Rajaraja I → Thanjavur.
- Rajendra I → Gangaikondacholapuram.
- Rajaraja II → Darasuram.
- Two temples may be called Brihadisvara; use the place and patron together.
- 1987: Thanjavur alone. 2004: extension to include the other two sites.

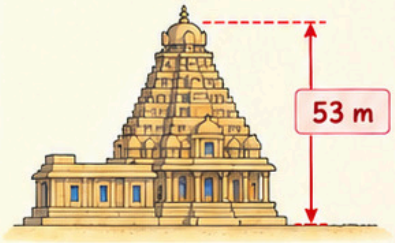
THANJAVUR • BRIHADISVARA

- Patron: Rajaraja I.
- Construction began in his 19th regnal year, 1003–04. Consecration took place in his 25th regnal year, 1009–10.
- Vimana height: 59.82 m.
- Inscribed on the World Heritage List in 1987.



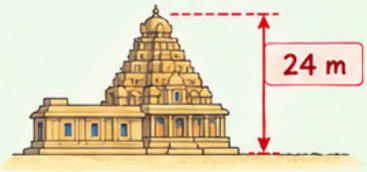
GANGAIKONDACHOLAPURAM • GANGAIKONDACHOLISVARAM

- Patron: Rajendra I.
- Also known as Brihadisvara. Completed in 1035.
- Vimana height: 53 m.
- Added to the World Heritage property in 2004.

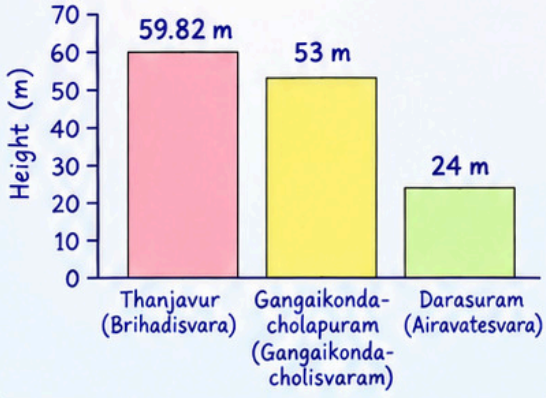


DARASURAM • AIRAVATESVARA

- Patron: Rajaraja II, not Rajaraja I.
- Built during his reign, 1143–1173.
- Vimana height: 24 m.
- Added to the World Heritage property in 2004.



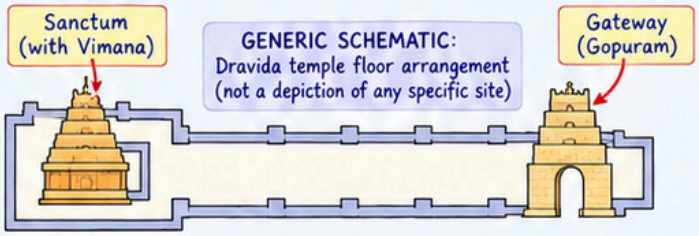
Vimana heights compared



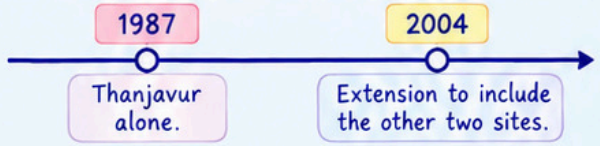
READ THE ARCHITECTURE

- Vimana: the tower above the sanctum.
- Gopuram: the monumental gateway tower.

Do not interchange these terms.



Timeline: World Heritage recognition



The Chola revival: from Kaveri base to imperial power

AN OLD DYNASTY, A NEW IMPERIAL PHASE

- The early Cholas belonged to the Sangam age. Vijayalaya did not begin the entire history of the Chola family; he revived its political power in the middle of the ninth century.
- Vijayalaya belonged to the Chola chiefly family of Uraiyur.

THE KAVERI DELTA BEFORE VIJAYALAYA

- The Muttaraiyar held power in the delta. They were subordinate to the Pallava kings of Kanchipuram.
- Vijayalaya captured the delta from the Muttaraiyar and made Thanjavur a centre of Chola power. He built a temple for Nishumbhasudini there.



Kanchipuram (Pallava overlordship)

Muttaraiyar held power in the Kaveri delta, under the overlordship of the Pallava kings of Kanchipuram. → Vijayalaya captured the delta from the Muttaraiyar and made Thanjavur a centre of Chola power. → Revival of Chola political power in the Kaveri delta (from the middle of the ninth century).



Thanjavur (Chola centre)

THREE DISTINCT RULERS

Vijayalaya

- Revival in the Kaveri delta, around the middle of the ninth century.



Rajaraja I

- Major territorial expansion and stronger administration; patron of Brihadisvara at Thanjavur.



Rajendra I

- Son of Rajaraja I; extended campaigns to the Ganga and Southeast Asia; established Gangaikondacholapuram.



Vijayalaya // Rajaraja I // Rajendra I

This is a sequence of selected rulers, not a complete list of all intervening kings.

WHY THE DELTA MATTERED

- Fertile agricultural land and irrigation supported revenue and settlements.
- Temple centres and administrative institutions helped consolidate power.
- Expansion relied on both land forces and naval campaigns.



Fertile land and irrigation → Revenue and settlements → Temple centres and administrative institutions (consolidate power)

KEEP THESE PLACES DISTINCT

Uraiyur	Associated with the older Chola chiefly family.
Thanjavur	Vijayalaya's base and Rajaraja I's great temple.
Gangaikondacholapuram	Rajendra I's new capital and temple.
Vengi	Eastern Chalukya territory linked to the Cholas through marriages and political intervention.



REVISION CHECK

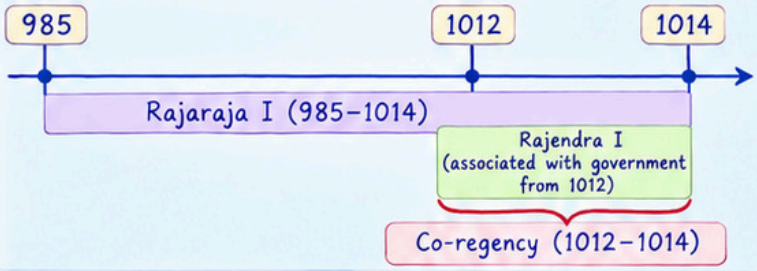
- Capture from Muttaraiyar → Vijayalaya.
- Thanjavur Brihadisvara → Rajaraja I.
- Ganga expedition and new capital → Rajendra I.

Rajaraja I: expansion and consolidation

REIGN AND SUCCESSION

Rajaraja I ruled from 985 to 1014. Rajendra I was associated with government from 1012; the overlap represents co-regency, not two unrelated dynasties.

Reign and co-regency (timeline)



CAMPAIGNS ON LAND

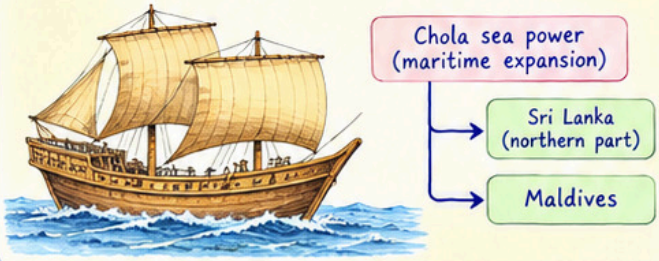
- **Chera country:** his early inscriptions celebrate victory at Kandalur Salai in present-day Kerala.
- **Pandya country:** victory over the Pandyas is associated with the title Pandya Kulashani.
- **Gangavadi:** Chola expansion reached this region of the Deccan.
- **Vengi:** intervention linked Chola policy to the Eastern Chalukyas.

Campaigns at a glance: land and sea

Sphere	Area / Campaign	Key Outcome / Link
Land campaigns (territorial expansion)	Chera country	Victory at Kandalur Salai (in present-day Kerala).
	Pandya country	Victory over the Pandyas; associated with the title Pandya Kulashani.
	Gangavadi	Chola expansion reached this region of the Deccan.
	Vengi	Intervention linked Chola policy to the Eastern Chalukyas.
Sea campaigns (maritime expansion)	Sri Lanka	Conquered Anuradhapura in 993; provincial centre at Polonnaruwa; concerned northern Sri Lanka.
	Maldives	His maritime expansion also reached the Maldives.

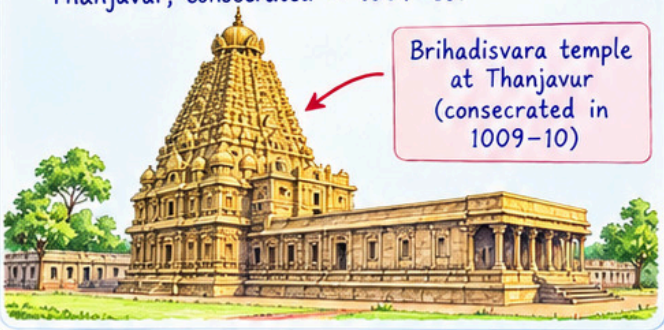
SEA POWER AND SRI LANKA

- Chola forces conquered Anuradhapura in 993 and established a provincial centre at Polonnaruwa. Rajaraja's conquest concerned northern Sri Lanka; the completion of conquest is associated with Rajendra I.
- His maritime expansion also reached the Maldives. Do not attribute every Chola overseas campaign to Rajendra alone.



ADMINISTRATION AND CULTURE

- Territorial expansion was accompanied by administrative reorganisation and revenue assessment.
- Temples helped organise economic and social life around settlements.
- Rajaraja I patronised the Brihadisvara temple at Thanjavur, consecrated in 1009–10.



TITLES THAT IDENTIFY HIM

- **Mummudi Chola:** three-crowned Chola, expressing power over the three Tamil kingdoms.
- **Pandya Kulashani:** associated with his victory over the Pandyas.
- **Shivapada Shekhara:** a title expressing devotion to Shiva.
- His records use **Rajakesari:** Chola rulers alternated Rajakesarivarman and Parakesarivarman titles.

DO NOT MIX THE KINGS

Rajaraja I →	Thanjavur temple; northern Sri Lanka; stronger imperial administration.
Rajendra I →	Ganga expedition; Gangaikondacholapuram; Srivijaya expedition of 1025.

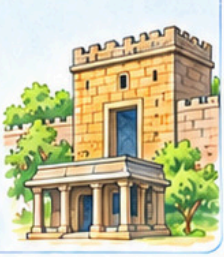
Rajendra I: the Ganga and overseas campaigns

TWO START DATES, DIFFERENT MEANINGS

Associated with government from 1012; sole ruler from 1014 to 1044. Rajendra I was the son of Rajaraja I and extended his father's policies.

SRI LANKA AND THE DECCAN

Rajendra completed the conquest of Sri Lanka and captured King Mahinda V. This differs from Rajaraja's earlier conquest of the northern part. He intervened in the Deccan and placed a son in charge at Madurai. His experience as crown prince included campaigns against the Western Chalukyas.

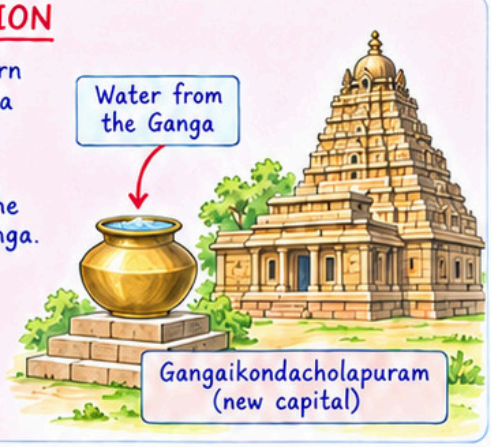


THE GANGA EXPEDITION

In the early 1020s, a northern expedition reached the Ganga and defeated the Pala ruler Mahipala.

Gangaikonda Chola means the Chola who conquered the Ganga. Water from the Ganga was brought to his new capital.

Gangaikondacholapuram commemorated the northern success. Its great temple was completed in 1035.



SRIVIJAYA: 1025

The naval expedition attacked Srivijaya centres in Southeast Asia, including territories of the Malay Peninsula and archipelago.

Kadaram Kondan is the title associated with the Kadaram campaign.

Distinguish a successful maritime expedition from assuming permanent Chola rule over all Southeast Asia.

Three major campaigns

Rajendra I: major campaigns

- **Sri Lanka and Deccan** — Completed conquest of Sri Lanka (captured King Mahinda V); Deccan intervention and a son placed at Madurai.
- **Ganga expedition** — Northern expedition (early 1020s) reached the Ganga and defeated the Pala ruler Mahipala.
- **Srivijaya (1025)** — Naval expedition attacked Srivijaya centres in Southeast Asia, including the Malay Peninsula and archipelago.







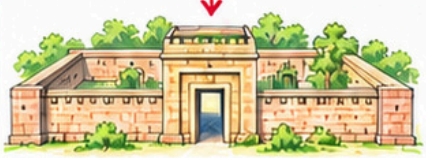
THREE EVENTS TO KEEP APART

- Northern campaign → Gangaikonda title and new capital.
- Southeast Asian campaign → Srivijaya and Kadaram, 1025.
- Temple completion → Gangaikondacholapuram, 1035.

Capital and temple: a clear timeline

New capital: Gangaikondacholapuram (after the Ganga success)

Temple completed: Gangaikondacholapuram, 1035





New capital (after the Ganga expedition) — Temple completion (1035)

FATHER AND SON

Rajaraja I built the imperial foundation; Rajendra I extended military reach. Both used naval power. Thanjavur's Brihadisvara belongs to the father; Gangaikondacholapuram's temple to the son.



Thanjavur's Brihadisvara (father: Rajaraja I)



Gangaikondacholapuram's temple (son: Rajendra I)

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Vengi: marriage alliances and the Chola-Chalukya connection

THE POLITICAL SETTING

Vengi was the Eastern Chalukya kingdom. Chola interests there involved both military intervention and dynastic marriages.

The Eastern Chalukyas of Vengi are distinct from the Western Chalukyas of Kalyani.

FIRST ALLIANCE

- Rajaraja I's daughter Kundavai married Vimaladitya of the Eastern Chalukyas.
- Their son was Rajaraja Narendra.

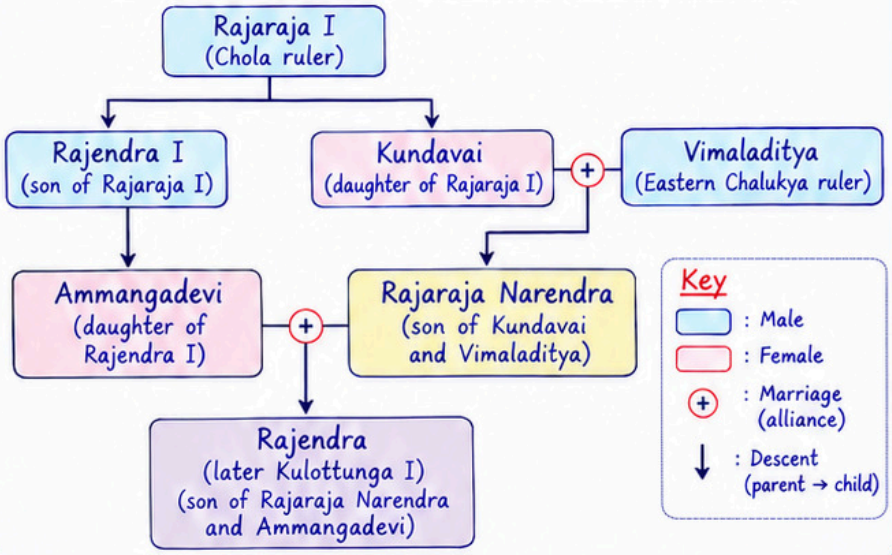
SECOND ALLIANCE

- Rajendra I's daughter Ammangadevi married Rajaraja Narendra.
- Therefore Rajaraja Narendra was both Rajendra I's nephew and his son-in-law.
- Nephew: he was the son of Rajendra I's sister Kundavai.
- Son-in-law: he married Rajendra I's daughter Ammangadevi.

THE NEXT GENERATION

- Rajaraja Narendra and Ammangadevi had a son named Rajendra. He became Kulottunga I and took the Chola throne in 1070.
- This Rajendra, later Kulottunga I, was NOT Rajendra I, his maternal grandfather.
- Dynastic links connected Chola and Eastern Chalukya claims.

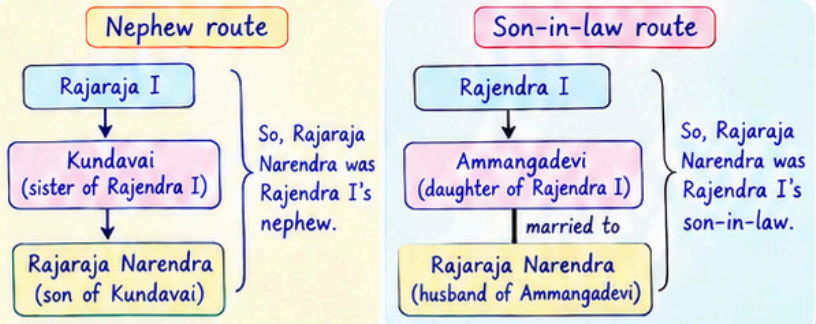
Genealogy: Chola-Eastern Chalukya marriage links



READ THE RELATIONSHIPS

- Rajaraja I → children Rajendra I and Kundavai.
- Kundavai + Vimaladitya → Rajaraja Narendra.
- Rajendra I → daughter Ammangadevi.
- Rajaraja Narendra + Ammangadevi → Rajendra, later Kulottunga I.

Nephew and Son-in-law: Two Routes to Rajaraja Narendra



REVISION TRAPS

- [ ] Kundavai and Ammangadevi belong to different generations.
- [ ] Rajaraja Narendra is not Rajaraja I.
- [ ] Kulottunga I's birth name Rajendra does not make him Rajendra I.
- [ ] Vengi is Eastern Chalukya territory, not the Western Chalukya capital.

Chola administration and temples: how the system worked

AGRICULTURE AND REVENUE

- The Kaveri delta supported intensive agriculture. Irrigation and organised revenue administration helped sustain the state and settlements.
- Rajaraja I strengthened administration alongside territorial expansion; land survey and assessment were important instruments.



LOCAL INSTITUTIONS

- Chola administration included organised village institutions.
- Uttaramerur inscriptions describe committee selection in the sabha through names written on palm-leaf tickets.
- This procedure is often called kudavolai. It was not universal adult franchise: eligibility and exclusion rules applied.
- Do not project a modern elected local council directly onto a medieval sabha.



TEMPLES AS INSTITUTIONS

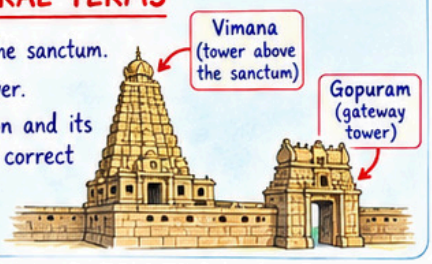
- Temples were places of worship and centres around which settlements developed. Land, endowments and economic activities supported them.
- They also sustained sculpture, bronze casting and other skilled work. Chola bronzes are noted for their craftsmanship.
- Brihadisvara at Thanjavur and the temple at Gangaikondacholapuram demonstrate imperial patronage.





TWO ARCHITECTURAL TERMS

- **Vimana**: tower above the sanctum.
- **Gopuram**: gateway tower.
- A temple's named patron and its town are essential for correct identification.



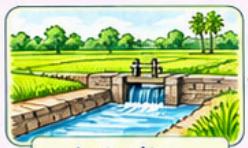
CONNECT THE SYSTEM

Irrigated agriculture → Production and revenue → State institutions and temple endowments.

Temple centres → Crafts, ritual activity and growing settlements.

Village institutions → Local committee functions and administration.

FROM AGRICULTURE TO INSTITUTIONS: THE SYSTEM


Irrigation (Kaveri delta)


Production (agriculture)


Revenue (assessment and collection)


State institutions (administration)


Temple endowments (land, resources and activities)

CHRONOLOGY ANCHORS

- Mid-ninth century: Vijayalaya's revival.
- 985: Rajaraja I's accession.
- 1009–10: Thanjavur temple consecration.
- 1012: Rajendra associated with government.
- 1014: Rajendra begins sole rule.
- 1025: Srivijaya expedition.
- 1035: Gangaikonda-cholapuram temple completed.
- 1070: Kulottunga I takes the Chola throne.

Rajaraja I: mainland campaigns and Vengi

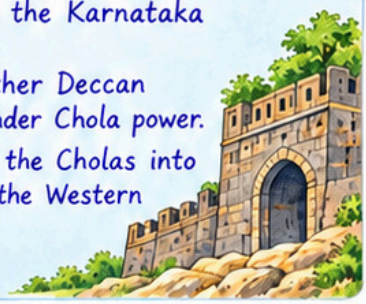
MORE THAN ONE FRONT

- Chola expansion reached the Chera and Pandya regions, northern Sri Lanka, Gangavadi, Vengi and the Maldives.
- Land campaigns and naval power worked together; overseas expansion was not Rajendra I alone.



THE DECCAN CONNECTION

- Gangavadi: the territory of the Western Gangas in the Karnataka region.
- Nolambapadi: another Deccan territory brought under Chola power.
- These gains brought the Cholas into closer contact with the Western Chalukyas.



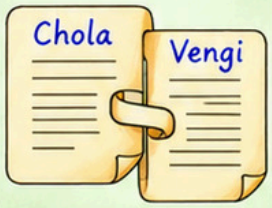
VENGI: MILITARY AND DYNASTIC POLICY

- Vengi belonged to the Eastern Chalukyas.
- Rajaraja's intervention helped Saktivarman regain the throne after an unsettled period.
- The Andhra ruler Bhima was defeated in the campaigns of Rajaraja's reign.
- Rajaraja's daughter Kundavai married Vimaladitya, Saktivarman's brother and successor.
- Military intervention + marriage alliance strengthened the Chola connection with Vengi.

Vengi restoration → Marriage alliance → Political link









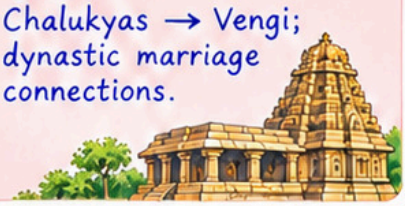
KALINGA AND THE WEST COAST

- Chola campaigns also reached Kalinga.
- Campaigns against the Cheras and Pandyas extended to the west-coast region.
- The conquest of the Maldives was a major maritime achievement of Rajaraja.



DO NOT CONFUSE THE TWO CHALUKYAS

Eastern Chalukyas → Vengi; dynastic marriage connections.



Western Chalukyas → Deccan rival power; repeated military conflict.



Vengi policy combined political intervention and family alliances, not just conquest.

Rajendra I: campaigns and political outcomes

BEFORE SOLE RULE

As crown prince, Rajendra took part in campaigns during his father's reign.
The conflict with the Western Chalukya Satyashraya belongs to this earlier phase, around 1005–06.
Do not place every campaign after Rajendra became sole ruler in 1014.

Before 1014

As crown prince, Rajendra took part in campaigns (e.g., the conflict with the Western Chalukya Satyashraya around 1005–06).

After 1014

As sole ruler from 1014, he pursued major campaigns such as the Ganga expedition (early 1020s) and the Srivijaya expedition (1025), along with continued political and regional actions.

1014

THE DECCAN AND VENGI

- Chola–Western Chalukya rivalry continued under Rajendra.
- Vengi's succession struggles drew in both powers.
- Rajendra supported Rajaraja Narendra; his daughter Ammangadevi married the Vengi ruler.
- Political support and dynastic marriage reinforced one another.



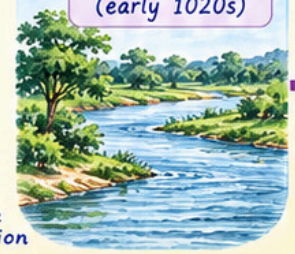
Support and marriage reinforced one another.



THE NORTHERN EXPEDITION

- An expedition in the early 1020s reached the Ganga and the territory of the Pala ruler Mahipala.
- The title Gangaikonda Chola commemorated this achievement.
- Gangaikondacholapuram became Rajendra's new capital.
- Its great temple was completed in 1035: the campaign, creation of the capital and tempie completion were not one event.

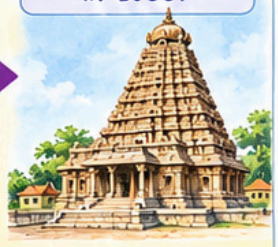
Ganga expedition (early 1020s)



Gangaikondacholapuram became the new capital.



Its great temple was completed in 1035.



SRIVIJAYA EXPEDITION, 1025

- Chola forces attacked Srivijaya and Kadaram in Southeast Asia.
- The ruler Sangrama Vijayottungavarman was captured.
- A successful overseas expedition does not imply permanent Chola administration over every Southeast Asian territory.



FATHER AND SON: KEEP THE SEQUENCE

Rajaraja → northern Sri Lanka and Maldives expansion.



Rajendra → completed Sri Lanka conquest, Ganga expedition and Srivijaya campaign.

Both reigns used naval power; different campaigns must not be merged.

Chola power: dynastic links and artistic legacy

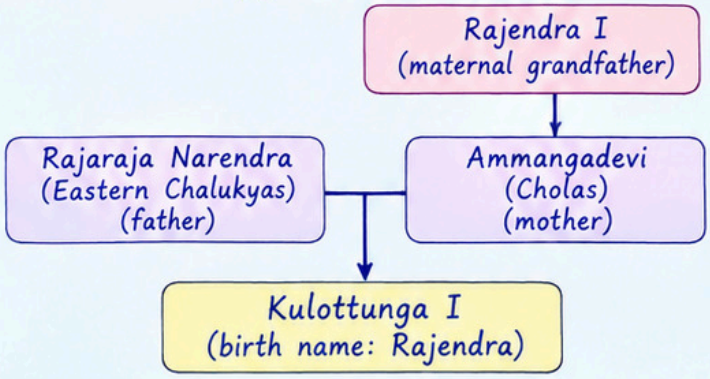
REVIVAL WAS NOT THE DYNASTY'S BEGINNING

- The early Cholas belonged to the Sangam age.
- Vijayalaya revived Chola power in the middle of the ninth century.
- His capture of Thanjavur from the Muttaraiyar created a strong base in the Kaveri delta.
- The older family centre at Uraiyur and the new imperial centre at Thanjavur are distinct.



1070: TWO DYNASTIC LINES CONNECT

- Kulottunga I took the Chola throne in 1070.
- He descended from the Eastern Chalukyas through his father Rajaraja Narendra and from the Cholas through his mother Ammangadevi.
- His maternal grandfather was Rajendra I.
- Kulottunga's birth name was Rajendra. He must not be confused with his grandfather or with another Chola ruler simply because names recur.



BRONZE ART: REMEMBER NAMED EXAMPLES

- Bhogasakti and Subrahmanya are notable Chola bronze icons at Gangaikondacholapuram.
- Bronze casting is distinct from stone sculpture and temple architecture, although all formed part of the same artistic culture.



THREE COMPLEMENTARY ACHIEVEMENTS

- Architecture → temple layout and towers.



- Stone sculpture → carved images and architectural ornament.



- Bronze casting → metal icons, including Bhogasakti and Subrahmanya.



TEMPLES CONNECTED ART AND SOCIETY

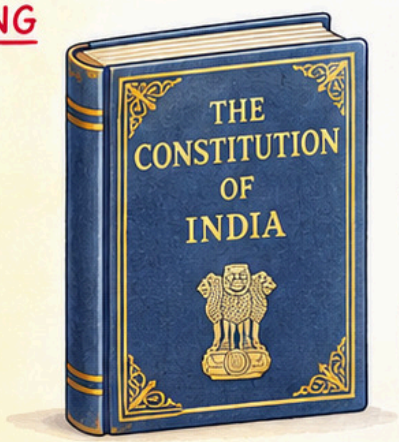


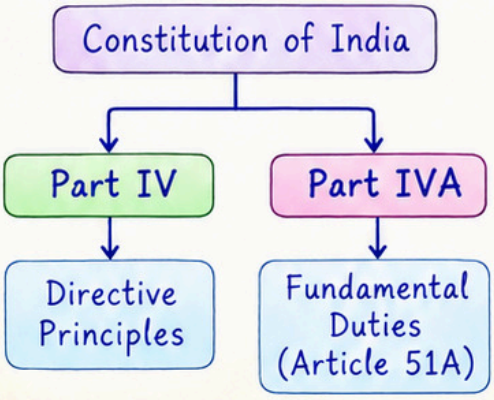
- Royal patronage and endowments supported worship and skilled work.
- Temple centres encouraged settlements and sustained artistic traditions.
- The Chola legacy cannot be reduced to campaigns alone: administration, irrigation, settlements and art were closely linked.

Fundamental Duties: Article 51A

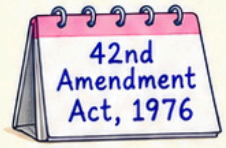
WHERE THEY BELONG

Part IVA contains one Article: 51A.
It lists eleven Fundamental Duties of Indian citizens.
Do not confuse Part IV (Directive Principles) with Part IVA (Fundamental Duties).





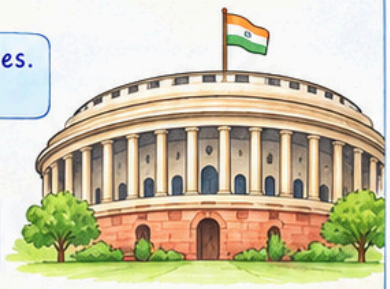
HOW TEN BECAME ELEVEN



→ inserted Part IVA, Article 51A(a)–(j): ten duties. In force from 3 January 1977.



→ added Article 51A(k): the education duty. Clause (k) in force from 1 April 2010.



(a) (b) (c) (d) (e) (f) (g) (h) (i) (j) + (k) = 10 + 1 = 11 duties

WHO BEARS THE DUTY?

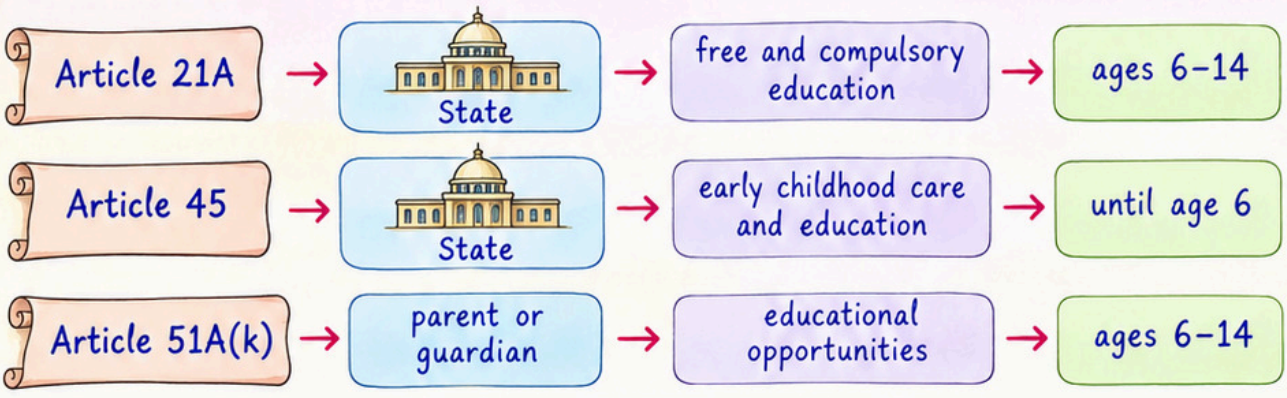
Article 51A addresses citizens of India.
Clause (k) specifically concerns a citizen who is a parent or guardian: provide educational opportunities to a child or ward aged 6–14 years.



EXAM DISTINCTION

An Amendment Act's year and its provision's commencement date can differ. Do not replace 2002 with 2010 when asked which amendment added the education duty.

EDUCATION: THREE DIFFERENT PROVISIONS



The first five duties

The first five duties: Article 51A(a)–(e)

It shall be the duty of every citizen of India:

(a) CONSTITUTION AND NATIONAL SYMBOLS

To abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem.



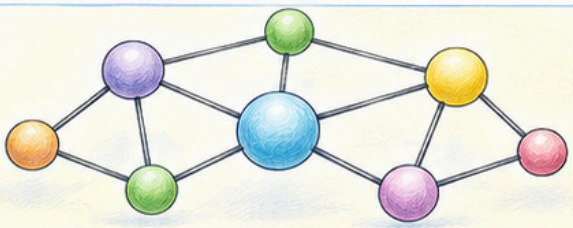
(b) FREEDOM STRUGGLE

To cherish and follow the noble ideals which inspired our national struggle for freedom.



(c) NATIONAL INTEGRITY

To uphold and protect the sovereignty, unity and integrity of India.



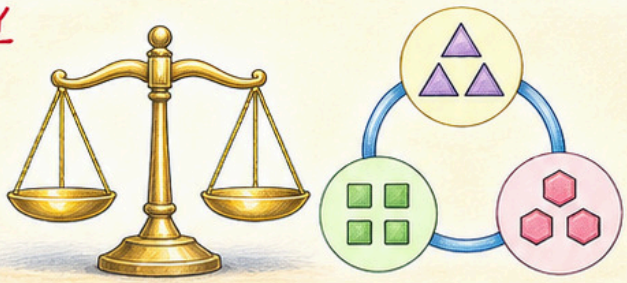
(d) DEFENCE AND SERVICE

To defend the country and render national service when called upon to do so.



(e) HARMONY AND WOMEN'S DIGNITY

To promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women.



RECALL THE DIFFERENCE

- (a) names the National Anthem, not the National Song.
- (b) concerns the ideals of the freedom struggle.
- (c) concerns sovereignty, unity and integrity.
- (e) combines harmony across diversities with women's dignity.

All five clauses were inserted by the 42nd Amendment Act, 1976, effective 3 January 1977.

Culture, environment and human development

Article 51A(f)–(k)

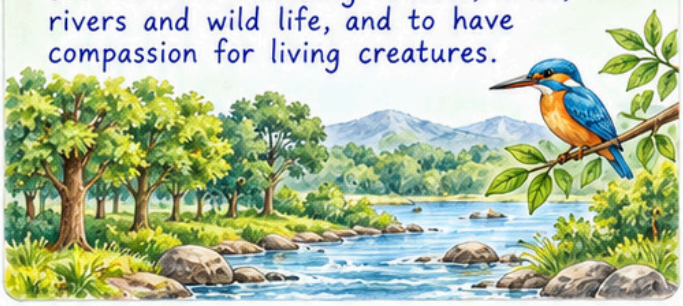
(f) COMPOSITE CULTURE

To value and preserve the rich heritage of our composite culture.



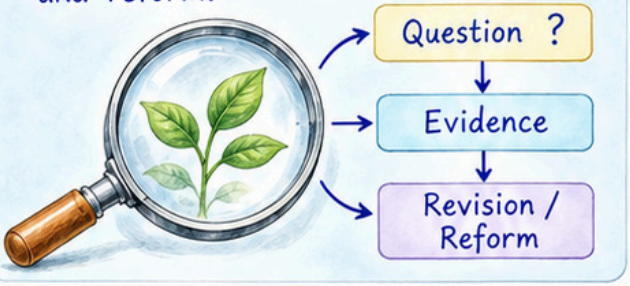
(g) ENVIRONMENT AND LIVING CREATURES

To protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures.



(h) SCIENTIFIC TEMPER

To develop the scientific temper, humanism and the spirit of inquiry and reform.



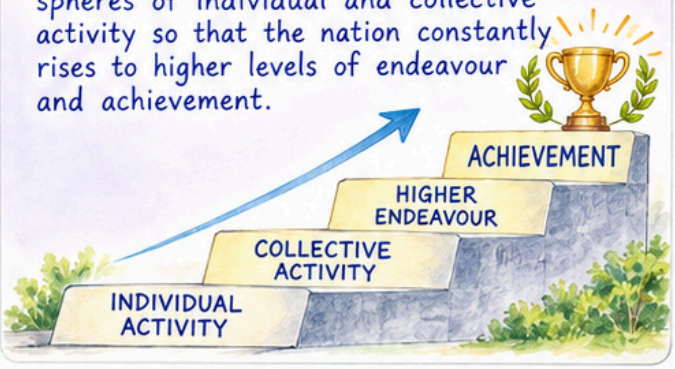
(i) PUBLIC PROPERTY AND NON-VIOLENCE

To safeguard public property and to abjure violence.



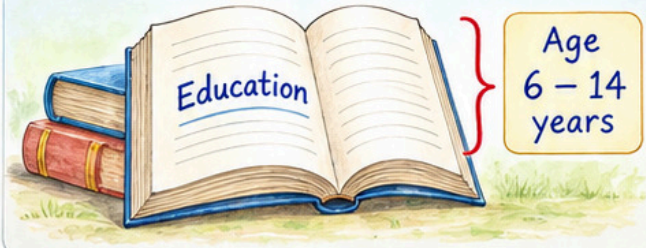
(j) EXCELLENCE

To strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.



(k) EDUCATION

A citizen who is a parent or guardian must provide opportunities for education to a child or ward between the ages of six and fourteen years.



KEEP THE CLAUSES DISTINCT

- Culture → (f)
- Environment and compassion → (g)
- Scientific temper, humanism, inquiry and reform → (h)
- Public property; reject violence → (i)
- Individual and collective excellence → (j)
- Parent or guardian; education ages6–14 → (k)

Clauses(f)–(j): 42nd Amendment Act, 1976.

Clause(k): 86th Amendment Act, 2002.

Rights, Directive Principles and Duties

Three constitutional roles, not interchangeable lists

FUNDAMENTAL RIGHTS



Part III
Articles 12–35

- Some rights protect every person; others are restricted to citizens.
- Article 32 guarantees the right to move the Supreme Court for enforcement of Fundamental Rights.
- Under Article 13, an inconsistent law is void to the extent of the inconsistency.

Location : Part III (Articles 12–35)

↓

Beneficiaries: Every person (some rights restricted to citizens)

↓

Remedy : Enforceable; Article 32 (writ to Supreme Court)



DIRECTIVE PRINCIPLES



Part IV
Articles 36–51

- Addressed to the State.
- Article 37: not enforceable by any court, but fundamental in governance; the State must apply them in making laws.
- Article 51 concerns international peace and security.

Location : Part IV (Articles 36–51)

↓

Addressee : The State

↓

Remedy : Not enforceable by any court (Article 37)



FUNDAMENTAL DUTIES



Part IVA
Article 51A

- Addressed to citizens of India.
- Article 51A contains no separate enforcement mechanism like Article 32.
- Duties guide constitutional interpretation; legislation can give effect to particular duties.
- Article 51A is NOT part of the Directive Principles.

Location : Part IVA (Article 51A)

↓

Addressee : Citizens of India

↓

Remedy : No separate enforcement mechanism comparable to Article 32



RIGHTS DO NOT DEPEND ON DUTIES

Enjoyment of Fundamental Rights is not conditional upon fulfilment of Fundamental Duties. Adding the duties did not change the status of Fundamental Rights.

Fundamental Rights **NOT** Fundamental Duties

REMEMBER

- State obligations ≠ citizens' duties.
- Article 51 ≠ Article 51A.
- A duty without its own writ remedy can still guide interpretation and supporting legislation.

1950 — Rights and Directive Principles already present.

3 January 1977 — First ten Fundamental Duties came into force.

1 April 2010 — Education duty in clause (k) came into force.

How laws support Fundamental Duties

A constitutional duty and a statutory offence are not the same thing

Article 51A(a): Constitution and national symbols



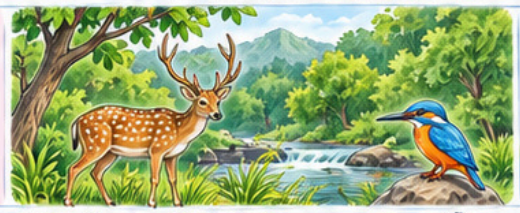
- Prevention of Insults to National Honour Act, 1971.
- Flag Code of India, 2002.

Article 51A(f): Composite cultural heritage



- Ancient Monuments and Archaeological Sites and Remains Act, 1958.
- Antiquities and Art Treasures Act, 1972.

Article 51A(g): Environment and wildlife



- Environment (Protection) Act, 1986.
- Wild Life (Protection) Act, 1972.
- Other environmental laws also support conservation.

Article 51A(i): Public property



- Prevention of Damage to Public Property Act, 1984.

THE CHRONOLOGY TRAP

1958 → ancient monuments law

1971 → national honour law

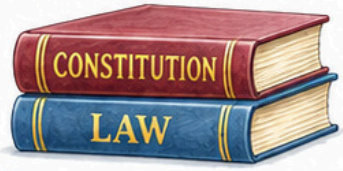
1972 → wildlife law and antiquities law

1976 → 42nd Amendment Act

3 January 1977 → Part IVA in force

1984 → public property law

1986 → environment protection law



Four listed laws predate Part IVA: one from 1958, one from 1971 and two from 1972.

A law need not have been enacted after 1976 to support a Fundamental Duty.

HOW TO THINK ABOUT ENFORCEMENT

Constitutional duty → supporting law or code → specific legal obligations.

Do not assume that every breach of Article 51A is automatically a separate punishable offence. The applicable law determines its own scope and consequences.



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How Fundamental Duties evolved

1976

1976: SWARAN SINGH COMMITTEE

- Set up during the Emergency and chaired by Swaran Singh. It recommended eight duties. A proposal to penalise non-compliance was not accepted.
- The 42nd Amendment Act incorporated ten duties, clauses(a)-(j), effective 3 January 1977.
- The idea was influenced by citizens' duties in the Soviet Constitution.



1998–1999

1998–1999: JUSTICE J.S. VERMA COMMITTEE

- The Government established the committee in 1998 to operationalise suggestions for teaching Fundamental Duties to citizens.
- Final report:31 October 1999.



2003

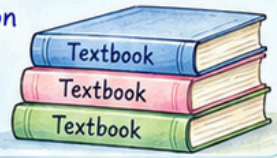
FOLLOW-UP

- 31 July 2003: In Ranganath Mishra v. Union of India, the Supreme Court directed the government to consider the Verma Committee and constitutional-review commission recommendations earnestly and act expeditiously.



2006

- 21 February 2006: The education ministry reported textbook inclusion of duties and charts in opening pages.



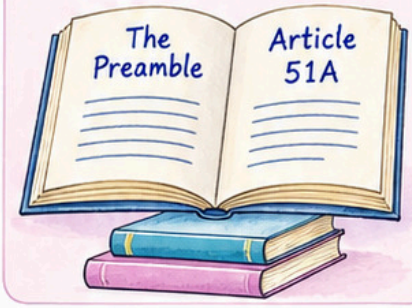
2019

- 2019: Higher educational institutions were directed to organise a Fundamental Duties pledge for Constitution Day, 26 November.



TEACH CITIZENSHIP AS RIGHTS + DUTIES

- Transform school and teacher-education curricula.
- Print the Preamble and Article 51A in school textbooks.
- Understand citizenship values as a combination of rights and duties.
- Enact suitable legislation where necessary to require citizens to fulfil obligations.



DISTINGUISH

- Committee recommendation ≠ constitutional amendment.
- Teaching and civic awareness ≠ automatic punishment for every breach.

Fundamental Duties in court

Not a separate writ remedy, but an interpretive guide

AIIMS STUDENTS' UNION v. AIIMS

Judgment: 24 August 2001; reported as (2002)1SCC 428.

- Fundamental Duties are not enforceable by a writ of court in the same way as Fundamental Rights.
- They nevertheless provide a valuable guide and aid to constitutional interpretation.

THE EXCELLENCE TEST

- Article 51A(h): scientific temper and humanism.
- Article 51A(j): excellence in individual and collective activity.
- The Court tested the institutional reservation for AIIMS's own students against excellence and Article 14.
- It struck down that institutional reservation; it did NOT uphold it.



Submission
A party's argument placed before the Court.

Judgment
The Court's final decision on the case.

M.C. MEHTA v. UNION OF INDIA

Judgment: 12 January 1988.

- The Court cited Article 51A(g), protection of the environment.
- It directed the Central Government to have educational institutions teach environmental-protection lessons for at least one hour a week in the first ten classes.
- Textbooks were to be distributed free of cost.
- Governments were also asked to consider a "Keep the city clean" week.



Submission
A party's argument placed before the Court.

Judgment
The Court's final decision on the case.

TWO PATHWAYS

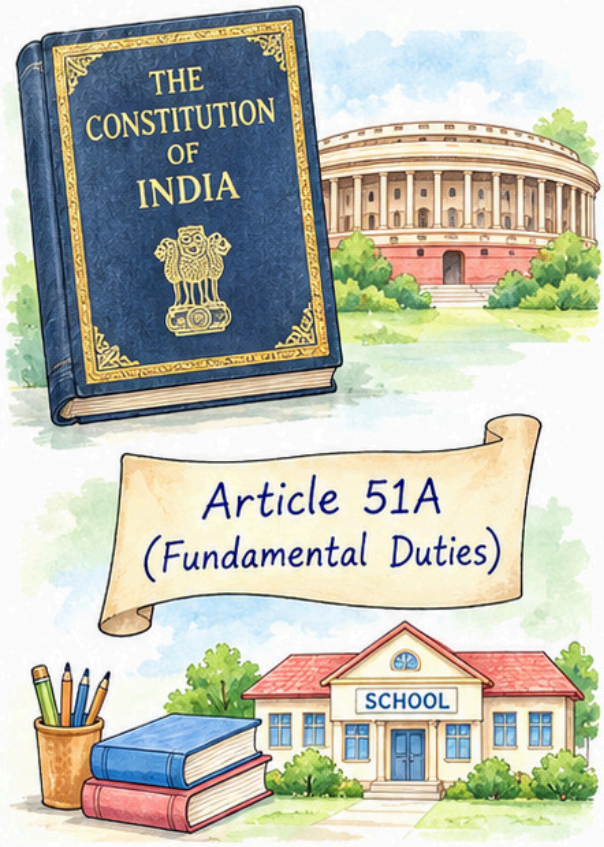
Scientific temper + excellence → interpretive standard → scrutiny of State action.

Environmental duty → educational directions → civic awareness.

A later written submission in Durga Dutt v. Union of India(2024) linked relevant laws to duties. A submission is not itself a Supreme Court judgment.

Q1. Consider the following statements about Article 51A of the Constitution of India:

1. Clause (k), on a parent or guardian providing opportunities for education to a child or ward between the age of six and fourteen years, was added by the Constitution (Eighty-sixth Amendment) Act, 2002.
2. The Constitution makes the enjoyment of rights conditional upon the fulfilment of duties.
3. The duty to renounce practices derogatory to the dignity of women stands in the same clause as the duty to promote harmony and the spirit of common brotherhood.
4. Part IVA, which contains Article 51A, came into force on 3 January 1977.



Which of the statements given above is/are correct?

(1) 1, 2 and 3 only
(2) 1 and 3 only
(3) 1, 3 and 4 only
(4) 2 and 4 only



TRY BEFORE READING THE EXPLANATION

Mark each statement independently. Distinguish the amendment year from the commencement date.

Q1. Answer: (3) 1, 3 and 4 only

Statement 1 : Correct

Clause (k) was inserted by section 4 of the Eighty-sixth Amendment Act, 2002, with effect from 1 April 2010. Its words are "who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years."

Statement 2 : Wrong

Enjoyment of Fundamental Rights is not dependent on fulfilment of duties. Adding the duties did not change the status of Fundamental Rights.

Statement 3 : Correct

Both duties are in clause (e), which first asks citizens to promote harmony and the spirit of common brotherhood transcending religious, linguistic and regional or sectional diversities, and then "to renounce practices derogatory to the dignity of women".

Statement 4 : Correct

Part IVA was inserted by section 11 of the Forty-second Amendment Act, 1976, with effect from 3 January 1977. The amendment was of 1976; the Part took effect in January 1977.

Key timeline: Amendment and commencement

- Eighty-sixth Amendment (2002) → Commencement : 1 April 2010
- Forty-second Amendment (1976) → Commencement : 3 January 1977

Why the other options are wrong:

- (1) includes statement 2, which is wrong, and leaves out statement 4.
- (2) leaves out statement 4, which is correct.
- (4) includes statement 2, which is wrong, and leaves out statements 1 and 3.

Wrong option elimination table

Option	Statements included	Verdict	Reason
(1)	1, 2 and 3 only	Wrong	Includes false statement 2; omits true statement 4.
(2)	1 and 3 only	Wrong	Omits true statement 4.
(3)	1, 3 and 4 only	Correct	All and only the true statements.
(4)	2 and 4 only	Wrong	Includes false statement 2; omits true statements 1 and 3.

Q2. Consider the following statements about how Article 51A has been used and given effect:

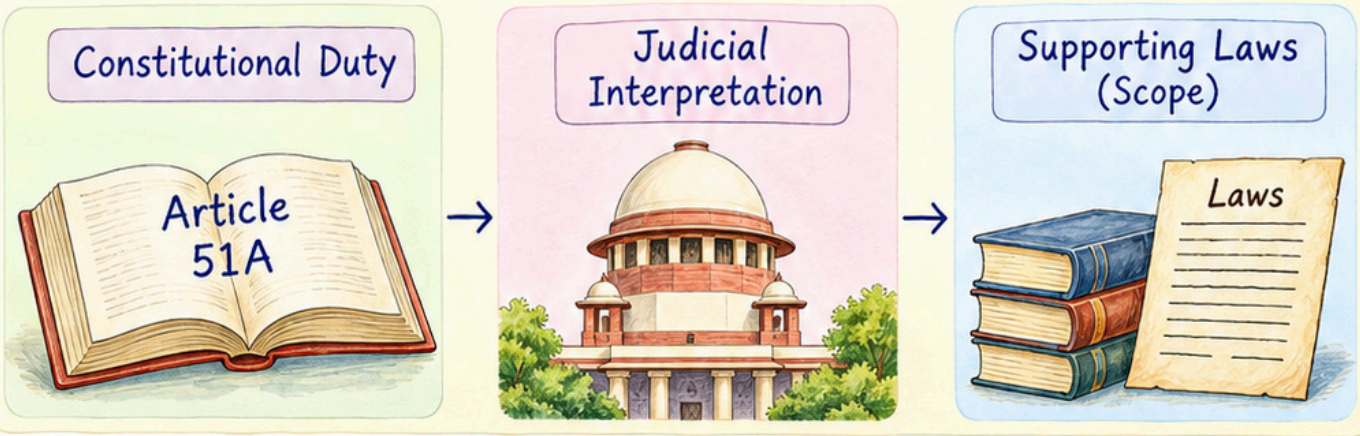
1. The Supreme Court has held that the Fundamental Duties are enforceable by a writ of court in the same way as the Fundamental Rights.
2. In AIIMS Students' Union v. AIIMS (2001), the Supreme Court relied on the duty to strive towards excellence to uphold the institutional reservation of seats for AIIMS's own students.
3. The laws that the Attorney General for India listed in a written note to the Supreme Court as bearing on the Fundamental Duties were all made after 1976.
4. In M.C. Mehta v. Union of India (1988), the Supreme Court cited clause (g) of Article 51A and directed the Central Government to have educational institutions teach lessons on the protection of the natural environment for at least one hour a week.

Which of the statements given above is/are correct?

(1) 1 and 3 only (2) 4 only (3) 2 and 4 only (4) 1, 2 and 3 only

TRY BEFORE READING THE EXPLANATION

Separate a constitutional duty, judicial interpretation and the scope of supporting laws.



Q2. Answer: (2) 4 only

Timeline of supporting laws (before Part IVA)

- **1958** — Ancient Monuments and Archaeological Sites and Remains Act, 1958
- **1971** — Prevention of Insults to National Honour Act, 1971
- **1972** — Wild Life (Protection) Act, 1972
- **Part IVA 1977**

Evaluation of statements

Statement 1: Wrong

In AIIMS Students' Union the Court said "Fundamental duties, as defined in Article 51A, are not made enforceable by a writ of court". They are a guide and aid to interpretation, not rights that a writ enforces.



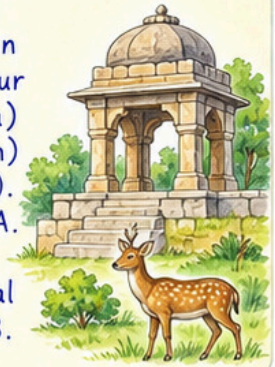
Statement 2: Wrong

The Court used the duty to strive towards excellence the other way. It tested the reservation against that goal and struck down the institutional reservation as violating Article 14.



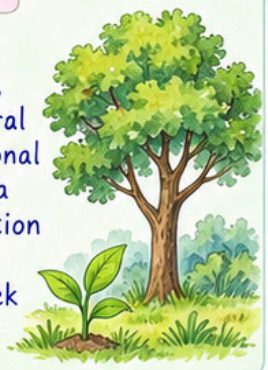
Statement 3: Wrong

The note lists the Prevention of Insults to National Honour Act, 1971 against clause (a) and the Wild Life (Protection) Act, 1972 against clause (g). Both are older than Part IVA. It also lists the Ancient Monuments and Archaeological Sites and Remains Act, 1958.



Statement 4: Correct

On 12 January 1988, citing "Clause (g) of Article 51A", the Court directed the Central Government to have educational institutions throughout India teach lessons on the protection of the natural environment for at least one hour a week in the first ten classes.



Why the other options are wrong:

(1) is made up of two wrong statements and leaves out statement 4.
(3) includes statement 2, which is wrong.
(4) is made up of the three wrong statements.

WTO: origins, membership and institutional structure

FROM NEGOTIATIONS TO AN ORGANISATION

- Uruguay Round negotiations: 1986–1994.
- Marrakesh Agreement signed: 15 April 1994.
- World Trade Organization began: 1 January 1995.
- India's 1991 industrial reforms preceded the WTO; do not treat the two as the same event.

From negotiations to the WTO: key dates



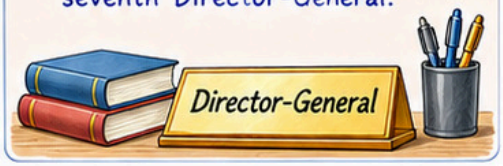
WHAT THE WTO DOES

- It provides rules for trade between members, a forum for negotiations, dispute settlement procedures and trade policy reviews.
- Headquarters: Geneva, Switzerland.
- Membership: 166 as at 7 November 2026, representing 98% of world trade. Timor-Leste became the 166th member on 30 August 2024.
- India joined the WTO on 1 January 1995; its GATT membership began on 8 July 1948.



THE TOP BODY

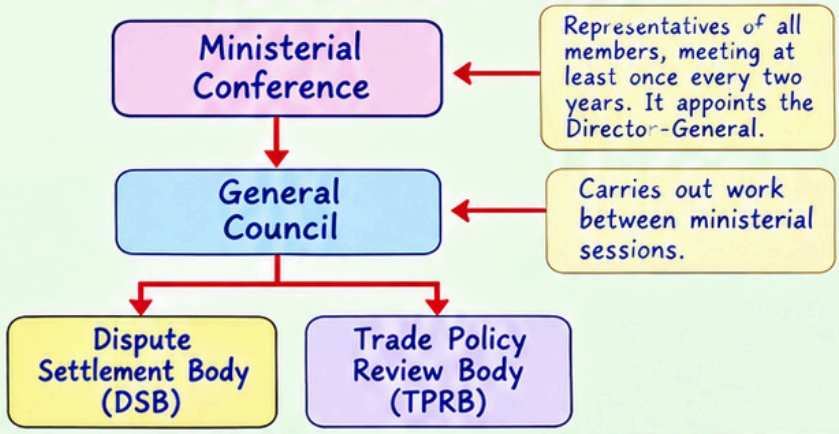
- Ministerial Conference: representatives of all members, meeting at least once every two years. It appoints the Director-General.
- Ngozi Okonjo-Iweala has served as Director-General since 1 March 2021; she is the seventh Director-General.



BETWEEN MINISTERIAL CONFERENCES

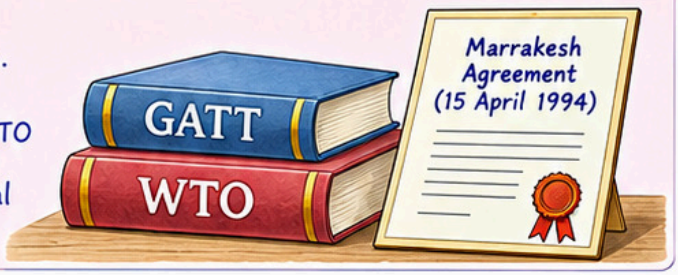
- The General Council carries out work between ministerial sessions.
- The same General Council also meets in two distinct capacities:
  - Dispute Settlement Body: administers the dispute settlement system.
  - Trade Policy Review Body: reviews members' trade policies.
- These are not three unrelated memberships.

WTO: institutional structure



DO NOT CONFUSE

- GATT: General Agreement on Tariffs and Trade.
- WTO: the organisation established in 1995.
- Marrakesh signing in 1994 is not the date the WTO began operating.
- The Ministerial Conference is above the General Council in the institutional structure.



Services trade: four GATS modes, four different movements

WHAT GATS COVERS

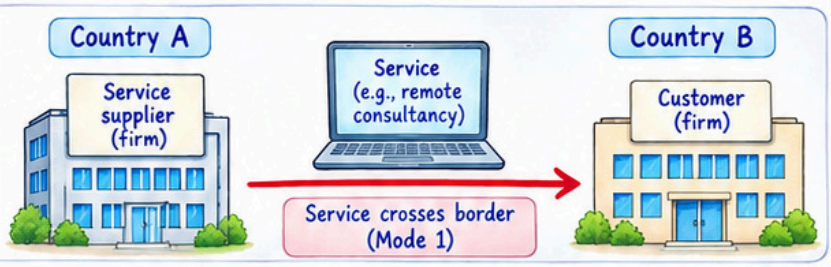
- The General Agreement on Trade in Services covers internationally traded services, except services supplied under governmental authority and most air transport services.
- National treatment is not an unconditional promise across every service: it applies where a member has made commitments in its schedule, subject to specified conditions and limitations.

THE MOVEMENT TEST

- Service moves → Mode 1.
- Consumer moves → Mode 2.
- Commercial establishment opens → Mode 3.
- Individual supplier moves → Mode 4.

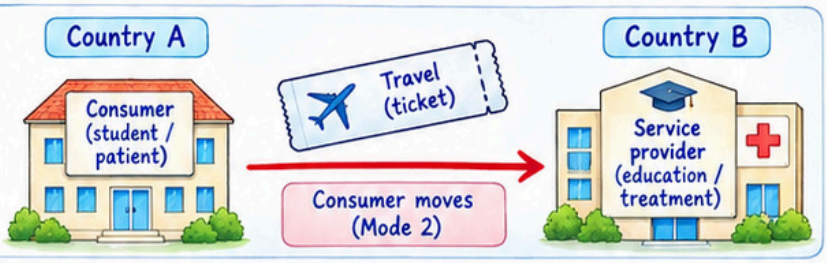
MODE 1 • CROSS-BORDER SUPPLY

- The service crosses the border while supplier and customer stay in their own countries.
- Example: a firm supplies remote consultancy online to a customer abroad.



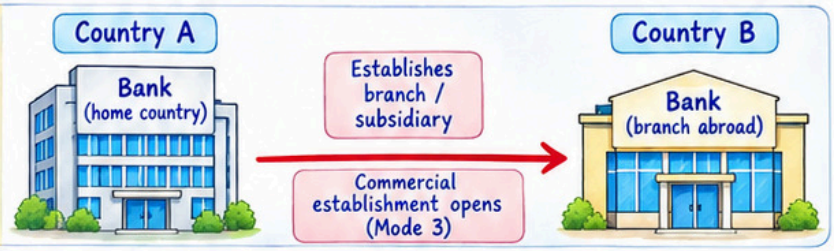
MODE 2 • CONSUMPTION ABROAD

- The consumer travels abroad to receive the service.
- Example: a student goes overseas for education, or a patient travels for treatment.



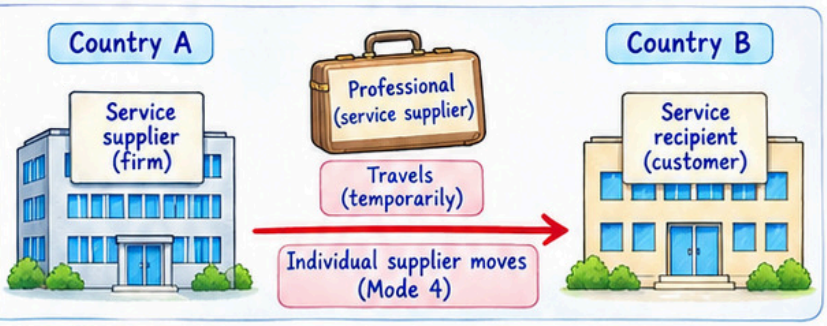
MODE 3 • COMMERCIAL PRESENCE

- A foreign service supplier establishes a branch or subsidiary in another country.
- Example: a bank opens a branch abroad.



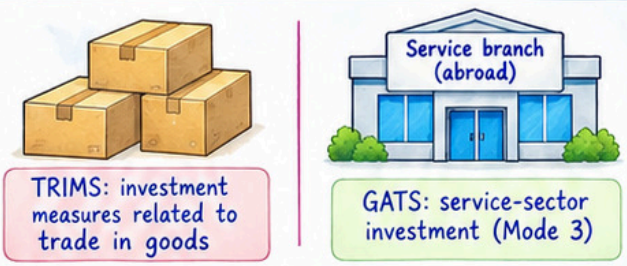
MODE 4 • PRESENCE OF NATURAL PERSONS

- Individuals travel to another country to supply services.
- Example: a professional travels temporarily to deliver a service under the applicable commitments.
- This is not a general right to permanent immigration or access to every labour market.



GATS OR TRIMS?

- Investment connected with a service-sector branch is Mode 3 under GATS.
- TRIMS concerns investment measures related to trade in goods, not all foreign investment.
- A local-content requirement for goods must not be confused with the establishment of a service branch.



WTO agreements: match the rule to the subject

AGREEMENT ON AGRICULTURE

- Three pillars: market access, domestic support and export competition.
- Do not put services or patents under this agreement.



Match: agreement → subject (what it covers)

- **AoA** → Trade in agricultural goods (market access, domestic support, export competition).
- **SPS** → Food safety and animal or plant health protection.
- **TBT** → Technical regulations, standards, testing and certification.
- **TRIMS** → Investment measures related to goods trade (e.g., local-content, trade-balancing requirements).
- **TRIPS** → Intellectual property (e.g., copyright, trademarks, GIs, industrial designs, patents, IC layouts, undisclosed information).
- **Fisheries** → Disciplines on fisheries subsidies.
- **DSU** → Procedures for resolving disputes (with an Appellate Body under Article 17).

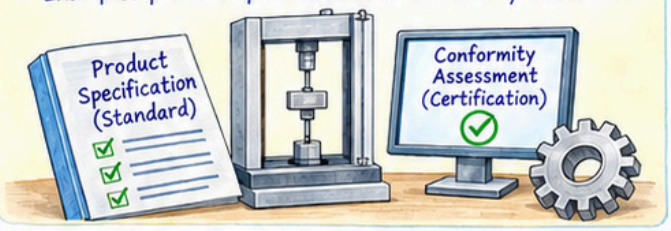
SPS • SANITARY AND PHYTOSANITARY MEASURES

- Food safety and animal or plant health protection.
- Measures require a scientific basis.
- Article 5.7 permits provisional measures where relevant scientific evidence is insufficient, subject to its conditions.
- Example: a food-safety or plant-disease measure.



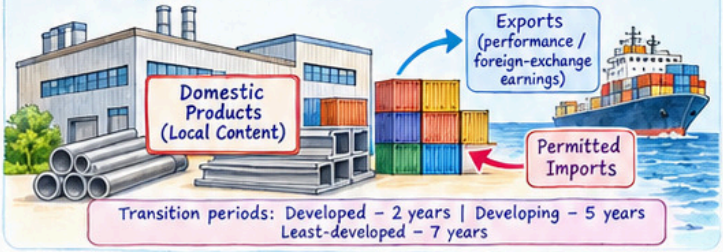
TBT • TECHNICAL BARRIERS TO TRADE

- Technical regulations, standards, testing and certification.
- They must not create unnecessary obstacles to trade.
- A code of good practice addresses bodies preparing and applying voluntary standards.
- Example: product specifications or conformity assessment.



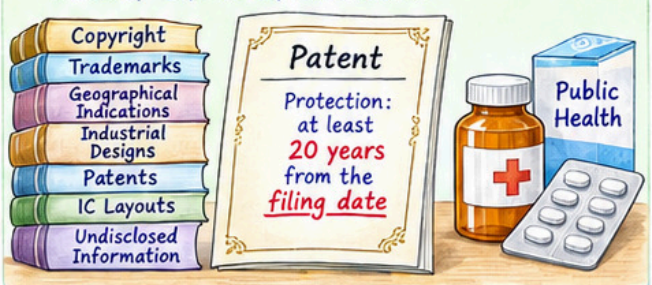
TRIMS • INVESTMENT MEASURES RELATED TO GOODS TRADE

- Its illustrative list includes local-content and trade-balancing requirements.
- A local-content rule requires purchase or use of domestic products.
- A trade-balancing rule links permitted imports to export performance or foreign-exchange earnings.
- Original transition periods: developed members 2 years; developing members 5 years, least-developed members 7 years.



TRIPS • INTELLECTUAL PROPERTY

- Covers copyright, trademarks, geographical indications, industrial designs, patents, integrated-circuit layouts and undisclosed information.
- Patent protection: at least 20 years from the filing date.
- The Doha Declaration of 14 November 2001 affirms flexibility to protect public health.



FISHERIES SUBSIDIES

- Agreement adopted at MC12 in June 2022; entered into force on 15 September 2025.
- MC14 continued negotiations on additional disciplines.
- Adoption, entry into force and further negotiations are different stages.



Three distinct stages (with key dates)

- **Adoption (MC12)** — June 2022
- **Entry into force** — 15 September 2025 (15 Sep 2025)
- **Further negotiations (MC14)** — Additional disciplines

DSU • DISPUTE SETTLEMENT UNDERSTANDING

- Provides procedures for resolving disputes.
- Article 17 established the Appellate Body.



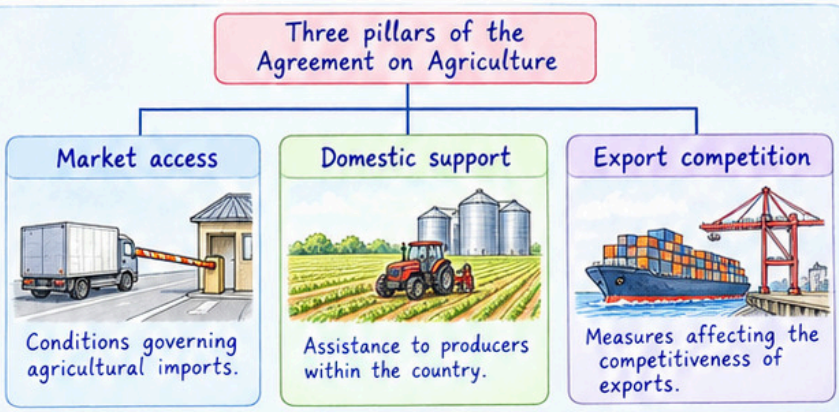
Dispute (under the WTO) → Procedures for resolution → Appellate Body (Article 17)

Agriculture: market access and historical reduction commitments

THREE PILLARS

- **Market access:** conditions governing agricultural imports.
- **Domestic support:** assistance to producers within the country.
- **Export competition:** measures affecting the competitiveness of exports.

These pillars are related but not interchangeable.



TARIFFICATION

Many non-tariff import restrictions, such as quotas, were converted into tariffs giving roughly equivalent protection.

A tariff is a tax on imports; a quota directly limits quantity.

Tariff versus quota: short comparison

Aspect	Tariff	Quota
Nature	A tax on imports.	A quantitative limit on imports.
Main effect	Raises the cost of imported goods (price effect).	Directly limits the quantity that can be imported (quantity effect).

ORIGINAL URUGUAY ROUND TARIFF CUTS

Item	Developed members	Developing members
Average reduction	36%	24%
Implementation period	Six years, 1995–2000	Ten years, 1995–2004
Minimum cut (on each product)	15%	10%

These are historical implementation commitments, not new annual reduction targets.

DOMESTIC SUPPORT REDUCTIONS

- Total Aggregate Measurement of Support (Total AMS) commitments used the 1986–1988 base.
- Reduction: developed members 20%; developing members 13%.
- Least-developed countries have no tariff or subsidy reduction commitments.



EXPORT SUBSIDIES: TWO HISTORICAL STAGES

- Original Uruguay Round commitments used the 1986–1990 base.
- Budgetary outlays: reductions of 36% for developed and 24% for developing members.
- Subsidised quantities: reductions of 21% and 14%, respectively.
- The 2015 Nairobi decision later required agricultural export subsidies to be phased out.

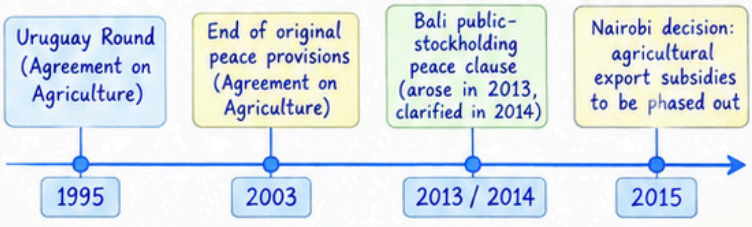
Historical export-subsidy commitments (Uruguay Round)

Measure	Developed members	Developing members
Base period	1986–1990	
Budgetary outlays (reduction)	36%	24%
Subsidised quantities (reduction)	21%	14%

PEACE PROVISIONS ARE DIFFERENT

- The original Agreement on Agriculture peace provisions lasted until the end of 2003.
- The Bali public-stockholding peace clause arose in 2013 and was clarified in 2014. It is a different decision.

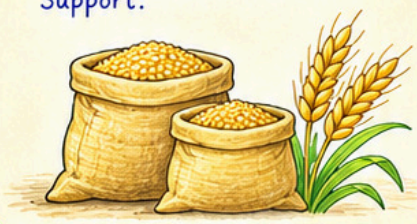
Key timeline: Uruguay Round to 2015 Nairobi



Domestic support: amber, blue, green and de minimis

AMBER BOX

- Domestic support that does not qualify for the green or blue boxes, including price support.
- Trade-distorting support is subject to limits and reduction commitments where applicable.
- Total AMS means Total Aggregate Measurement of Support.



BLUE BOX

- Support linked to programmes requiring farmers to limit production.
- It is an exemption from reduction commitments under specified conditions, not a name for export subsidies.
- No spending limits apply under the current blue-box rules.



GREEN BOX

- Support that causes no, or at most minimal, trade distortion.
- It must be government-funded and must not involve price support.
- It is permitted without spending limits if Annex 2 criteria are met.
- The label is not a blanket exemption for every environmental or welfare scheme.



DE MINIMIS

- Small amounts of otherwise amber-box support may be excluded from reduction commitments.
- Threshold: 5% of agricultural production value for developed members and 10% for most developing members.
- Product-specific and non-product-specific support are tested separately under the relevant rules; do not confuse the percentage with a share of the government's budget.

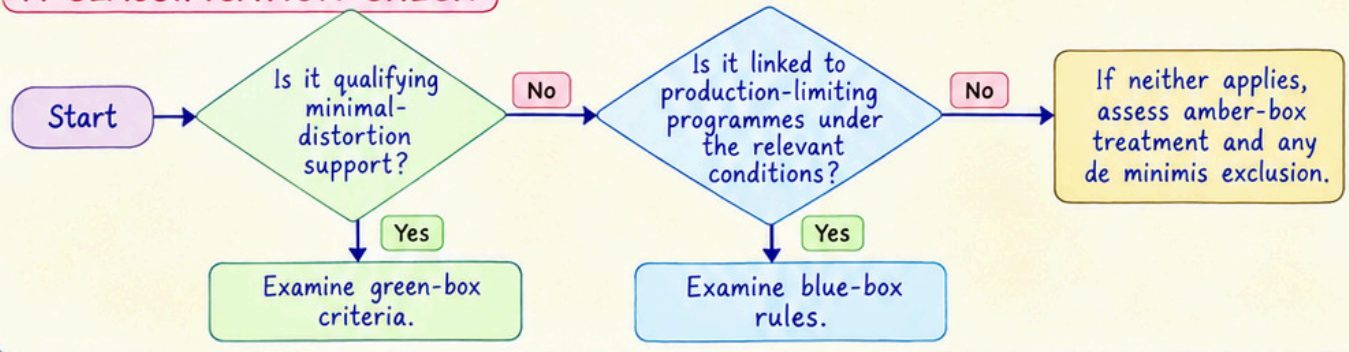
Threshold for de minimis exclusion

5% of agricultural production value (for developed members)

10% of agricultural production value (for most developing members)



A CLASSIFICATION CHECK



INDIA AND FOOD SECURITY

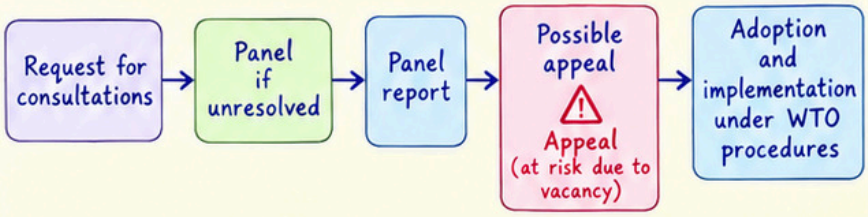
- Public stockholding for food security is a central negotiating issue for India.
- The Bali2013 peace clause protects eligible developing-country programmes from specified challenges only when the decision's conditions are met.
- The General Council's 2014 decision confirmed continuation until a permanent solution is agreed. It is not an unconditional exemption for all subsidies.



WTO disputes: panels, appeals and the vacancy problem

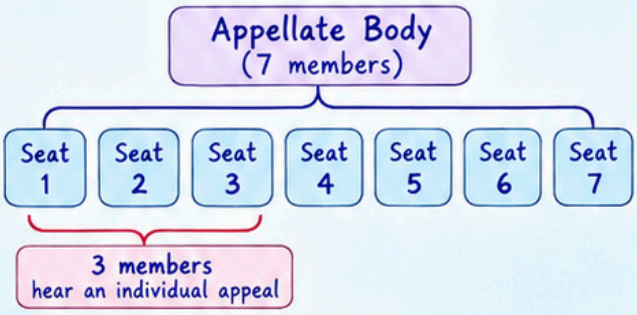
THE ORDINARY ROUTE

- Request for consultations → panel if unresolved → panel report → possible appeal → adoption and implementation under WTO procedures.
- The Dispute Settlement Body is the General Council meeting in its dispute-settlement capacity.



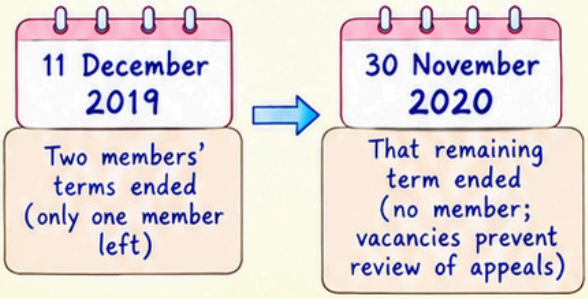
APPELLATE BODY: THE DESIGN

- Established under Article 17 of the Dispute Settlement Understanding.
- Seven members are appointed by the DSB for four-year terms, renewable once.
- Three members hear an individual appeal. Do not confuse total membership with the number hearing each case.



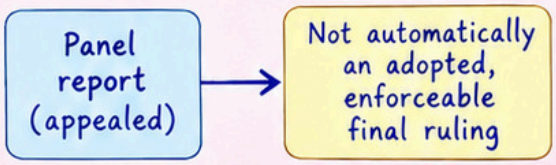
WHY APPEALS CANNOT BE HEARD

- Two members' terms ended on 11 December 2019, leaving only one member.
- That remaining term ended on 30 November 2020. Ongoing vacancies prevent review of appeals.
- This does not mean that every WTO function, or every panel, ceased operating.



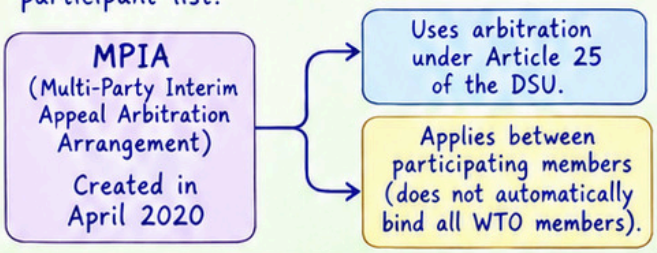
APPEAL INTO THE VOID

- A party may notify an appeal even though the Appellate Body cannot hear it.
- An appealed panel report is not automatically an adopted, enforceable final ruling. Distinguish a panel's finding from final dispute resolution.



AN ALTERNATIVE FOR PARTICIPANTS

- The Multi-Party Interim Appeal Arbitration Arrangement (MPIA) was created in April 2020.
- It uses arbitration under Article 25 of the DSU.
- It applies between participating members; it does not automatically bind all WTO members.
- India was not a participant in the March 2026 participant list.



REVISION NUMBERS

- Article 17 → Appellate Body.
- Article 25 → arbitration.
- Seven → total Appellate Body seats.
- Three → members hearing an appeal.
- Four years → normal term; renewable once.

India at the WTO: two disputes and their procedural status

SUGAR AND SUGARCANE • DS579

- Brazil complained against India. Australia (DS580) and Guatemala (DS581) brought parallel complaints.
- Subject: domestic support for sugarcane and sugar export schemes under the Agreement on Agriculture.
- Panel report: 14 December 2021.
- The panel found product-specific support above 10% of sugarcane production value in the five seasons 2014-15 to 2018-19; it also found relevant schemes to be export subsidies.
- India notified an appeal on 24 December 2021.
- These are panel findings and an appealed report, not a completed Appellate Body ruling.



ICT TARIFFS • DS582

- The European Union complained against India.
- Subject: tariffs on certain information and communications technology goods under GATT 1994 Article II:1(a) and (b).
- Panel report: 17 April 2023.
- The panel treated India's WTO Schedule as the source of tariff commitments; the Information Technology Agreement was not itself a covered agreement.
- It found tariffs on several items inconsistent with Article II.
- India notified an appeal on 8 December 2023.



Procedural timeline: DS579 (Sugar and Sugarcane)

Panel report (14 December 2021) → Appeal notification (24 December 2021) → Not a completed Appellate Body ruling

Procedural timeline: DS582 (ICT Tariffs)

Panel report (17 April 2023) → Appeal notification (8 December 2023) → Appeal notified (not an appeal heard)

COMPARE THE TWO

Dispute (DS)	Issue (subject)	Complainant	Panel report date
DS579	Agricultural support and export subsidies	Brazil	2021
DS582	Tariff commitments on ICT goods	European Union (EU)	2023

CASE CARD: DS579 (SUGAR AND SUGARCANE)

Parties	Brazil complained against India. Australia (DS580) and Guatemala (DS581) brought parallel complaints.
Agreement	Agreement on Agriculture.
Issue	Domestic support for sugarcane and sugar export schemes.
Finding	Product-specific support above 10% of sugarcane production value in the five seasons 2014-15 to 2018-19; relevant schemes are export subsidies.
Status	Panel report: 14 December 2021. India notified an appeal on 24 December 2021. These are panel findings and an appealed report, not a completed Appellate Body ruling.

CASE CARD: DS582 (ICT TARIFFS)

Parties	The European Union complained against India.
Agreement	GATT 1994 Article II:1(a) and (b).
Issue	Tariffs on certain information and communications technology goods.
Finding	The panel treated India's WTO Schedule as the source of tariff commitments; the Information Technology Agreement was not itself a covered agreement. It found tariffs on several items inconsistent with Article II.
Status	Panel report: 17 April 2023. India notified an appeal on 8 December 2023.

THE PROCEDURAL LESSON

Panel report → Appeal notification → Appeal heard? (Not automatic)

- Panel report ≠ adopted final outcome in every case.
- Appeal notification ≠ appeal heard.
- The Appellate Body vacancy problem matters when interpreting both cases.
- Always identify the agreement, parties, issue, finding and procedural stage separately.

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MC14 and India: decisions, negotiations and unresolved issues

MC14 • YAOUNDÉ, CAMEROON

- The conference began on 26 March 2026 and concluded early on 30 March 2026.
- Ministers adopted decisions on integrating small economies and special and differential treatment in the SPS and TBT Agreements.
- They agreed to continue fisheries-subsidy negotiations, with recommendations due at MC15.
- Draft texts, including a declaration on WTO reform, returned to Geneva.

E-COMMERCE MORATORIUM

- MC13 in Abu Dhabi 2024 had extended the moratorium on customs duties on electronic transmissions until MC14 or 31 March 2026, whichever came earlier.
- MC14 did not reach consensus on extension. The moratorium lapsed on 30 March 2026.
- Do not repeat an older claim that it remains extended automatically.

Moratorium timeline (electronic transmissions)



MC13 in Abu Dhabi 2024 → Until MC14 or 31 March 2026 → Lapsed on 30 March 2026 ✗

INDIA'S POSITIONS AT MC14



Food security : prioritise a development-oriented permanent solution on public stockholding.



Fisheries : distinguish heavily subsidised industrial fleets from small-scale fishers in developing countries.



Disputes : address continued dysfunction of dispute settlement.



Decision-making : preserve consensus and each member's right not to accept new obligations without agreement.



Investment Facilitation for Development : India did not agree to incorporation as an Annex 4 agreement.

DISTINGUISH THREE TYPES OF OUTCOME



Adopted decisions : agreed text.



Continuing negotiations : unresolved issues still under discussion.



No consensus : no agreed extension or new obligation from that proposal.

- India's negotiating position is not automatically the final rule accepted by all members.

FOOD STOCKHOLDING REMAINS DISTINCT

- The conditional Bali peace-clause protection continues until a permanent solution is agreed. MC14 did not itself settle that long-pending permanent solution.



WTO milestones: origins, disputes and legal anchors

ORIGIN OF THE E-COMMERCE MORATORIUM

The moratorium on customs duties on electronic transmissions was a later ministerial decision, not an original rule of the 1994 Marrakesh Agreement.



Moratorium timeline

- **May 1998:** the Second Ministerial Conference adopted the moratorium on customs duties on electronic transmissions.
- **30 March 2026:** the moratorium lapsed when MC14 did not agree on an extension.
- **14-15 July 2026:** General Council discussions still showed no movement on the moratorium since the May meeting. This is a dated negotiating update, not a new extension.

DISPUTES BEGIN BEFORE PANEL REPORTS

DS579: Brazil requested consultations on 27 February 2019.

27 February 2019 (Consultation request (DS579)) → Panel proceedings → SUGAR Panel Report (14 December 2021) → Appeal (India) (24 December 2021)

DS582: the European Union requested consultations on 2 April 2019.

2 April 2019 (Consultation request (DS582)) → Panel proceedings → ICT Panel Report (17 April 2023) → Appeal (India) (8 December 2023)

Consultation request → panel proceedings → panel report → appeal notification.

An appeal notification does not mean that an appeal has been heard.

SUGAR: THE LEGAL DETAIL

India's WTO Schedule contains no sugar export-subsidy commitments. The panel found the challenged schemes inconsistent with the relevant agriculture obligations.



Keep the panel's findings distinct from the final resolution of an appealed dispute.

WHY APPOINTMENTS MATTER

United States opposition has blocked new Appellate Body appointments. The resulting vacancies prevent appeal review, not every WTO activity.



LEGAL ANCHORS



Legal article	Subject (core content)
Marrakesh Agreement Article IV	WTO institutional structure.
Article VI	Secretariat; the Ministerial Conference appoints the Director-General.
DSU Article 17	Appellate Body.
DSU Article 25	Arbitration, used by participating members in the MPIA.

What counts as urban?

Urbanisation = a rising proportion of people living in urban areas.

Two routes to urban status (Census 2011)

Statutory town

Notified under law; a municipality, municipal corporation, cantonment board or notified town area committee.

Legal status is the criterion; the three Census-town tests are not required.

Census town

All THREE tests together:

1. Population: at least 5,000.
2. At least 75% of MALE MAIN WORKERS in non-agricultural pursuits.
3. Density: at least 400 persons per square kilometre.

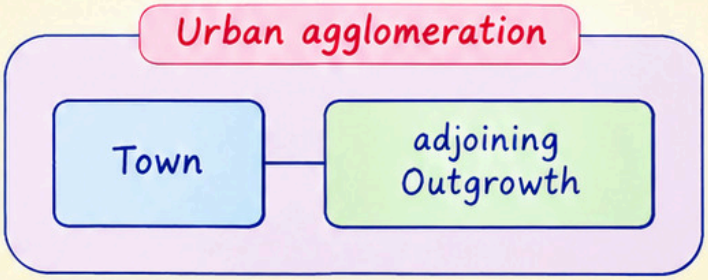
AND

Census town (urban)

Not all residents; not all workers.

Urban agglomeration

Continuous urban spread consisting of a town and adjoining outgrowths, or two or more physically contiguous towns, with or without outgrowths.



Outgrowth

An identifiable adjoining area outside statutory town limits, possessing urban amenities. Examples: railway colony, university campus or port area.

Two classification questions

Population-size class = HOW LARGE?

Functional class = WHAT DOES IT MAINLY DO?

A city can be both a port and an industrial centre. Size does not determine its function.

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The urbanisation timeline

Urbanisation is the increase in the proportion of people living in towns and cities. It brings changes in the size and number of towns, the share of population in urban areas and the growth of the urban population.

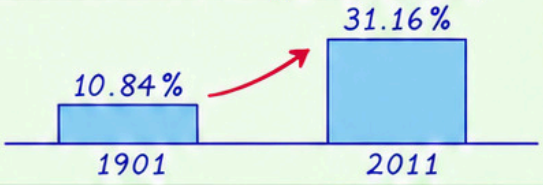
Key terms:

- Town or UA: a town or an urban agglomeration counted as a statistical unit. Towns include statutory and census towns.
- Urban share: the percentage of the total population living in urban areas.
- Decadal growth of urban population: the percentage increase in the urban population over the preceding ten years.

The trend, 1901 to 2011

The urban share rose from 10.84% in 1901 to 31.16% in 2011, showing a clear long-term increase in urbanisation.

Urban share: an upward trend



Census year	Towns or UAs counted	Urban share (per cent)	Decadal growth of urban population (per cent)
1901	1,827	10.84	Not given
1911	1,815	10.29	0.35
1921	1,949	11.18	8.27
1931	2,072	11.99	19.12
1941	2,250	13.86	31.97
1951	2,843	17.29	41.42
1961	2,365	17.97	26.41
1971	2,590	19.91	38.23
1981	3,378	23.34	46.14
1991	4,689	25.71	36.47
2001	5,161	27.81	31.13
2011 (provisional)	7,935	31.16	31.80

STATISTICAL BASES

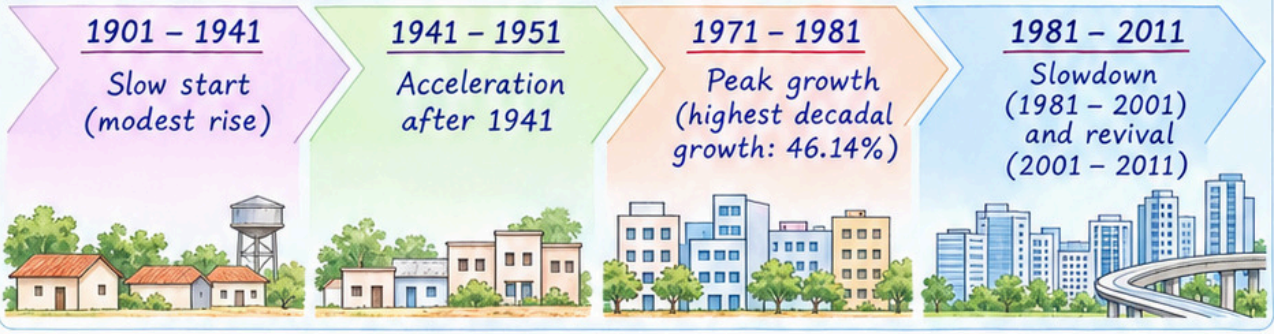
- 2001 urban share: 27.81%.
- 2001–2011 urban population growth: 31.80%, from 286.11 million to 377.11 million.
- 1991 urban share: 25.71%.
- 2011 provisional count: 7,935 towns.
- 2011 urban share: provisional 31.16%; final 31.14%. Keep provisional and final data distinct.
- Share measures the urban proportion; growth measures change in urban population.

Phases of India's urban growth

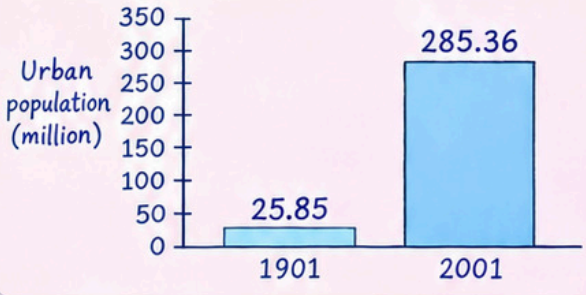
Phases of the trend

- **Twentieth century:** urban population increased approximately eleven-fold. The historical series rises from about 25.85 million in 1901 to 285.36 million in 2001. This historical-series 2001 total differs from the 286.11 million base used in the 2001–2011 Census comparison above; keep each series internally consistent.
- **Slow start:** the urban share rose only from 10.84 to 13.86 per cent between 1901 and 1941, and it fell between 1901 and 1911 (10.84 to 10.29).
- **After 1941:** the share reached 17.29 per cent in 1951. The decadal growth of the urban population was highest in 1971 to 1981 (46.14 per cent).
- **Slowdown:** urban population decadal growth fell from 46.14% in 1971–1981 to 36.47% in 1981–1991 and 31.13% in 1991–2001. This is a dated historical trend, not a claim about the latest two decades.
- **Revival:** During 2001–2011, the decline in the 1980s and 1990s was reversed in 2001 to 2011: the annual growth rate of the urban population rose slightly, from 2.75 to 2.76 per cent.

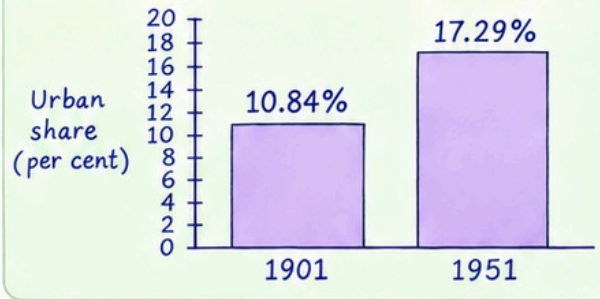
Four phases of India's urban growth (by Census period)



Urban population (historical series)



Urban share of total population



- A slower growth rate did not lower the share: after 1911 the urban share rose at every Census.
- The number of towns counted, however, fell between 1951 and 1961 (2,843 to 2,365).



Six population-size classes

Classes of towns by population size

The Census groups towns into six classes.

Class	Population (Census)	Share of India's urban population, 2001 (per cent)
Class I	1,00,000 and above	61.48
Class II	50,000 to 99,999	12.30
Class III	20,000 to 49,999	15.00
Class IV	10,000 to 19,999	8.08
Class V	5,000 to 9,999	2.85
Class VI	Less than 5,000	0.29

- These population shares refer to 2001. Class IV covers 10,000–19,999 people; it does not include the 20,000–49,999 Class III range.
- City: a town of 1,00,000 and above. So every Class I town is a city.
- Class I dominates: in 2001 India had 423 Class I towns, holding more than 60 per cent of the urban population.

The six classes (population ranges)

- Class I : 1,00,000 and above
- Class II : 50,000 to 99,999
- Class III : 20,000 to 49,999
- Class IV : 10,000 to 19,999
- Class V : 5,000 to 9,999
- Class VI : Less than 5,000

Population thresholds

- A conventional geographical description calls cities of 1–5 million metropolitian and those above 5 million mega. In 2001 there were 35 million-plus cities among 423 Class I cities; six exceeded 5 million and held 21.0% of the urban population. These thresholds differ from the 10-million threshold used for the 2011 mega-UA count.

Census 2011 counts

- 468 Class I UAs or towns;
- 53 million-plus UAs or cities, with 160.7 million people (42.6 per cent of the urban population);
- three mega cities: Greater Mumbai, Delhi and Kolkata.

2001 shares chart

Class	Share of India's urban population, 2001 (per cent)
Class I	61.48
Class II	12.30
Class III	15.00
Class IV	8.08
Class V	2.85
Class VI	0.29

Comparable units

- 423 in 2001 counts towns; 468 in 2011 treats an entire UA as one unit where applicable. Do not subtract the two as if they measured identical units. The 53 million-plus count is provisional; a final-data compilation lists 52. Do not mix these bases.

India's largest urban agglomerations

The largest urban agglomerations

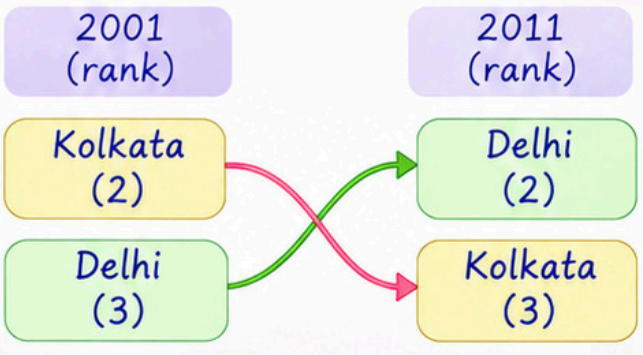
Rank in 2011	Urban agglomeration	Population, 2011 (Census, final)	Population, 2001 (million)
1	Greater Mumbai	18,394,912	16.37
2	Delhi	16,349,831	12.79
3	Kolkata	14,057,991	13.22
4	Chennai	8,653,521	6.42
5	Bengaluru (Bangalore)	8,520,435	5.69

- Greater Mumbai was the largest UA in both years.
- Delhi was third in 2001, behind Kolkata, and second in 2011, ahead of Kolkata by about 2.3 million.
- Hyderabad also exceeded 5 million in 2001, with 5.53 million.
- **Mega-city threshold:** using more than 5 million would include Chennai and Bengaluru in 2011 (each above 8.5 million). The 2011 count of three mega UAs uses more than 10 million: Greater Mumbai, Delhi and Kolkata. State the threshold and reference year rather than treating the label as universal.



Delhi/Kolkata two-year rank crossing







Towns classified by function

Classes of towns by function

Towns can be classified by their dominant or specialised function.

Function	Indian examples
Administrative towns 	Chandigarh, New Delhi, Bhopal, Shillong, Guwahati, Imphal, Srinagar, Gandhinagar, Jaipur, Chennai
Industrial towns 	Mumbai, Salem, Coimbatore, Modinagar, Jamshedpur, Hugli, Bhilai
Transport cities 	Ports: Kandla, Kochchi, Kozhikode, Vishakhapatnam. Inland hubs: Agra, Dhulia, Mughal Sarai, Itarsi, Katni
Commercial towns 	Kolkata, Saharanpur, Satna
Mining towns 	Raniganj, Jharia, Digboi, Ankaleshwar, Singrauli
Garrison cantonment towns 	Ambala, Jalandhar, Mhow, Babina, Udhampur
Educational towns 	Roorkee, Varanasi, Aligarh, Pilani, Allahabad
Religious and cultural towns 	Varanasi, Mathura, Amritsar, Madurai, Puri, Ajmer, Pushkar, Tirupati, Kurukshetra, Haridwar, Ujjain
Tourist towns 	Nainital, Mussoorie, Shimla, Pachmarhi, Jodhpur, Jaisalmer, Udagamandalam (Ooty), Mount Abu

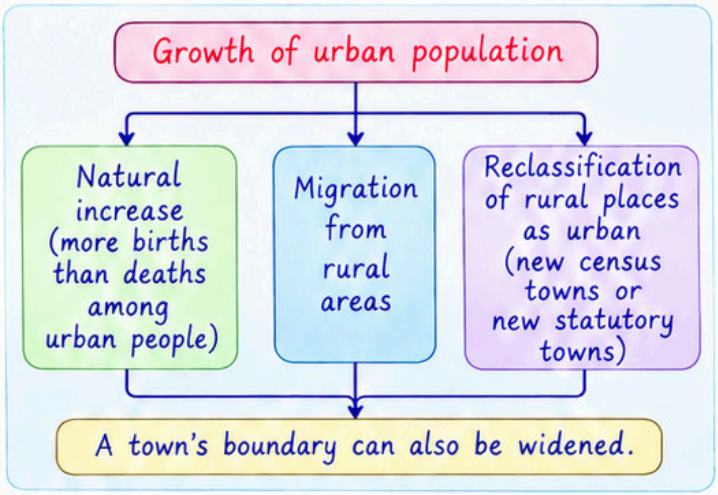
- Cities change their functions over time. Specialised cities can grow into multifunctional metropolises, which cannot be placed neatly in a single class.
- One town can occur in more than one functional class. Varanasi is both educational and religious; Andhra Pradesh examples include Tirupati as religious/cultural and Visakhapatnam as a port.

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Why urban populations grow

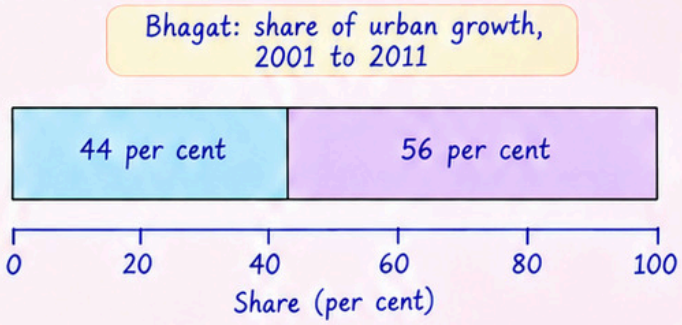
Causes of urban growth and their shares

Urban population grows in three main ways: natural increase (more births than deaths among urban people), migration from rural areas, and reclassification of rural places as urban (new census towns or new statutory towns). A town's boundary can also be widened.



Bhagat estimate (2011), for 2001 to 2011:

- Natural increase gave 44 per cent of the urban growth; net rural-urban classification and rural-to-urban migration together gave 56 per cent.
- In 1991 to 2001 those two together gave 42 per cent.
- The share of natural increase was highest in 1981 to 1991, at 62 per cent.
- He notes that the 2011 data cannot separate reclassification from migration.



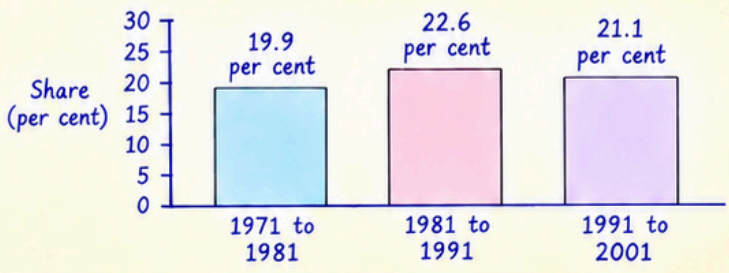
Pradhan estimate (2013), for 2001 to 2011:

- Natural increase 44 per cent (Bhagat's figure); new census towns 29.5 per cent; rural areas made statutory towns about 2.3 per cent; boundary expansion 2 per cent (an assumption); migration, the residual, about 22.2 per cent.
- So reclassification gave more than migration.

Natural increase	44%
New census towns	29.5%
Rural areas made statutory towns	about 2.3%
Boundary expansion	2% (assumption)
Migration (residual)	about 22.2%

Pradhan: migration's share

Pradhan also finds that migration's share changed little: 19.9, 22.6 and 21.1 per cent in 1971 to 1981, 1981 to 1991 and 1991 to 2001.



Urban projections are not counts

Projections

These are estimates, not counts; each belongs to its report and date.

2019

Historical 2019 projection

National Commission on Population, Report of the Technical Group on Population Projections (November 2019):

"The urban population in the country, which is 31.8 percent in 2011, is expected to increase to 38.6 percent by 2036."

Urban growth is to account for 73 per cent of the total increase in population by 2036 (22.4 crore of 30.7 crore).

Note that this report's own 2011 base is 31.8 per cent, not the Census's 31.16.



2018

UN DESA, World Urbanization Prospects 2018 (release of 16 May 2018):

by 2050 India is projected to have added 416 million urban dwellers (China 255 million, Nigeria 189 million).

The three together are to account for 35 per cent of the growth of the world's urban population between 2018 and 2050.

The world's urban share was 55 per cent in 2018 and is projected at 68 per cent in 2050.

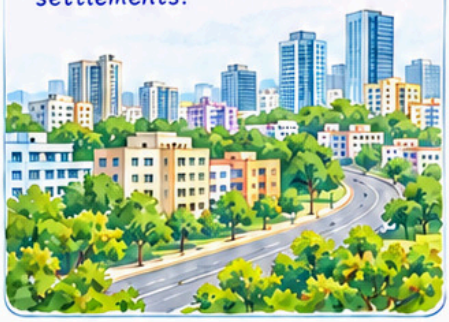


2025

UN, World Urbanization Prospects 2025 (released on 18 November 2025):

India is one of seven countries (with Nigeria, Pakistan, the Democratic Republic of the Congo, Egypt, Bangladesh and Ethiopia) that together are expected to add more than 500 million CITY RESIDENTS between 2025 and 2050.

Cities are a distinct category in the 2025 classification; do not equate this with all urban settlements.



The next count of India's urban population will come from Census 2027.

ANDHRA PRADESH:

2011 urban share 33.49% for the undivided State (provisional); 29.47% recast for the present State.

Different territory, different denominator.



How Indian towns evolved

Towns existed in the Indus civilisation, including Harappa and Mohenjodaro, Their later evolution can be grouped into ancient, medieval and modern periods.

Period	How the towns grew	Examples
Ancient 	A history of over 2,000 years; most grew as religious and cultural centres	Varanasi, Prayag (Allahabad), Pataliputra (Patna), Madurai
Medieval 	About 100 present towns began here; most grew as headquarters of principalities and kingdoms, as fort towns, often on the ruins of ancient towns	Delhi, Hyderabad, Jaipur, Lucknow, Agra, Nagpur
Modern: European trading ports 	The Europeans first set up trading ports on the coast	Surat, Daman, Goa, Pondicherry
Modern: British centres 	The British consolidated around three main centres, built in British style, and added hill towns as summer resorts	Mumbai (Bombay), Chennai (Madras), Kolkata (Calcutta)
Modern: industrial towns after 1850 	Modern industry created new towns	Jamshedpur
After Independence: administrative headquarters 	New capitals and administrative centres	Chandigarh, Bhubaneswar, Gandhinagar, Dispur
After Independence: industrial centres 	Towns built around new industry	Durgapur, Bhilai, Sindri, Barauni
After Independence: satellite towns 	Towns that grew around metropolises	Ghaziabad, Rohtak, Gurgaon

What the chronology shows:

1. Gurgaon is now named Gurugram.
2. Hyderabad is a medieval example in the Telugu-speaking region. Many ancient towns developed as religious and cultural centres.
3. One town can carry two labels from two schemes: Varanasi is an ancient town by origin and a religious and educational town by function; Jaipur is a medieval town by origin and an administrative town by function.

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Test your understanding

MCQs

Q1. Consider the following statements about the trend of urbanisation and the classes of towns in India:

1. According to the Census of India, a Class IV town has a population of 20,000 to 49,999.
2. India's urban share rose by more percentage points between 2001 and 2011 than between 1991 and 2001.
3. India's urban share in 1911 was higher than in 1901.
4. the number of towns counted in the Census of 1961 was smaller than the number counted in 1951.

Which of the statements given above is/are correct?

- (1) 1 and 2 only
- (2) 2 and 4 only
- (3) 1 and 3 only
- (4) 3 and 4 only

Q2. Consider the following statements about towns and urban growth in India:

1. According to the Census figures, Delhi overtook Kolkata in population as an urban agglomeration between 2001 and 2011.
2. Dhulia and Katni are examples of mining towns.
3. By R B Bhagat's estimate, natural increase contributed more than half of India's urban growth between 2001 and 2011.
4. Madurai is one of the Indian towns that began in the medieval period.

Which of the statements given above is/are correct?

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

Question 1: worked explanation

Answer key and explanations

Q1. Answer: (2) 2 and 4 only

Statement 1 is wrong:	in the Census classes, 20,000 to 49,999 is Class III. Class IV is 10,000 to 19,999.
Statement 2 is correct:	27.81 to 31.16 is a 3.35 percentage-point rise in 2001–2011; 25.71 to 27.81 is a 2.10-point rise in 1991–2001. Minor second-decimal variations do not reverse the comparison.
Statement 3 is wrong:	the urban share fell from 10.84 per cent in 1901 to 10.29 per cent in 1911.
Statement 4 is correct:	The historical table counts 2,843 towns in 1951 and 2,365 in 1961, even though the urban share rose from 17.29 to 17.97 per cent.

Why the other options are wrong:

(1) has statement 1, which is wrong, and leaves out statement 4.
(3) has statements 1 and 3, both wrong.
(4) has statement 3, which is wrong, and leaves out statement 2.

Question 2: worked explanation

Q2. Answer: (3) 1 only

Statement 1 is correct:

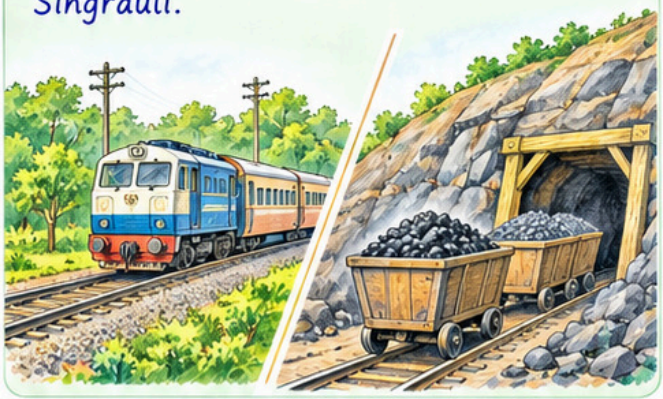
in 2001 Kolkata (13.22 million) was larger than Delhi (12.79 million). In the final Census figures of 2011 the Delhi UA had 16,349,831 people and the Kolkata UA 14,057,991, so Delhi had moved to second place, behind Greater Mumbai.



Delhi | Kolkata

Statement 2 is wrong:

Dhulia and Katni are hubs of inland transport, with Agra, Mughal Sarai and Itarsi. Its mining towns are Raniganj, Jharia, Digboi, Ankaleshwar and Singrauli.



Statement 3 is wrong:

Bhagat estimates that natural increase gave 44 per cent of urban growth in 2001 to 2011, less than half. The other 56 per cent came from reclassification and migration together.



44 per cent from natural increase

56 per cent from reclassification and migration

Statement 4 is wrong:

Madurai belongs among the ancient towns, those with a history of over 2,000 years, with Varanasi, Prayag (Allahabad) and Pataliputra (Patna). The towns that began in the medieval period include Delhi, Hyderabad, Jaipur, Lucknow, Agra and Nagpur.

Ancient towns



Medieval towns



Why the other options are wrong:

(1) has statement 2, which is wrong. (2) has statements 3 and 4, both wrong, and leaves out statement 1. (4) has statements 2, 3 and 4, all wrong, and leaves out statement 1.

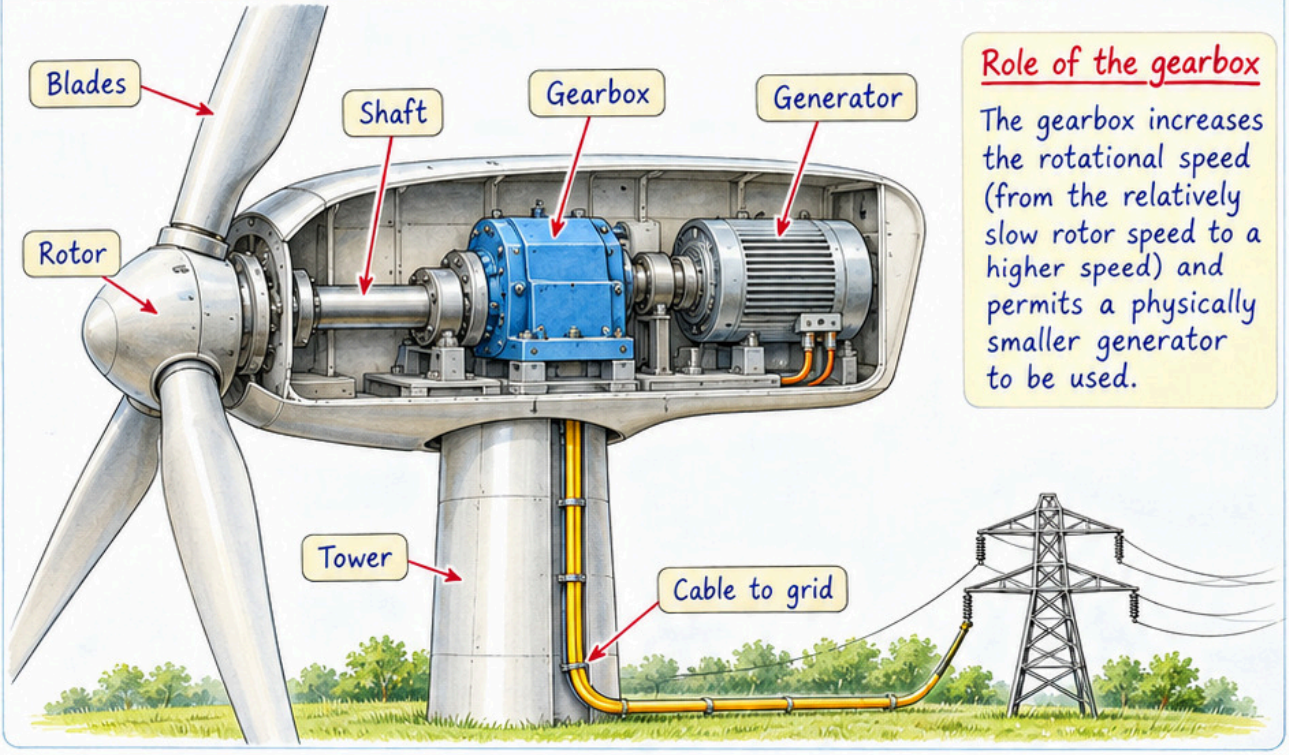
Wind energy: from moving air to electricity

Wind energy is electricity made from the kinetic energy of moving air. Turbines operate on land (onshore) or at sea (offshore). Wind is renewable and produces no direct combustion emissions during generation. Local winds and land-sea breezes can also be used.

From wind to grid: the four steps

1. Moving air carries kinetic energy.
2. Aerodynamic force turns blades and rotor.
3. Rotor drives generator directly or through a gearbox.
4. Generator produces electricity for the grid.

Wind turbine (horizontal-axis) – cutaway view and working

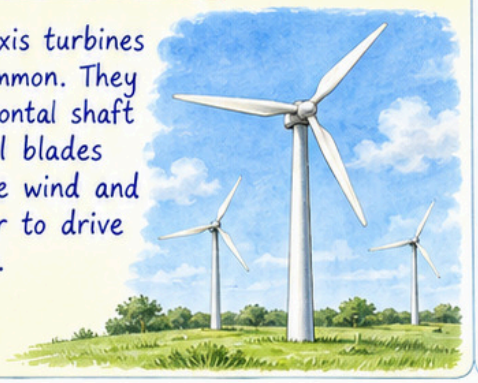


Role of the gearbox

The gearbox increases the rotational speed (from the relatively slow rotor speed to a higher speed) and permits a physically smaller generator to be used.

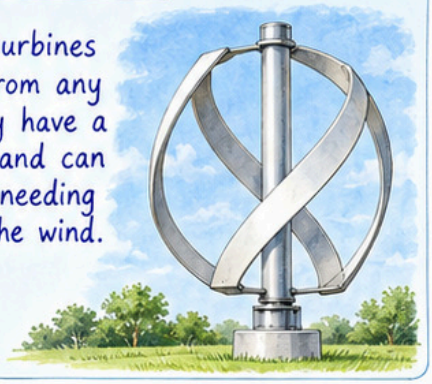
Horizontal-axis turbines

Horizontal-axis turbines are most common. They have a horizontal shaft with aerofoil blades that capture wind and turn a rotor to drive a generator.



Vertical-axis turbines

Vertical-axis turbines accept wind from any direction. They have a vertical shaft and can turn without needing to face into the wind.



Wind speed, power and variability

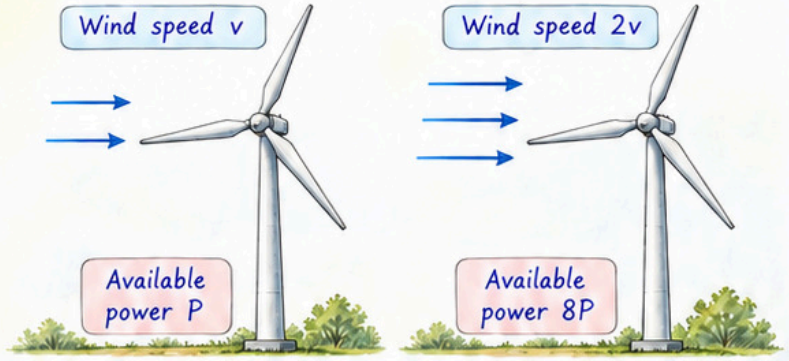
The kinetic energy in moving air (wind) gives rise to available wind power. The available wind power in a flow is proportional to the cube of the wind speed:

Available wind power $\propto$ wind speed^3

Key implication

- Doubling the wind speed gives eight times the available wind power, not four.
- This is about the available wind power in the wind, not the actual turbine output (which is lower and follows the turbine's power curve).

Wind speed and available power



Worked formula

Available power $\propto v^3$

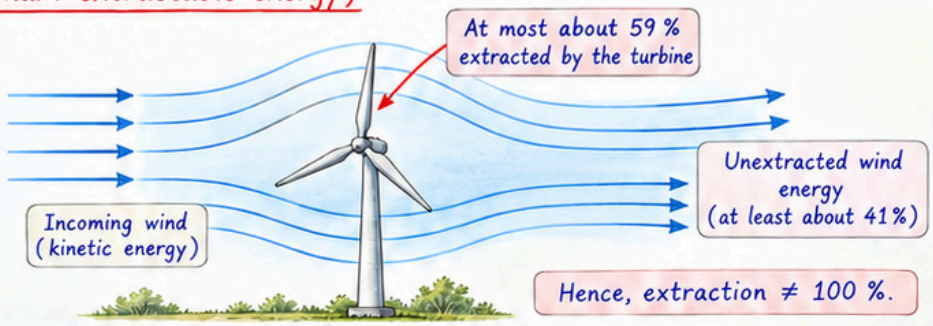
- If the wind speed doubles (from v to 2v), the ratio of available power is

$$\frac{(2v)^3}{v^3} = 8$$

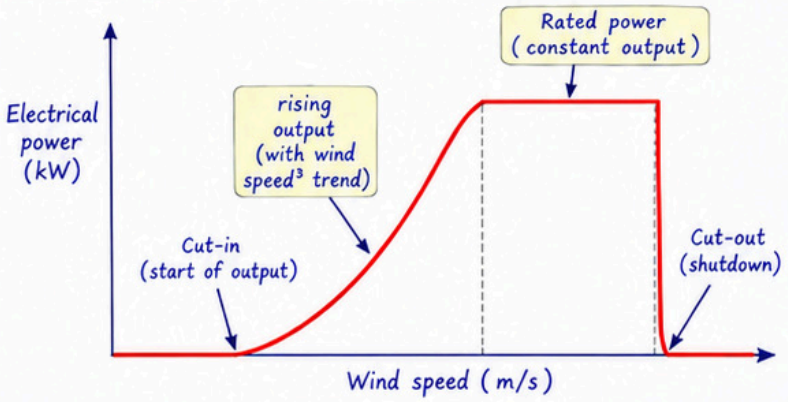
- Hence, doubling the wind speed gives eight times the available wind power.

The Betz limit (maximum extractable energy)

- At most about 59 % of the wind kinetic energy can be extracted by a wind turbine (Betz limit).
- At least about 41 % is not extracted as useful rotor power.



Turbine power curve (actual output)



What this means

- The actual turbine output follows the turbine's power curve and its operational limits (cut-in, rated power and cut-out).
- Therefore, the eightfold increase in available wind power is not a universal eightfold increase in electricity output.
- At low wind speeds (below cut-in), the turbine produces no electricity, so other sources, storage (e.g. batteries) or grid support are needed.

In short Available wind power follows v^3; turbine output follows its power curve.

Onshore and offshore: wind, cost and scale

ONSHORE

- Located on land.
- Favourable wind conditions occur in Rajasthan, Gujarat, Maharashtra and Karnataka.
- Turbines range from 100 kW to several MW.
- Road access supports transport and maintenance.



OFFSHORE

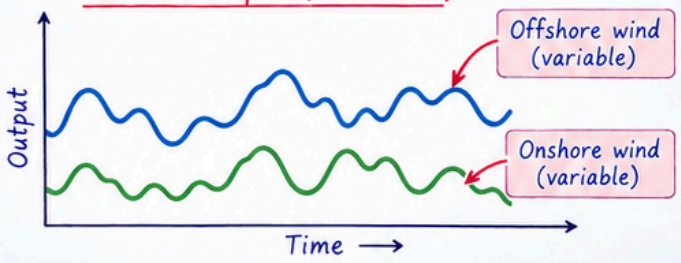
- Located at sea.
- Winds are generally stronger and more frequent.
- Very large turbines are possible; some exceed the height of the Statue of Liberty.
- Higher construction and maintenance costs.



Comparative adequacy and reliability

Offshore wind can offer higher adequacy and reliability, and lower storage requirements, than onshore wind and solar; this does NOT mean constant output.

Variable output (illustrative)



Dated tariff (auction results)

- Onshore auction examples:
  - ₹2.43/kWh — December 2017;
  - ₹3.17/kWh — May 2023.

These are dated auction results, not universal tariffs.

Mechanism to support offshore wind

Higher offshore construction cost → Viability gap funding (VGF) → Lower cost of offshore power → Purchase by DISCOMs

Moving turbines and connecting power

ONSHORE LOGISTICS:

- Turbine components move by road.
- Dedicated transmission lines, including Green Energy Corridors, carry power to the grid.



OFFSHORE LOGISTICS:

- Large components move by ships.
- Ports support assembly, installation and servicing.



From offshore turbines to the onshore grid: transmission chain

Wind turbines → Collection network → Offshore substation → Export cable → Onshore grid



HVDC = high-voltage direct current.
AC = alternating current.

- Nearby offshore projects: AC transmission may be used.
- Farther offshore projects: HVDC may be preferred.

Offshore substations and transmission infrastructure are planned through PGCIL.

INSTALLED ONSHORE:

- India's installed wind capacity reached 59.20 GW on 30 September 2026.



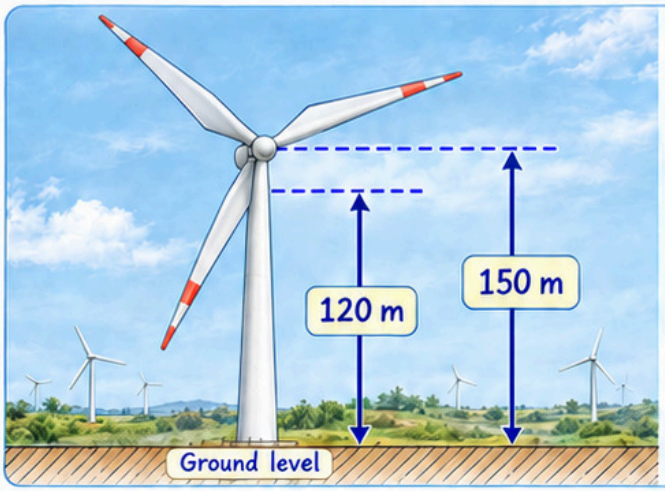
PLANNED OFFSHORE VGF PROJECTS:

- 1 GW = 500 MW in Gujarat + 500 MW in Tamil Nadu.
- These are planned projects, not operational offshore capacity.
- Offshore leasing areas and port readiness enable development.

Unit reminder: 1 GW = 1,000 MW.



India's wind energy: potential versus installed capacity



Gross potential: **695.5 GW** at 120 m; **1163.9 GW** at 150 m (June 2026 estimates).

The 150 m estimate is also expressed as 11,63,856 MW; rounding explains the GW figure.

Potential is an assessed resource, NOT installed turbines.

Measured installed capacity

The actual, measured wind capacity that has been commissioned and is supplying power to the grid.

21.04 GW — March 2014
56.09 GW — March 2026
59.20 GW — 30 September 2026

- FY2025–26: record addition of 6.05 GW.
- India ranked fourth globally in installed wind capacity.

Future targets

Planned total installed capacity for specified future years.

Target: 100 GW by 2030
Target: 156 GW by 2036

Targets are not achieved capacity.

Project pipeline (under implementation)

Capacity from wind projects that are under implementation (construction, erection or other advanced stages).



28 GW under implementation (June 2026).

This is separate from installed capacity and is not added automatically.

Worked example: capacity gap

Gap from 30 September 2026 installed capacity to 2030 target:

100 – 59.20 = 40.80 GW

Term	Meaning
Resource potential	Possible resource assessed at a specified hubheight.
Installed capacity	Commissioned rated power.
Pipeline	Projects still being implemented.
Target	Future ambition.

Unit:

1 GW = 1000 MW

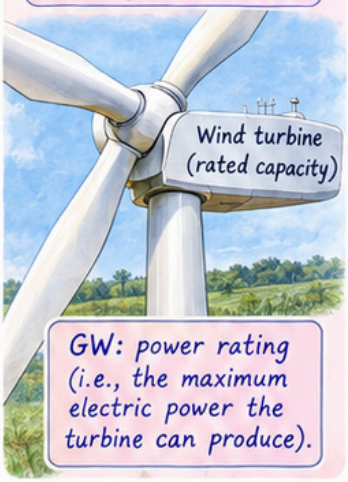


Capacity, generation and the wind ecosystem

1. CAPACITY IS NOT GENERATION.

- At 31 March 2026, wind capacity is **56.1 GW** (rounded; precise 56.09 GW).
- Share of installed power capacity: **10.5%.**
- Share of electricity generated in FY2025-26: **5.8%.**

Capacity (power rating)



GW: power rating (i.e., the maximum electric power the turbine can produce).

Generation (electricity)



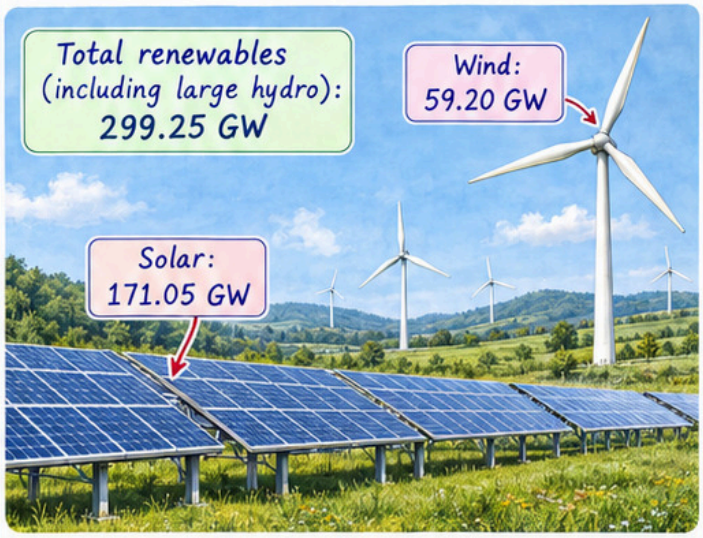
Generation: electricity produced over time (measured in kWh, MWh or GWh).

- Denominators are different: 10.5% uses total installed power capacity, whereas 5.8% uses total electricity generated.
- Do not compare the two percentages together.

2. RENEWABLE MIX, 30 SEPTEMBER 2026:

- Total renewables (including large hydro): **299.25 GW.**
- Solar: **171.05 GW.**
- Wind: **59.20 GW.**

(Solar and wind are components within the total renewables, not separate totals.)

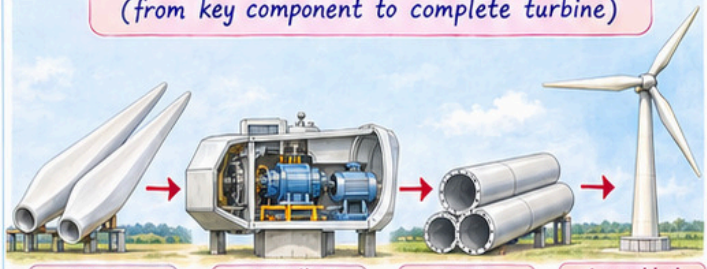


- About 45% of wind generation occurred during peak-demand hours (June 2026 reporting).

3. MANUFACTURING:

- Annual manufacturing capacity: **10 GW** in 2014 → **24 GW** in March 2026.
- 70–80% of key components are manufactured domestically.

Wind turbine manufacturing supply chain (from key component to complete turbine)



Blade (aerodynamic rotor blade that captures wind energy)

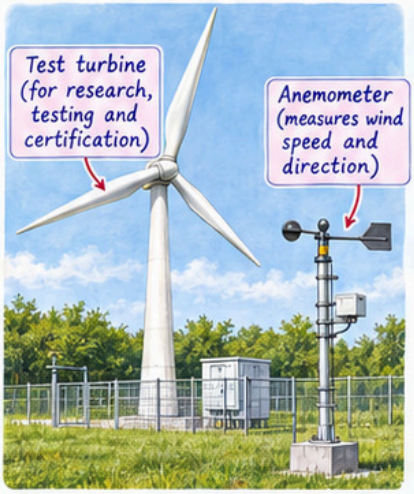
Nacelle / Generator (housing that contains the generator and key drive systems)

Tower (structural support that holds the nacelle and rotor at height)

Assembled wind turbine (complete unit ready for installation and operation)

4. NIWE:

- NIWE: National Institute of Wind Energy.
- Under the Ministry of New and Renewable Energy (MNRE).



Functions of NIWE

- Wind resource assessment.
- Research.
- Standards.
- Testing and certification.
- Skills (capacity building and training).
- Offshore nodal role and block demarcation.

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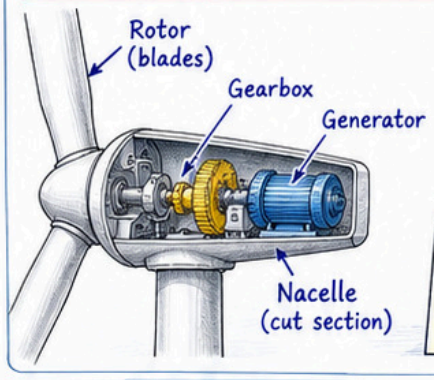
States: installed wind capacity versus potential

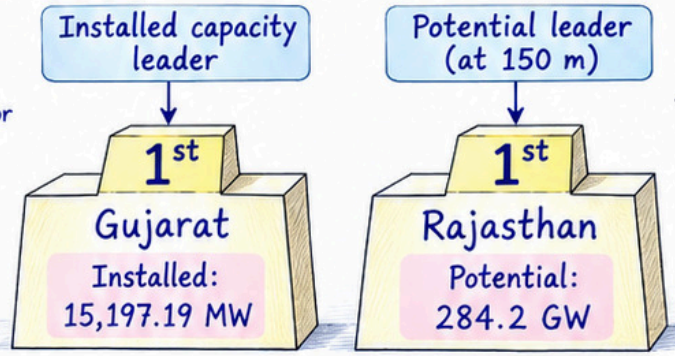
The table compares states by their installed wind capacity (MW) as on 28 February 2026 and their wind energy potential (GW) at 150 m as assessed in June 2026.

State	Installed MW (28 February 2026)	Installed rank	Potential GW at 150 m (June 2026)
Gujarat	15,197.19	1	180.8
Tamil Nadu	12,102.76	2	95.1
Karnataka	8,500.54	3	169.3
Maharashtra	5,873.01	4	173.9
Rajasthan	5,229.15	5	284.2
Andhra Pradesh	4,415.78	6	123.3
Madhya Pradesh	3,610.15	7	55.4

- India's installed total on 28 February 2026: **55,132.50 MW.**.
- Telangana: assessed potential **54.7 GW** at 150 m; no installed figure is shown here.

Leaders (by different measures)







Exam distinctions



Rajasthan: **first** in 150 m potential, **fifth** in installed capacity in this dated table.



Tamil Nadu: **second** in installed capacity, **sixth** among the eight listed states in potential.



Andhra Pradesh: **sixth** in installed capacity; potential **123.3 GW.**.

Explanation

Potential depends on assessed wind resources and hub height. Installed capacity also reflects investment, land, transmission and project implementation. A high potential rank need not imply a high installed rank.

Wind policy: offshore, repowering and hybrid

What is it?

A set of national policies and guidelines for wind energy that cover offshore development, repowering of ageing wind projects, life extension of existing projects and wind-solar (hybrid) projects.

Key terms

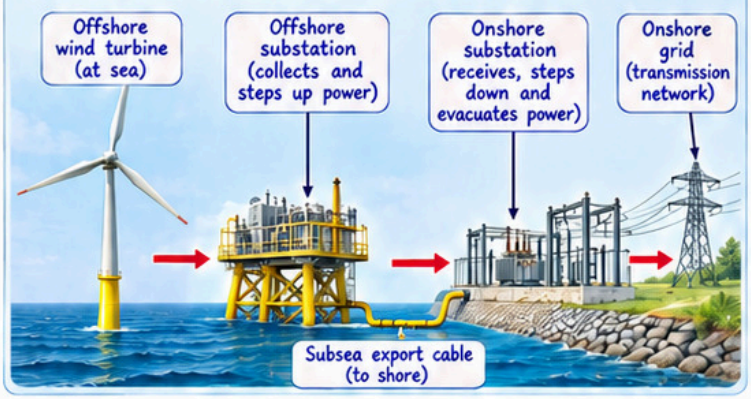
- **Offshore wind:** wind power projects at sea, here in India's Exclusive Economic Zone (EEZ).
- **Repowering:** replacing older, lower-capacity turbines with new, more efficient and larger turbines at suitable sites.
- **Life extension:** continued operation of existing wind projects beyond their original design life, after assessment and refurbishment, subject to safety and technical suitability.
- **Hybrid (wind-solar):** a project that combines wind and solar power using shared infrastructure to improve resource use; it does not guarantee constant power.

Chronological policy spine (key events)

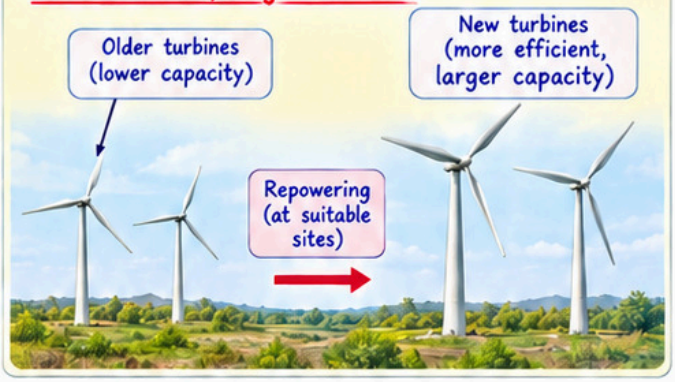
2015	National Offshore Wind Energy Policy: offshore development in India's Exclusive Economic Zone; NIWE's nodal role.
5 August 2016	Original wind repowering policy.
December 2017	Competitive bidding guidelines for wind power procurement.
14 May 2018	National Wind-Solar Hybrid Policy; first amendment 13 August 2018.
6 December 2023	National Repowering and Life Extension Policy for Wind Power Projects revises the 2016 framework; includes refurbishment beyond design life.
19 June 2024	Offshore wind VGF scheme approved.

2023 was NOT the first repowering policy; it revised 2016.

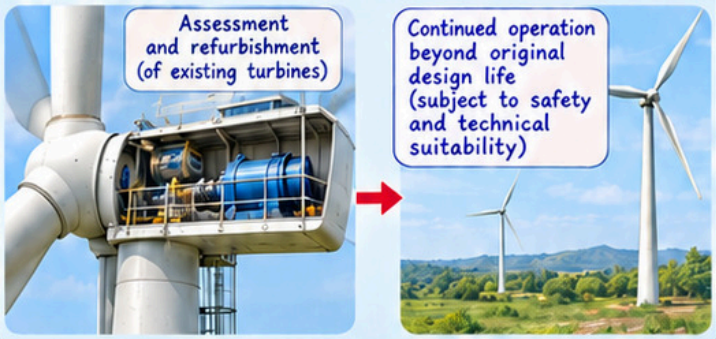
OFFSHORE: from sea turbine to onshore grid



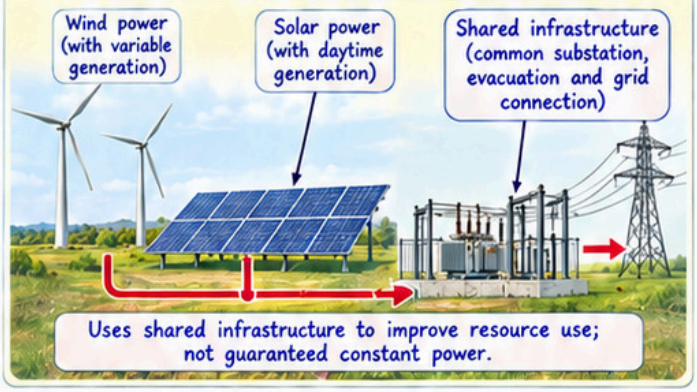
REPOWERING: replace older turbines with more efficient, larger turbines



LIFE EXTENSION: continue operation beyond design life



HYBRID: wind + solar with shared infrastructure



15 June 2026: Global Wind Day event in Goa.

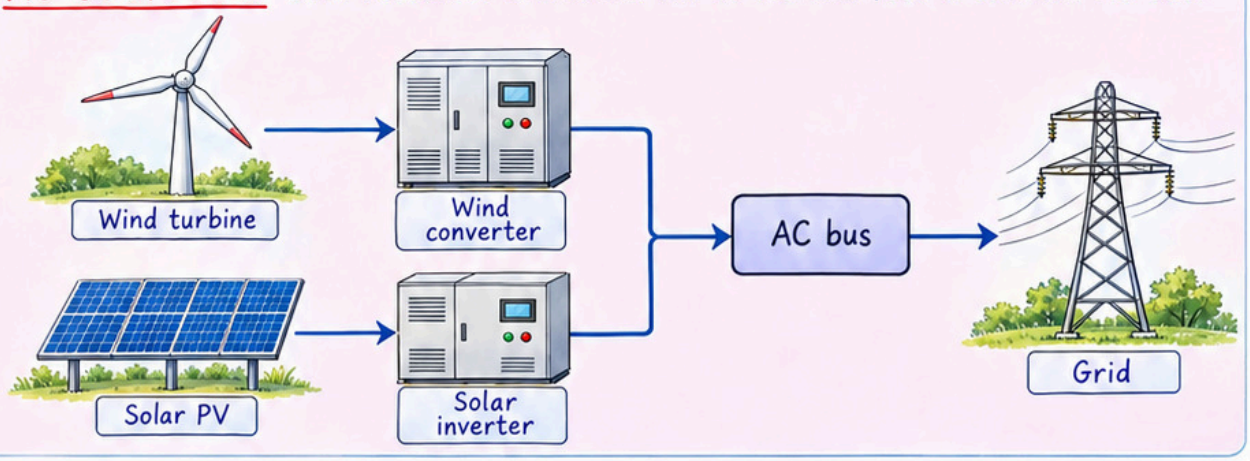
Wind–solar hybrid: the rule and the wiring

- A hybrid project combines wind and solar using shared infrastructure.
- Rated capacity of one resource must be at least 25% of the other resource's rated capacity, NOT 25% of total project capacity.

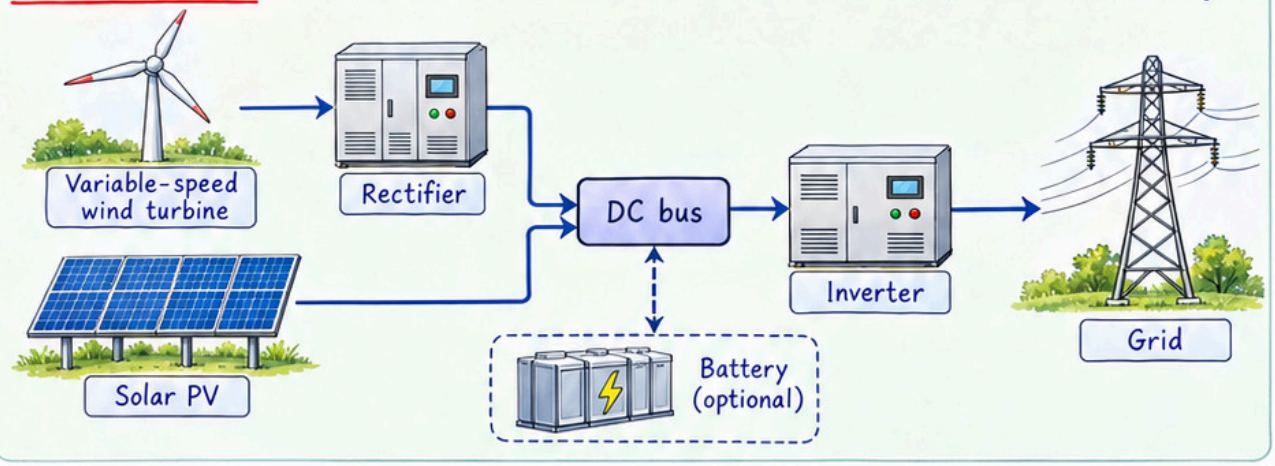
Worked example:

- 100 MW wind + 25 MW solar qualifies because $\frac{25}{100} \times 100 = 25\%$.
- Total = 125 MW; solar share of total = 20%, yet rule met.

AC COUPLING: Both resources are converted to AC and feed a common AC bus.



DC COUPLING: Both resources feed a common DC bus, which is then inverted to AC for the grid.



Rectifier: Converts AC (alternating current) to DC (direct current).

Inverter: Converts DC (direct current) to AC (alternating current).

- Wind and solar may complement each other across time.
- Shared transmission and infrastructure improve resource use.
- Batteries are optional; they can smooth variability and support delivery.
- Hybrid does not guarantee constant output.

Offshore wind VGF: what is funded?

Approved 19 June 2024

Total ₹7,453 crore

- ₹6,853 crore for offshore wind projects
  - Project capacity: 1 GW
    - 500 MW (Gujarat)
    - 500 MW (Tamil Nadu)
- ₹600 crore for upgrading two ports







Scheme: actual allocation (what is funded)

- A total scheme budget of ₹7,453 crore, approved on 19 June 2024.
- ₹6,853 crore is for offshore wind projects with a total capacity of 1 GW (500 MW in Gujarat + 500 MW in Tamil Nadu).
- ₹600 crore is for upgrading two ports.

Expected future outcomes (not actuals)

- Outcomes such as electricity generation, emissions reduction and larger ecosystem development are expected from the scheme.
- These are forward-looking estimates based on planned projects and are not measured achievements at the time of approval.

Expected benefits, not measured achievements

1 GW projects are expected to produce 3.72 billion units of electricity annually and reduce 2.98 million tonnes of CO_2-equivalent emissions annually for 25 years.

Building the offshore wind ecosystem (larger, longer-term intent)

The scheme is intended to help build an ecosystem for an initial 37 GW of offshore development, with estimated investment of ₹4,50,000 crore. This is **NOT** the 1 GW funded-project capacity or the ₹7,453 crore scheme budget.

Targets and bidding trajectory (timeline)

2018 offshore target:
30 GW by 2030.

2024 review:
bidding trajectory for 37 GW by 2030.

- The target (30 GW) and the bidding trajectory (37 GW) are DIFFERENT.
- Both are policy planning figures and are NOT operational capacities.

Quick distinction: key numbers at a glance

Funded projects	Scheme budget	Ecosystem scale	Estimated ecosystem investment
1 GW	₹7,453 crore	37 GW	₹4,50,000 crore

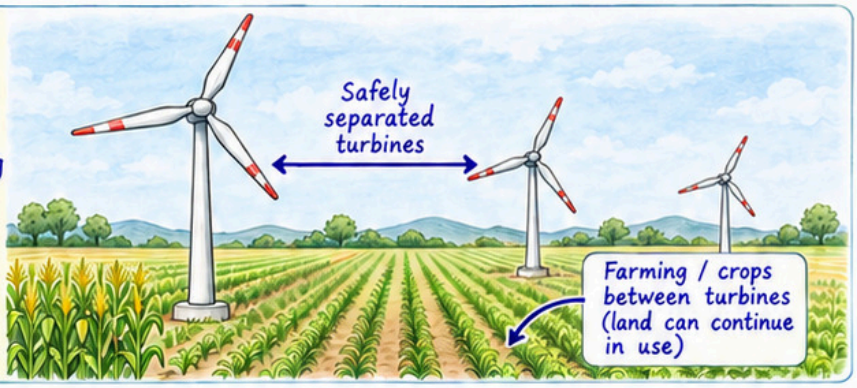
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Wind energy: barriers and policy responses

1. LAND

Problem:
Siting and land access still need management.

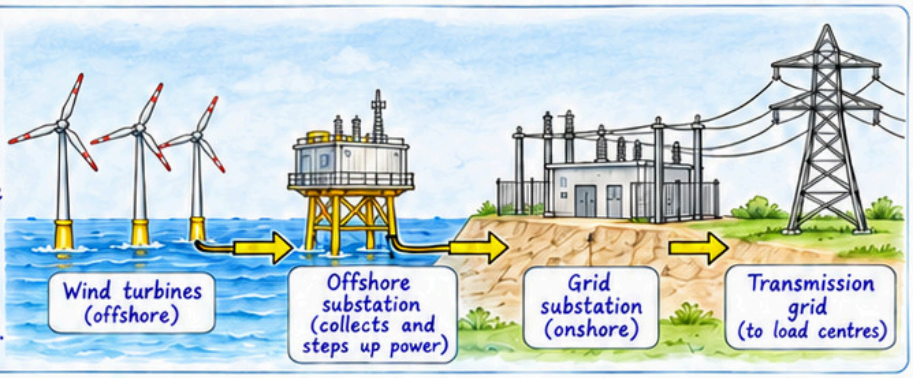
Response:
Windfarm land can often continue farming or grazing between turbines, with appropriate siting and land access management.



2. GRID

Problem:
Dedicated transmission and offshore substations are needed to evacuate power.

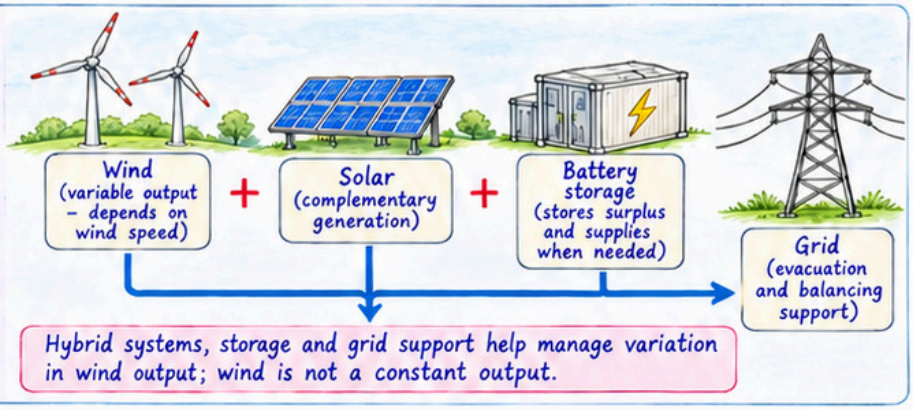
Response:
Develop transmission infrastructure, including offshore substations (where needed), to collect wind power and move it to the grid.



3. VARIABILITY

Problem:
Wind output changes with wind speed; it is not a constant output.

Response:
Use hybrid systems, storage and grid support to manage variation in wind output and supply more reliable power.



Policy support for wind energy

- **January 2026 taskforce:** A taskforce constituted in January 2026 to address wind energy issues and accelerate deployment.
- **₹500 crore generation-based incentive (GBI):** A provision of ₹500 crore for the generation-based incentive (GBI) for FY 2025–26.
- **500 MW Contract for Difference (CfD) pilot:** A 500 MW CfD pilot to improve price / revenue certainty for wind energy.

  CfD aims to reduce price uncertainty; it does not make wind output constant.
- **Wind renewable purchase obligation (RPO):** A wind RPO to create assured demand for wind power.
- **Green Energy Open Access:** Green Energy Open Access to enable greater offtake and use of wind power by consumers.
- **Approved List of Models and Manufacturers (ALMM):** An ALMM for wind to promote quality, reliability and a credible supply chain.

Dated tariff reminder

- **₹2.43** / kWh – December 2017.
- **₹3.17** / kWh – May 2023.

Exam traps (key contrasts)

1. Resource potential ≠ installed capacity.
2. Scheme budget ≠ single project allocation.
3. 37 GW ecosystem ambition ≠ 1 GW VGF-funded projects.

Practice: wind energy in India

Q1. Consider the following statements about wind energy in India:

1. Under the National Wind-Solar Hybrid Policy, 2018, a plant is recognised as a hybrid plant if the rated power capacity of one resource is at least 25 per cent of the rated power capacity of the other.

2. In the State-wise estimates for Global Wind Day 2026, Rajasthan has the largest estimated wind power potential at 150 metres above ground level.

3. The Viability Gap Funding scheme approved by the Union Cabinet on 19 June 2024 is for 1 GW of offshore wind projects, 500 MW each off the coasts of Gujarat and Tamil Nadu.

4. In MNRE's State-wise figures for 28 February 2026, Tamil Nadu had a larger installed wind capacity than Gujarat.

Which of the statements given above is/are correct?

(1) 1, 2 and 3 only

(2) 2 only

(3) 1, 3 and 4 only

(4) 2, 3 and 4 only



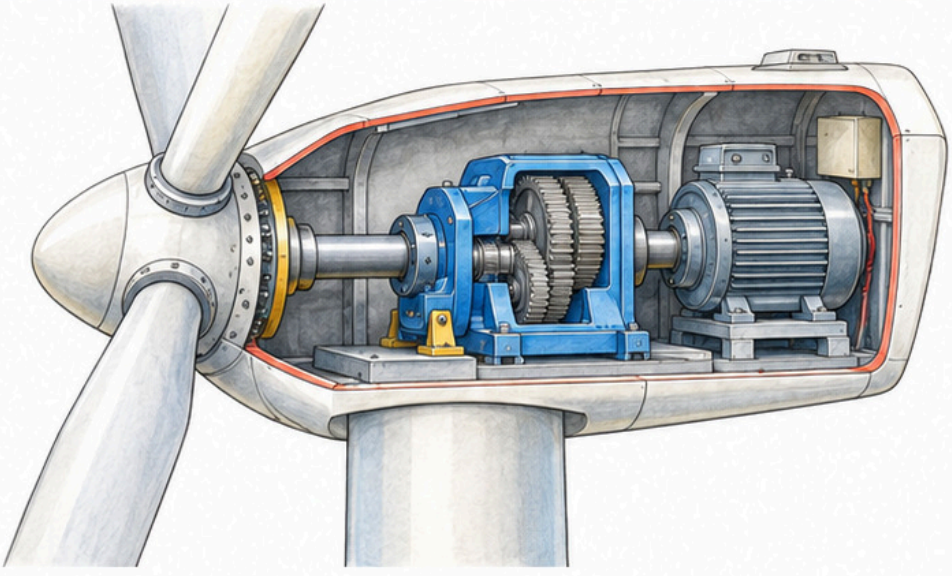
Practice: turbines and policy

Q2. Consider the following statements about wind turbines and wind policy:

1. If the wind speed doubles, the power available in the wind roughly quadruples.
2. Under Betz's law, a wind turbine can extract up to about 80 per cent of the kinetic energy of the wind.
3. In a wind turbine, a gearbox can be used to speed up the rotation coming from the rotor, which allows a physically smaller generator.
4. The National Repowering and Life Extension Policy for Wind Power Projects of December 2023 was the first policy issued in India for repowering wind power projects.

Which of the statements given above is/are correct?

(1) 1 and 2 only
(2) 1 and 4 only
(3) 2, 3 and 4 only
(4) 3 only



Q1: answer and complete reasoning

Answer: (1) 1, 2 and 3 only.

1. Statement 1 – CORRECT

The 2018 Hybrid Policy recognises a wind–solar hybrid if the rated power capacity of one resource is at least 25% of the other. The condition is a relative capacity requirement between the two resources, not a share of the total project capacity.

Example (ratio, not share of total):

If solar capacity = 25 MW and wind capacity = 100 MW, then

25 MW ÷ 100 MW × 100 = 25%.

Hence, the hybrid qualifies under the policy, as one resource is at least 25% of the other.

2. Statement 2 – CORRECT

The June 2026 estimates at 150 m place Rajasthan first among the eight listed states with 284.2 GW. It is ahead of Gujarat (180.8 GW), Maharashtra (173.9 GW) and Karnataka (169.3 GW). Thus, the statement that Rajasthan leads is correct.

Ranked comparison (June 2026, at 150 m):

Rank	State	Estimated potential (GW)
1.	Rajasthan	284.2
2.	Gujarat	180.8
3.	Maharashtra	173.9
4.	Karnataka	169.3

3. Statement 3 – CORRECT

The Cabinet approved ₹6,853 crore for 1 GW of offshore projects, with 500 MW each off Gujarat and Tamil Nadu. This approval is within the total scheme outlay of ₹7,453 crore.

Allocation (within total scheme):

₹6,853 crore (for 1 GW) → 500 MW off Gujarat
₹6,853 crore (for 1 GW) → 500 MW off Tamil Nadu

Total scheme outlay: ₹7,453 crore

4. Statement 4 – WRONG

On 28 February 2026, Gujarat had 15,197.19 MW and Tamil Nadu had 12,102.76 MW. Gujarat was first in installed capacity, and Tamil Nadu was second. Hence, any statement placing Tamil Nadu ahead of Gujarat is incorrect.

Comparison (28 February 2026):

Rank	State	Installed capacity (MW)
1.	Gujarat	15,197.19
2.	Tamil Nadu	12,102.76

Option elimination:

Option	Analysis
(2)	Leaves out correct statements 1 and 3.
(3)	Includes wrong statement 4 and leaves out correct statement 2.
(4)	Includes wrong statement 4 and leaves out correct statement 1.

Therefore, only option (1) includes all correct statements and excludes wrong statement.

Q2: answer and complete reasoning

Answer: (4) 3 only.

Statement 1 : WRONG

- Power available in wind is proportional to the cube of wind speed.
- Doubling wind speed gives eight times, not four times, the available power.
- Formula : $P \propto v^3$.

$$\frac{(2v)^3}{v^3} = 8$$

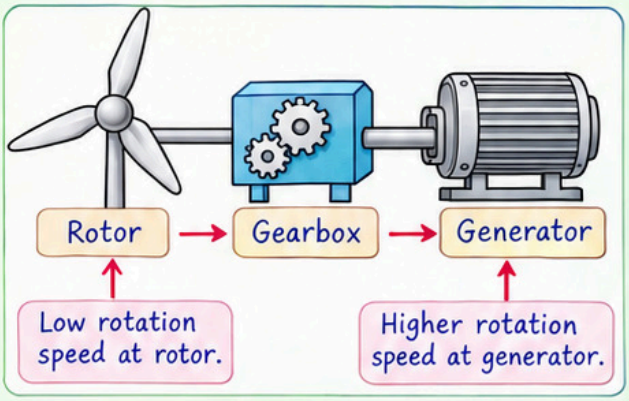
- This is the available wind power, not the universal actual turbine output.

Statement 2 : WRONG

- Betz limit is about 59% of wind kinetic energy, not 80%.
- A turbine cannot extract all wind energy; at most about 59% can be converted to useful mechanical power according to the Betz limit.

Statement 3 : CORRECT

- The rotor connects to a generator directly or through a gearbox.
- The gearbox speeds up rotation and allows a physically smaller generator.



Statement 4 : WRONG

- December 2023 National Repowering and Life Extension Policy revised an earlier Policy for Repowering of Wind Power Projects issued on 5 August 2016.

Timeline

2016 : Original policy (issued on 5 August 2016) → **2023 :** Revision (National Repowering and Life Extension Policy in December 2023)

Option elimination :

- Option (1) contains wrong statement 1 and leaves out correct statement 3.
- Option (2) contains wrong statement 1 and leaves out correct statement 3.
- Option (3) contains wrong statements 2 and 4.
- **Option (4) 3 only is correct.**

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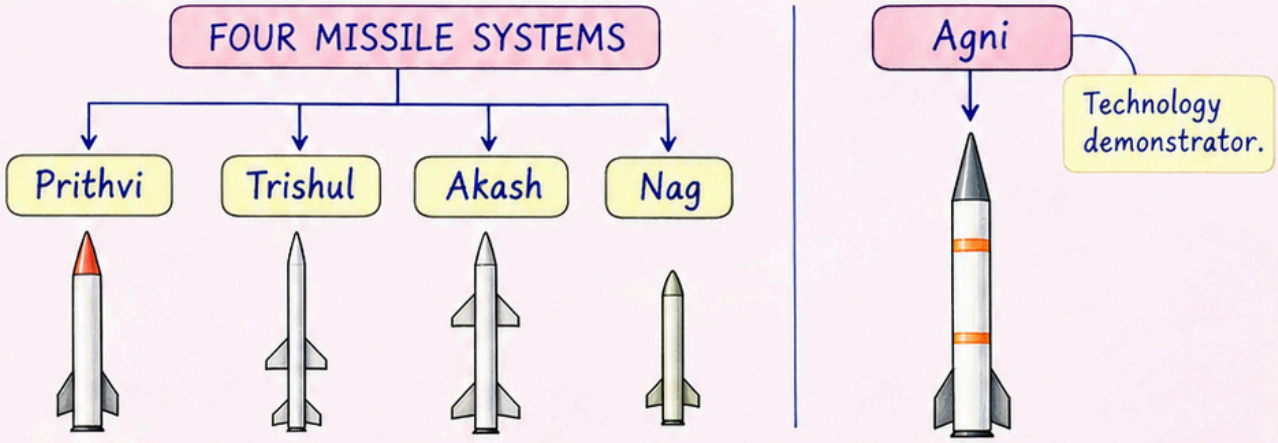
IGMDP: integrated missile development

Integrated Guided Missile Development Programme was DRDO's programme led by A.P.J. Abdul Kalam from Hyderabad.

DRDO

- DRDO: Defence Research and Development Organisation.
- Formed in 1958.
- Around 41 laboratories and 5 DRDO Young Scientist Laboratories (as listed October 2026).
- Head: Secretary, Department of Defence Research and Development, and Chairman, DRDO.
- Missile laboratories in Hyderabad.

Programme family under IGMDP



A.P.J. Abdul Kalam: career two-path timeline

ISRO

- Kalam led team designing/ developing Satellite Launch Vehicle SLV-3.
- On 18 July 1980, SLV-3 placed Rohini satellite in low earth orbit.
- Later Director of ISRO's launch vehicle programme.



DRDO

- Appointed Director of Defence Research and Development Laboratory (DRDL), Hyderabad, in 1982.
- As DRDL Director, chief of IGMDP.



Integrated: multiple missile projects developed together under one programme.

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IGMDP: programme milestones

- Conceived/begun in the early 1980s (1982–83).
- Sanctioned on 26 July 1983.
- Led by A.P.J. Abdul Kalam as Director, DRDL.
- Aim: four missile systems — Prithvi, Akash, Trishul and Nag — plus the Agni technology demonstrator.

Lead labs

- DRDL, Hyderabad (Director headed programme).
- Research Centre Imarat (RCI), Hyderabad (Kalam founder-director).

Integrated programme

- Integrated means all five projects under one programme rather than separate programmes.

Milestones and status (chronological)

2 March 2006 → **Development report:** Prithvi inducted in three versions; Agni in two variants; Akash, Nag and Trishul completed development and ready for user trials.

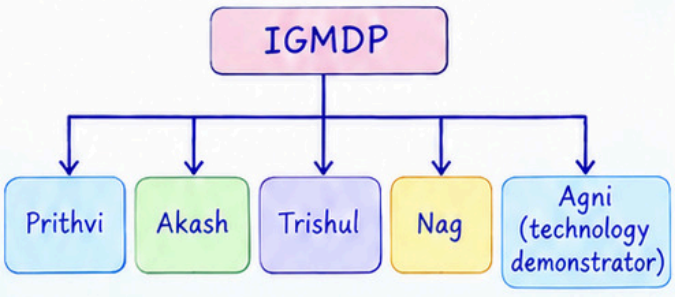
30 June 2006 → **Projected completion:** Programme was projected to be completed by 30 June 2006.

27 February 2008 → **Government position:** The programme was not being abandoned.

March 2012 → **Recorded actual completion:** The programme was recorded as completed in March 2012.



IGMDP: five-branch programme



On 27 February 2008, the government stated that IGMDP was not being abandoned. A government reply on 13 August 2012 recorded completion in March 2012.

Five projects, different roles

Missile	Type	Role	Status in 2012 (historical baseline)
Prithvi 	Short-range surface-to-surface missile	Strikes targets on land from the ground	The Prithvi series has been inducted
Agni 	Long-range surface-to-surface missile, begun as a technology demonstrator for re-entry technology; Agni is described as India's first intermediate-range ballistic missile	Proved the re-entry technology needed for longer-range missiles	The demonstrator was completed successfully; its technology is used in the Agni series
Trishul 	Short-range surface-to-air missile	Quick-reaction defence against low-flying aircraft; it also showed a sea-skimming capability	Closed as a technology demonstrator, because of delay in developing state-of-the-art technology and changed requirements of the armed forces
Akash 	Medium-range surface-to-air missile	Air defence; it can handle several targets at once	Under production and induction
Nag 	Anti-tank guided missile	Destroys tanks; a "fire and forget" missile	Cross-country trials held with a re-configured Nag Missile Carrier (NAMICA)

Technology demonstrators and development paths

IGMDP

SURFACE-TO-SURFACE



Prithvi



Agni

SURFACE-TO-AIR



Trishul (short-range)



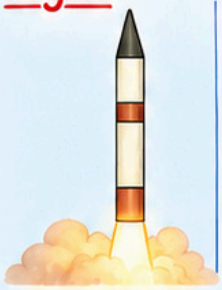
Akash (medium-range)

ANTI-TANK



Nag

Agni



Agni was the programme's technology demonstrator, distinct from the four missile systems. First launched in 1989; it drew on SLV-3 experience. Its purpose was to demonstrate re-entry technology.

History timeline

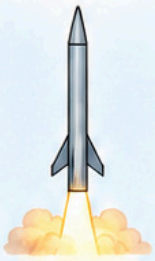
SLV-3 experience → Agni technology demonstrator → Agni series

Prithvi



By 2006, Prithvi had been inducted in three versions.

Trishul



By February 2003, Trishul was being developed as a technology demonstrator, de-linked from user services. It demonstrated sea-skimming capability. Its technologies supported later missile projects. On 27 February 2008, the government stated that Trishul development was completed as a technology demonstrator.

Meaningful contrast

System	Development path (key contrast)
Agni	Technology demonstrator from programme design.
Trishul	Development continued as demonstrator de-linked from users.

A technology demonstrator proves technologies; it need not become a service missile itself.

Hyderabad and the programme legacy

- DRDO's missile cluster lists three laboratories in Hyderabad: DRDL and the Advanced Systems Laboratory (ASL) at Kanchanbagh, and RCI at Vigyanakancha.
- On 15 October 2015, at a ceremony at RCI, the Defence Minister, Manohar Parrikar, declared this missile complex (ASL, DRDL and RCI) the "Dr APJ Abdul Kalam Missile Complex".
- The missiles are designed in Hyderabad and flight-tested on the Odisha coast.

Three laboratories in Hyderabad (DRDO missile cluster)

DRDO missile cluster (Hyderabad)

DRDL	ASL	RCI
		
Defence Research and Development Laboratory	Advanced Systems Laboratory (at Kanchanbagh)	Research Centre Imarat (at Vigyanakancha)

The programme legacy (from Hyderabad)

Prithvi	Agni	Akash	Nag	Trishul
A series of missiles inducted into the armed forces	Its re-entry technology is used in the Agni series	Taken into production and induction; it is in service	Its carrier (NAMICA) and its variants for helicopters	No service missile; its technologies were to help later projects
				

Missile	What it became
Prithvi	A series of missiles inducted into the armed forces
Agni	Its re-entry technology is used in the Agni series
Akash	Taken into production and induction; it is in service
Nag	Its carrier (NAMICA) and its variants for helicopters
Trishul	No service missile; its technologies were to help later projects

- Missiles that came later and outside the IGMDP, such as BrahMos and Nirbhay, are not IGMDP missiles.

Kalam: career milestones

- Kalam became Director General of DRDO in 1992. He was Principal Scientific Adviser to the Government of India from November 1999 to November 2001.
- He received the Padma Bhushan (1981), the Padma Vibhushan (1990) and the Bharat Ratna (1997).
- His missile successes earned him the nickname "Missile Man". He was sworn in as India's 11th President in July 2002 and left office at the end of his term in 2007.

Timeline of offices and awards

Offices (positions held)



Director General of DRDO (1992)



Principal Scientific Adviser to the Government of India (November 1999 – (November 2001)



President of India (11th President) (July 2002 – 2007)

Awards (honours received)



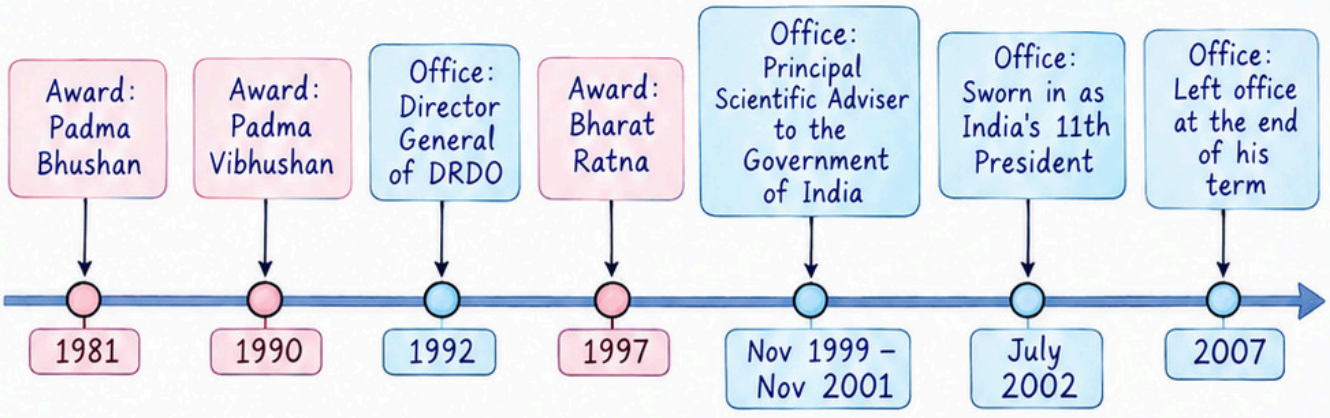
Padma Bhushan (1981)



Padma Vibhushan (1990)



Bharat Ratna (1997)



Legend: = Office / position = Award / honour

IGMDP: chronological revision

18 July 1980	SLV-3 built by team Kalam led places Rohini satellite in low earth orbit.
1982	Kalam appointed Director DRDL, Hyderabad.
1982–83	Programme begins.
26 July 1983	Programme sanctioned.
1989	Agni first launched.
1992	Kalam becomes Director General DRDO.
February 2003	Trishul to continue as technology demonstrator, de-linked from user services.
2 March 2006	Development status: Prithvi inducted in three versions, Agni in two variants; Akash, Nag, Trishul ready for user trials.
27 February 2008	Government stated IGMDP was not being abandoned; Trishul development was completed as a technology demonstrator.
13 August 2012	Programme completion recorded as March 2012.
15 October 2015	Hyderabad missile complex named after Kalam.











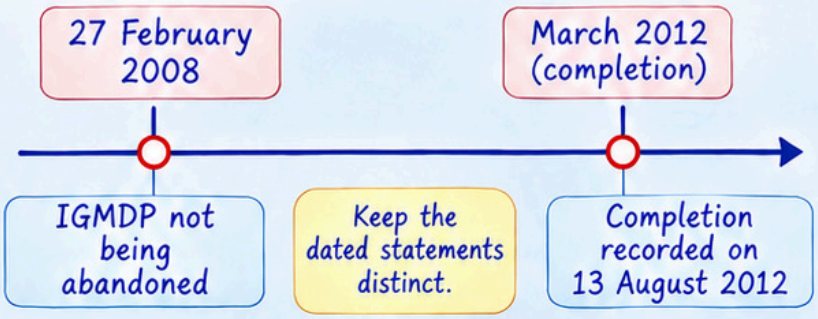
Key distinctions to remember

- **March 2012 completion vs August 2012 report:** The programme's completion was in March 2012, while the completion was recorded (reported) on 13 August 2012.
- **2008 government position:** IGMDP was not being abandoned. Trishul's technology-demonstrator outcome must not be treated as closure of the whole programme.

IGMDP: three examination traps

1. GOVERNMENT POSITION vs COMPLETION

On 27 February 2008, the government stated that IGMDP was not being abandoned. A reply on 13 August 2012 recorded completion in March 2012.



2. DRDO MISSILE does not automatically mean IGMDP.

Not every missile developed by DRDO is part of the IGMDP. The IGMDP included five missiles, while some other DRDO missiles were developed outside the programme.

IGMDP (Five missiles)

- Prithvi
- Agni — Technology demonstrator
- Trishul
- Akash
- Nag

Outside IGMDP (Other DRDO missiles)

- BrahMos — India - Russia joint venture cruise missile.
- Astra — Developed separately.
- Nirbhay — Later, outside the programme.

3. TWO SURFACE-TO-AIR MISSILES, DIFFERENT ENDINGS.

Both Trishul and Akash are surface-to-air missiles developed under the IGMDP, but they had different development outcomes.

- **Trishul** → Development outcome
  - Short-range.
  - Completed as a technology demonstrator.
  - Did not become a service missile.
- **Akash** → Development outcome
  - Medium-range.
  - Went into production and induction.

Conclusion: Do not credit Trishul with Akash's success. Trishul's development outcome was distinct from completion of the whole programme.

Functional classification (in IGMDP)

Surface-to-surface (ballistic)	Surface-to-air	Anti-tank
Prithvi / Agni	Trishul / Akash	Nag

MCQ 1

Q1. Consider the following pairs of a missile of the Integrated Guided Missile Development Programme (IGMDP) and a feature of that missile:

Missile of the IGMDP	Feature
1. Prithvi	Inducted into the armed forces in three versions
2. Agni	Began as a demonstrator of re-entry technology
3. Trishul	Medium-range surface-to-air missile
4. Nag	Designed to destroy tanks

How many of the pairs given above are correctly matched?

- (1) Only one pair
- (2) Only two pairs
- (3) Only three pairs
- (4) All four pairs

MCQ 1: explanation

Q1. Answer: (3) Only three pairs

- Pair 1 is correct: by 2 March 2006, Prithvi had been inducted into the armed forces in three versions. Agni, by contrast, had been inducted in two variants.
- Pair 2 is correct: Agni was not one of the four missile systems of the programme; it was its technology demonstrator for re-entry technology, and that technology is now used in the Agni series.
- Pair 3 is wrong: Trishul is a short-range surface-to-air missile, closed as a technology demonstrator. The medium-range surface-to-air missile of the programme is Akash.
- Pair 4 is correct: Nag is the programme's anti-tank guided missile.
- So three pairs (1, 2 and 4) are correctly matched.

Verdict on each pair

Pair	Verdict
1	Correct
2	Correct
3	Wrong
4	Correct

Why the other options are wrong

- Why (1) is wrong: a candidate reaches one pair by rejecting pairs 1 and 2 along with pair 3, for example by giving Prithvi Agni's "two variants" and by taking Agni for one of the four missile systems from the start.
- Why (2) is wrong: a candidate reaches two pairs by rightly rejecting pair 3 but also rejecting pair 1 or pair 2, for example by thinking that "technology demonstrator" belongs only to Trishul, so that Agni cannot have begun as one.
- Why (4) is wrong: a candidate reaches all four by accepting pair 3, mixing up the two surface-to-air missiles and giving Trishul the medium range that belongs to Akash.

MCQ 2

Q2. Consider the following statements about the Integrated Guided Missile Development Programme (IGMDP):

1. A.P.J. Abdul Kalam became Director General of DRDO before he was appointed Director of the Defence Research and Development Laboratory (DRDL).
2. The IGMDP was sanctioned in July 1983.
3. Kalam headed the IGMDP as Director of DRDL.
4. The Advanced Systems Laboratory, DRDL and the Research Centre Imarat are all located in Hyderabad.

Which of the statements given above is/are correct?

(1) 1, 2 and 3 only

(2) 2, 3 and 4 only

(3) 1 and 4 only

(4) 3 and 4 only

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MCQ 2: explanation

Q2. Answer: (2) 2, 3 and 4 only

Explanations:

Statement	Verdict	Explanation
1	Wrong	Kalam was appointed Director of DRDL in 1982 and became Director General of DRDO in 1992. The order in the statement is reversed.
2	Correct	The programme was sanctioned on 26 July 1983.
3	Correct	As Director of DRDL, Kalam was the Chief of the Integrated Guided Missile Development Programme.
4	Correct	ASL and DRDL are at Kanchanbagh and RCI is at Vigyanakancha, all in Hyderabad. Together they make up the Dr APJ Abdul Kalam Missile Complex.

Why the other options are wrong:

- (1) includes statement 1, which is wrong, and leaves out statement 4.
- (3) includes statement 1 and leaves out statements 2 and 3.
- (4) leaves out statement 2, which is correct.

- A candidate who strikes out statement 1 is still left with (2) and (4), and must know that the programme was sanctioned in July 1983 to choose between them.

Self-awareness: recognising yourself

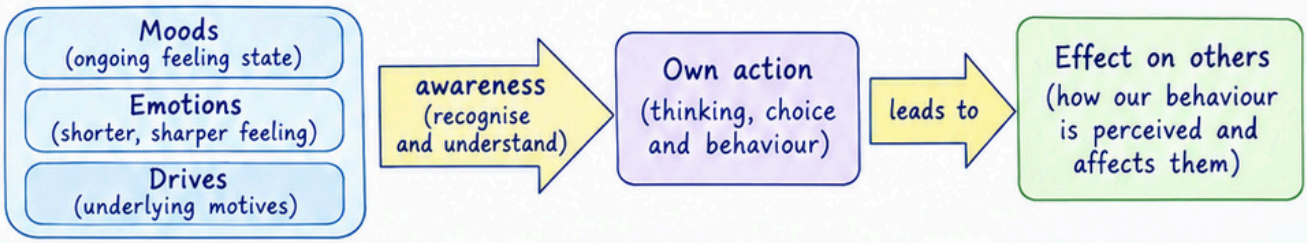
Concept in one line

Self-awareness is the ability to recognise and understand one's own moods, emotions and drives and their effect on others. It covers knowing what sets off one's strong reactions (emotional triggers) and learning what others see in us that we do not (the blind area of the Johari window).

Key takeaways

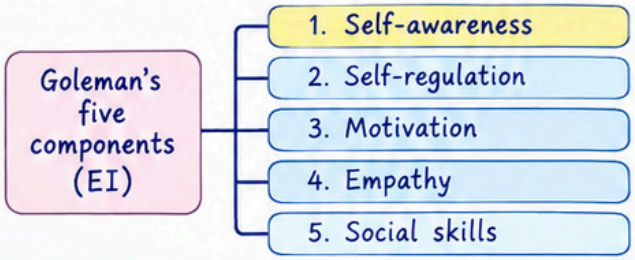
- **Emotional intelligence:** ability to monitor one's own and others' emotions, to distinguish among them and to use the information to guide thinking and action (Salovey and Mayer); Goleman's book (1995) made the term widely known.
- **Recognising emotions:** spotting an emotion from the cues a public-service situation presents, including mixed feelings.
- **Types of emotion:** basic emotions (Ekman's six, Plutchik's eight) versus complex emotions (blends and self-conscious emotions).

From inner state to impact: the self-awareness chain

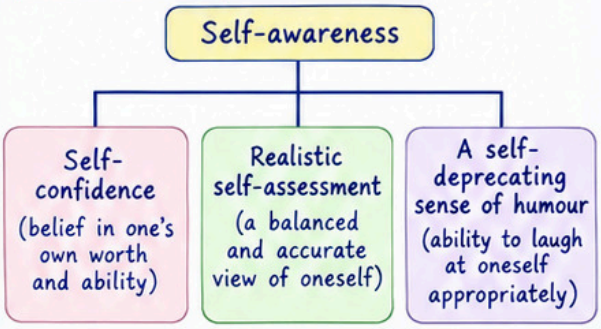


Goleman's components of emotional intelligence

- Goleman's five components in "What Makes a Leader?" (Harvard Business Review, 1998).
- Self-awareness is the first component.

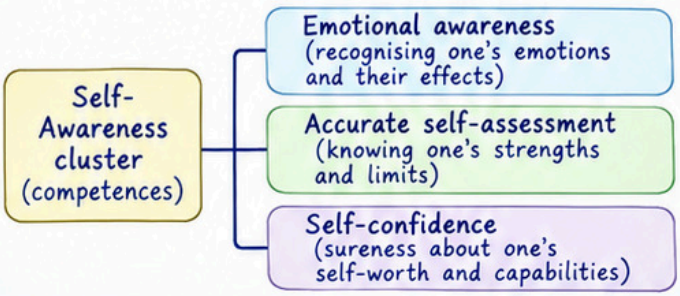


Three hallmarks of self-awareness (in the article)



Three competences in the Self-Awareness cluster

- In the Emotional Competence Framework, the Self-Awareness cluster holds three competences:



Related concepts at a glance

Concept	In brief
Self-awareness	Know and understand one's own moods, emotions and drives and their effect on others.
Self-regulation	Manage and adjust one's emotions, impulses and behaviour.
Empathy	Understand and consider others' feelings and perspectives.
Motivation	Use inner drive to set, pursue and sustain meaningful goals.

Recognising is not regulating

Goleman's definition

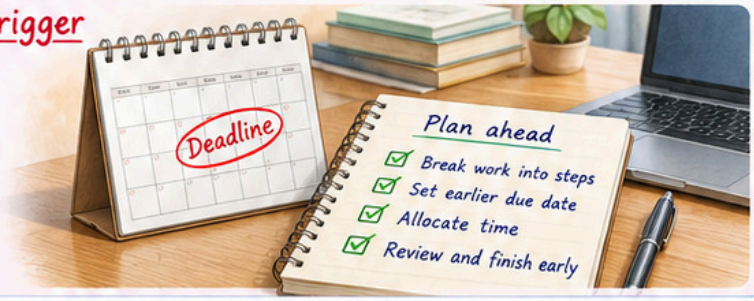
- The ability to recognise and understand one's moods, emotions and drives, as well as their effect on others.

Goleman's text (key points)

- "Self-awareness means having a deep understanding of one's emotions, strengths, weaknesses, needs, and drives."
- People with a high degree of it "recognize how their feelings affect them, other people, and their job performance."
- It reaches to values and goals: a highly self-aware person "knows where he is headed and why."

Goleman's example of a known trigger

A self-aware person who knows that tight deadlines bring out the worst in him plans his time carefully and gets his work done well in advance. He knows the reaction and plans around it.



Functional process: from trigger to action

Deadline (trigger)



A situation that tends to evoke a strong emotion (e.g., a tight deadline).

→

Emotion awareness (recognition)



Notice and name the emotion (e.g., "I feel stressed and under pressure").

→

Planning (deliberate action)



Use the awareness to plan and act wisely (e.g., schedule earlier and allocate time).

Awareness and regulation

- Perceiving and being sensitive to one's feelings is distinct from controlling and regulating them.
- Gardner's intrapersonal intelligence is knowledge of one's internal strengths and limitations, used to relate effectively to others.

Self-awareness versus self-regulation

	Self-awareness	Self-regulation
What it is	Recognising and understanding one's emotions, drives, strengths, weaknesses, needs, values and goals.	Managing and directing one's emotions, impulses and responses.
Main focus	Understanding (awareness).	Control and choice (regulation).
Key outcome	Insight into how I feel and why, and how it affects me and others.	A more constructive response and better actions.
Example (in a deadline situation)	"I notice I feel anxious when a deadline is near."	"I manage the anxiety by planning earlier and sticking to the plan."

Intrapersonal intelligence



Knowledge of one's internal strengths and limitations, used to relate effectively to others.

Signs of self-awareness

Point	Goleman, "What Makes a Leader?" (1998)	Awareness and intrapersonal intelligence
What it is	Recognising and understanding one's own moods, emotions and drives and their effect on others; a deep understanding of one's emotions, strengths, weaknesses, needs and drives	Perceiving and being sensitive to one's own feelings and emotions; intrapersonal intelligence: knowledge of one's internal strengths and limitations
What it is not	Not being harsh on oneself or over-hopeful: self-aware people are "neither overly critical nor unrealistically hopeful"; candour about feelings is not "wimpiness"	Not the same as controlling emotions: controlling and regulating emotions is a separate characteristic
Signs of it	The hallmarks (self-confidence, realistic self-assessment, a self-deprecating sense of humour); honesty with oneself and others; knowing when to ask for help; a "thirst for constructive criticism"; comfort in talking about one's limitations and strengths	Relating one's emotions to one's thoughts and taking them into account in decisions; understanding the powerful influence of the nature and intensity of one's emotions

How Goleman spots it:

in an interview, ask a candidate to describe a time he got carried away by his feelings and did something he later regretted; self-aware candidates are frank in admitting failure, often with a smile. In performance reviews, self-aware people know their limitations and strengths and are comfortable talking about them.

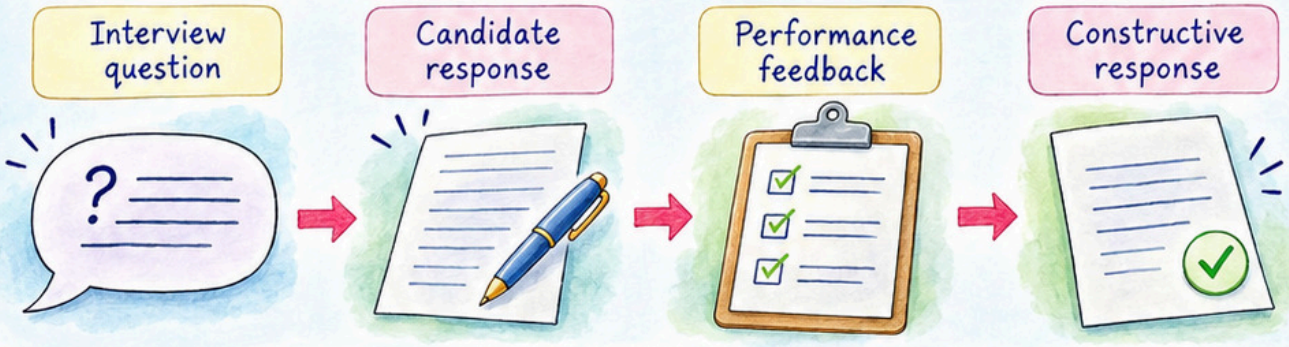


What low self-awareness looks like (Goleman):

people with low self-awareness interpret the message that they need to improve as a threat or a sign of failure.



Interview / performance-feedback chain



Emotional triggers: noticing patterns

- **Definition:** triggers are "environmental, interpersonal, sensory or cognitive situations that spark sudden, intense negative reactions", often as a result of past trauma, pain or a stressful situation.
- The trigger is the situation; the strong emotion is the reaction it sets off.

Point	Key points
What a trigger is	A situation that sparks a sudden, intense negative reaction, often because of past trauma, pain or stress
Examples at work (Goleman)	Tight deadlines that bring out the worst in a person; being told that one needs to improve, which a person with low self-awareness reads as a threat or a sign of failure
Examples in daily life	Someone criticising the way you look or act; a partner raising his or her voice, which can bring up anger from childhood; high-stress situations that set off self-doubt or shame; problematic co-workers
How to notice one: the body	Tense muscles and shoulders, "a pit in your stomach", heavy breathing or shaking
How to notice one: thoughts	Thoughts that are "negative and distorted"; asking whether the feeling is familiar from the past
How to notice one: the pattern over time	Watching for patterns; keeping a list of one's triggers, how they feel and what is happening when they are triggered

The trigger is the situation; the strong emotion is the reaction

Trigger (situation)

The situation that sparks the reaction.



Reaction (strong emotion)

The sudden, intense negative emotion it sets off.



Three ways to notice one: body, thoughts and pattern over time

Body

Tense muscles and shoulders, "a pit in your stomach", heavy breathing or shaking.



Thoughts

Thoughts that are "negative and distorted"; asking whether the feeling is familiar from the past.



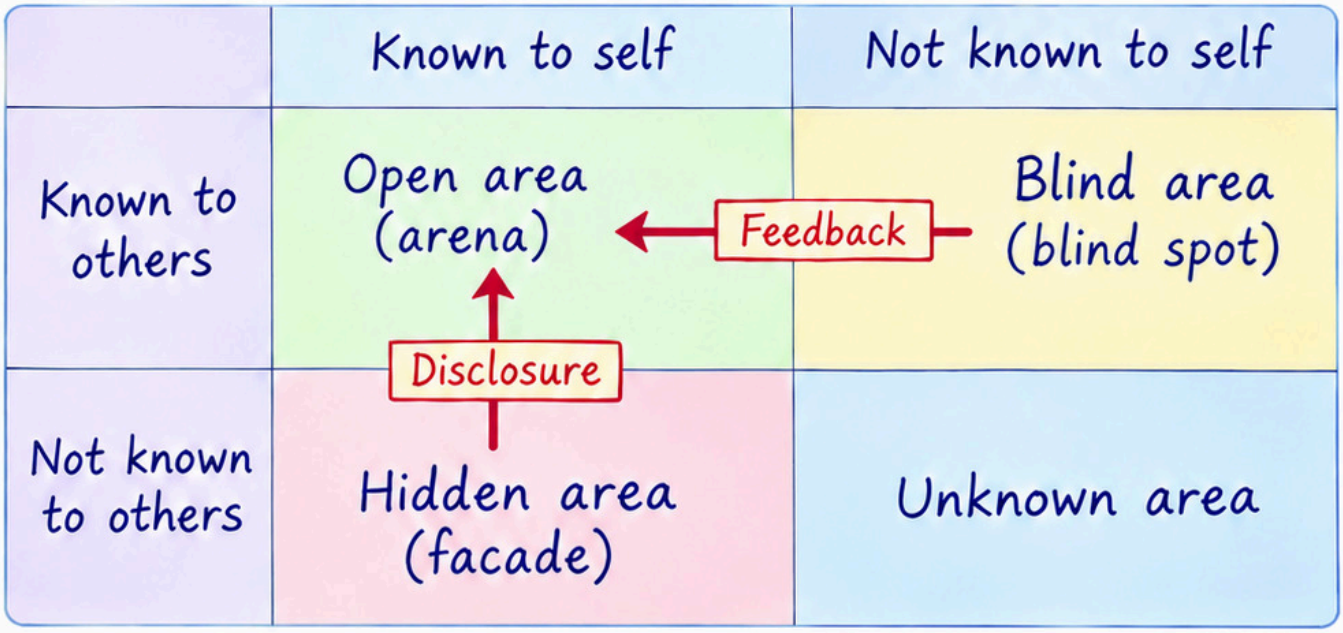
Pattern over time

Watching for patterns; keeping a list of one's triggers, how they feel and what is happening when they are triggered.



Johari window: four areas

- **Who and when:** psychologists Joseph Luft and Harrington Ingham created the Johari window and first presented it in 1955. "Johari" is made from their first names, Joseph and Harrington. It is used mainly in self-help groups and corporate settings.
- **The four panes:** behaviour, feelings and motivation are sorted by whether they are known to oneself and known to others.



- **The blind spot:** what others know about us that we ourselves do not know.
- **Feedback** from others moves information from the blind area into the open area.
- **Self-disclosure** (telling others something about oneself) moves information from the hidden area into the open area. Sharing about ourselves also puts others in a better position to give us accurate feedback.
- **The aim:** to enlarge the open area at the expense of the unknown and blind areas.
- **The link with self-awareness:** feedback is how something in the blind area becomes known to oneself. Goleman's self-aware person has a thirst for constructive criticism; the person with low self-awareness takes a message to improve as a threat.

Building self-awareness.

Self-awareness means recognising one's feelings, thoughts, triggers and patterns, and their effect on behaviour.

FEEDBACK

1. Seek constructive feedback.

In the Johari window, feedback moves information from the blind area into the open area.



2. Use appropriate self-disclosure.

Sharing relevant information about oneself moves it from the hidden area into the open area and supports more accurate feedback.



3. Compare several perspectives.

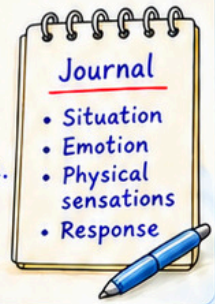
Multi-rater assessment in Goleman's model uses ratings from several people who know the person.



REFLECTION

4. Keep a trigger journal.

Record the situation, the emotion and physical sensations, and the response. Review entries for recurring patterns.



5. Name the emotion.

Notice and label feelings and bodily sensations. Recognising an emotion can support the next step: regulating the response.



6. Look back.

Ask whether a feeling resembles an earlier experience. Recall occasions when emotions strongly influenced behaviour and consider what could be done differently.



PRACTICE

7. Develop emotional habits through motivation, repeated practice and feedback.

Understanding a concept once is not the same as consistently applying it.





A USEFUL DISTINCTION

Internal self-awareness concerns understanding oneself; external self-awareness concerns understanding how others see oneself. Introspection alone does not guarantee greater self-awareness. Combine reflection with honest feedback.

Four components, four questions

Component	Goleman's definition	What it deals with	The question it answers
Self-awareness	The ability to recognise and understand one's moods, emotions and drives, and their effect on others	One's own feelings, their causes and effects, one's strengths and limits	What am I feeling, what set it off, and how does it affect others?
Self-regulation	The ability to control or redirect disruptive impulses and moods; the propensity to suspend judgement, to think before acting	What one does with one's own feelings	What shall I do with this feeling?
Motivation	A passion to work for reasons that go beyond money or status; a propensity to pursue goals with energy and persistence	One's drive towards goals	What keeps me working towards the goal?
Empathy	The ability to understand the emotional make-up of other people; skill in treating people according to their emotional reactions	Other people's feelings	What is the other person feeling?

- **Self-regulation in one line:** it acts on a feeling (controls or redirects it); self-awareness first recognises and understands the feeling.
- **Empathy in one line:** it is about other people's emotional make-up. Self-awareness includes one's own effect on others, but understanding what others feel is empathy.
- **Motivation** is drive towards goals, not knowledge of one's feelings.

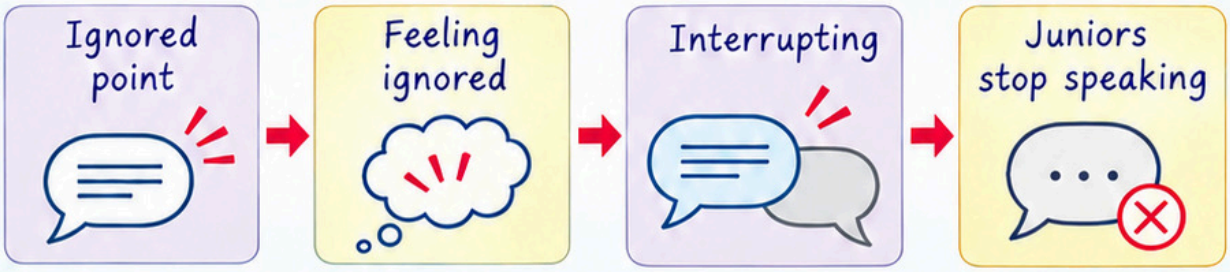
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Worked situation: feedback in meetings

Situation. A schoolteacher learns from peer feedback that she often interrupts colleagues in staff meetings. Which response best shows self-awareness?

- (a) She decides that the colleagues who gave the feedback are jealous of her results.
- (b) She resolves to say nothing at all in the next few meetings, without asking why she interrupts.
- (c) She asks two colleagues when it happens, notices that she interrupts when she feels her point is being ignored, and sees that juniors then stop speaking.

Functional diagram: from feeling ignored to the effect on others



Feedback in Johari terms

Blind area
Not known to her, but seen by others (e.g. interrupting in meetings).

→ Feedback →

Open area
Known to her and known to others (e.g. recognising that she interrupts).

Solution. The answer is (c). It recognises the feeling (feeling ignored), the trigger (her point being passed over) and the effect on others (juniors stop speaking), which is Goleman's definition of self-awareness. In Johari terms, the feedback has moved something from her blind area into her open area.

(a) blames others and rejects the feedback, much like the reaction Goleman links with low self-awareness (reading a message to improve as a threat).

(b) tries to control the behaviour without understanding it; control is the business of self-regulation, and here it comes without the awareness that should come first.

Worked statements and exam traps

Statements.

(i) A self-aware officer is one who never feels angry.

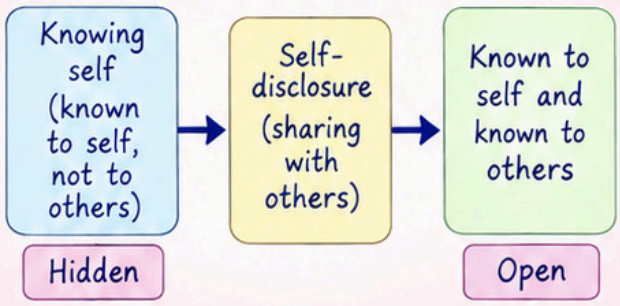
(ii) In the Johari window, what a person knows about himself but keeps from others lies in the hidden area.

Solution.

(i) is false. Self-awareness is recognising and understanding one's emotions, not being free of them: Goleman's self-aware person still knows that tight deadlines bring out the worst in him, and plans around it.

(ii) is true. The hidden area (facade) holds what is known to self but not to others; self-disclosure moves it into the open area.

Johari window: self-knowledge and sharing



Knowing ≠ Controlling

Knowing (self-awareness)	Controlling (self-management)
• Recognises and understands one's emotions (e.g. anger). • Names the feeling and what set it off. • Comes first.	• Regulates or manages the emotion. • Decides how to respond (e.g. staying calm, delaying a reply). • A different characteristic in Goleman's model.

Three common exam traps

1. Knowing a feeling is not the same as controlling it.	Perceiving one's feelings and controlling them are two separate characteristics, and Goleman puts control under a different component. Recognising comes first: a self-aware response names the feeling and what set it off before anything is done about it.
2. Self-aware does not mean self-critical, and looking inward is not always enough.	Goleman's self-aware people are "neither overly critical nor unrealistically hopeful", and they can laugh at their own faults. Eurich found that introspection does not always make a person more self-aware.
3. Oneself against others.	Self-awareness includes knowing one's effect on others, but understanding the emotional make-up of other people is empathy. In Gardner's terms, knowing oneself is intrapersonal intelligence and understanding others is interpersonal intelligence.

MCQ 1

Q1. A Deputy Tahsildar finds that he snaps at his colleagues whenever a file comes back from the Collectorate with objections. Which one of the following responses best shows self-awareness?

(1) He tells himself that an officer should never feel irritated, and pushes the feeling down without asking why it comes.



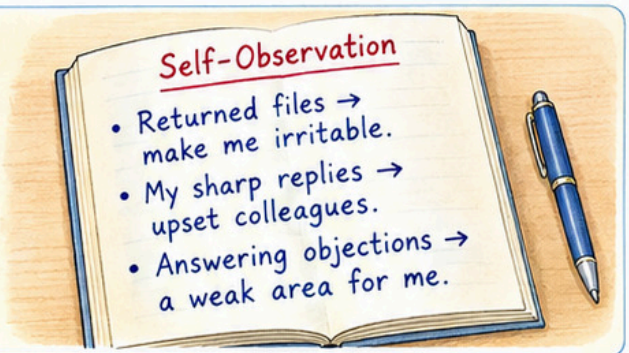
(2) He notices that the clerk who handles returned files looks anxious, and asks her how she is coping with the work.



(3) He sets himself the goal of clearing every pending file in his section this year, and keeps at it even when files are returned.



(4) He notes that returned files make him irritable, sees that his sharp replies upset colleagues, and admits that answering objections is a weak area for him.



MCQ 1: explanation

Q1. Answer: (4) He notes that returned files make him irritable, sees that his sharp replies upset colleagues, and admits that answering objections is a weak area for him.

- Why (4) is correct: self-awareness, in Goleman's definition, is recognising and understanding one's own moods and emotions and their effect on others, together with a realistic view of one's strengths and weaknesses. Option (4) has all three: the feeling and its trigger (returned files make him irritable), its effect on others (his replies upset colleagues) and an honest limit (a weak area). This is the realistic self-assessment that is one of Goleman's hallmarks.

- Why (1) is wrong: it tries to control the feeling, which is the field of self-regulation, and skips what self-awareness needs: recognising the feeling and understanding what sets it off.

- Why (2) is wrong: it notices another person's feelings and responds to them. That is empathy, the ability to understand the emotional make-up of other people. It says nothing about his own irritation.

- Why (3) is wrong: it shows motivation, a propensity to pursue goals with energy and persistence. It leaves his reaction to returned files, and its effect on colleagues, untouched.

Option-wise comparison and verdict

Option	What it shows	Relation to self-awareness (as per Goleman)	Verdict
(1)	Tries to control the feeling.	Self-regulation; does not recognise the feeling or what sets it off.	Wrong
(2)	Notices another person's feelings and responds.	Empathy; focuses on the other person's emotions, not on his own irritation.	Wrong
(3)	Shows goal pursuit with energy and persistence.	Motivation; leaves his reaction to returned files and its effect on colleagues untouched.	Wrong
(4)	Notes his irritation, its effect on colleagues, and admits a weak area.	Self-awareness; covers the feeling and its trigger, its effect on others, and a realistic view of his weakness.	Correct

MCQ2

Q2. Consider the following statements:

1. In the Johari window of Joseph Luft and Harrington Ingham (1955), the blind area holds what others know about a person that the person does not know.
2. Emotional triggers are situations that spark sudden, intense negative reactions, often as a result of past trauma, pain or a stressful situation.
3. In Goleman's "What Makes a Leader?", the propensity to suspend judgement, to think before acting, is part of the definition of self-awareness.
4. In the Johari window, feedback from others moves information from the blind area into the open area.

Which of the statements given above is/are correct?

(1) 1, 2 and 4 only
(2) 1 and 4 only
(3) 2, 3 and 4 only
(4) 3 only

MCQ 2: explanation

Q2. Answer: (1) 1, 2 and 4 only

Statement-wise evaluation

Statement 1	Correct	In the Johari window, the blind area (blind spot) is the pane that is known to others but not known to self.
Statement 2	Correct	This is the definition given by the Cleveland Clinic psychologist Susan Albers, who adds that triggers often come from past trauma, pain or a stressful situation.
Statement 3	Wrong	In Goleman's table, the propensity to suspend judgement, to think before acting, is part of the definition of self-regulation. Self-awareness is defined as the ability to recognise and understand one's moods, emotions and drives, and their effect on others.
Statement 4	Correct	Feedback from others moves information from the blind area into the open area. Self-disclosure, not feedback, is what moves information from the hidden area into the open area.

Why the other options are wrong

(2)	Leaves out statement 2, which is correct.
(3)	Includes statement 3, which is wrong, and leaves out statement 1.
(4)	Gives only statement 3, which is wrong, and leaves out statements 1, 2 and 4.

Compound, duplicate and other types of ratios

Concept in one line

New ratios made from given ratios have standard names: a compound ratio multiplies the given ratios term by term, and the duplicate, triplicate, sub-duplicate, sub-triplicate and inverse ratios square, cube, take the square root or cube root of, or swap, the terms of one ratio. The exam asks you to form these ratios, to join two ratios into one, and to use the duplicate ratio in problems on squares and areas.

Types of ratios (from a : b)

Compound (a : b and c : d)	$ac : bd$
Duplicate (square)	$a^2 : b^2$
Triplicate (cube)	$a^3 : b^3$
Sub-duplicate (square root)	$\sqrt{a} : \sqrt{b}$
Sub-triplicate (cube root)	$\sqrt[3]{a} : \sqrt[3]{b}$
Inverse (swap)	$b : a$

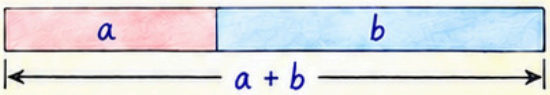
Revision notes

2.1 Ratio foundations

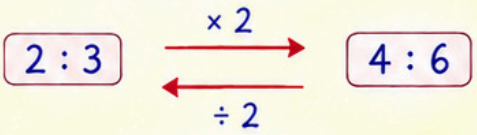
- **ratio and proportion: the basics.**

In a : b the first term, a, is the antecedent and the second term, b, is the consequent. A ratio is in its lowest terms (its simplest form) when its terms are whole numbers that have no common factor other than 1. Multiplying or dividing both terms by the same non-zero number gives an equivalent ratio. Ratio means comparison by division.

a : b



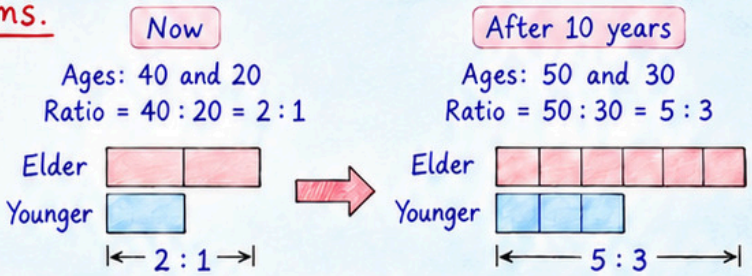
Example (equivalent ratios)



2 : 3 = 4 : 6

- **ages: ratio-based problems.**

The ratio of an elder person's age to a younger person's falls towards 1 as the years pass; Section 2.6 gives the rule.



The ratio falls from 2 : 1 (= 2.00) to 5 : 3 (≈ 1.67), which is closer to 1.

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Ratio – Further Notes

dividing a quantity in a given ratio.

A total T divided in the ratio $a : b$ gives $\frac{a}{a+b} \times T$ and $\frac{b}{a+b} \times T$.

Every ratio in this topic is first made a plain ratio of whole numbers and then divided in the same way.

2.2 The types of ratio at a glance

Let $a : b$ and $c : d$ be ratios whose terms are positive numbers.

Type	Rule	Worked example
Compound ratio of $a : b$ and $c : d$	$ac : bd$ (the antecedents multiplied together, the consequents multiplied together)	$2 : 3$, $4 : 5$ and $5 : 8$ give $40 : 120 = 1 : 3$
Duplicate ratio of $a : b$	$a^2 : b^2$	$3 : 4$ gives $9 : 16$
Triplicate ratio of $a : b$	$a^3 : b^3$	$2 : 3$ gives $8 : 27$
Sub-duplicate ratio of $a : b$	$\sqrt{a} : \sqrt{b}$	$16 : 25$ gives $4 : 5$

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More Types of Ratios

Type	Rule	Example
Sub-triplicate ratio of $a : b$	$\sqrt[3]{a} : \sqrt[3]{b}$ (cube roots)	$8 : 125$ gives $2 : 5$
Inverse (reciprocal) ratio of $a : b$	$b : a$	$4 : 7$ gives $7 : 4$
Ratio of greater inequality	$a : b$ in which a is greater than b	$7 : 5$
Ratio of less inequality	$a : b$ in which a is less than b	$5 : 7$
Commensurable ratio	It can be written as a ratio of two integers	$1.5 : 2 = 3 : 4$
Incommensurable ratio	It cannot be written as a ratio of two integers	$\sqrt{3} : \sqrt{5}$

- If $a = b$, the ratio is a ratio of equality.

Roots and inverse:

- The sub-triplicate ratio of $a : b$ is $\sqrt[3]{a} : \sqrt[3]{b}$; the inverse ratio is $b : a$. A ratio multiplied by its inverse gives 1, or the ratio $1 : 1$.

- The duplicate ratio of $a : b$ is the compound of $a : b$ with itself; the triplicate ratio is the compound of three copies of $a : b$.

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When the ratio of two quantities of the same kind can be expressed as the ratio of two integers, the quantities are said to be commensurable. Otherwise they are incommensurable. $\sqrt{3} : \sqrt{5}$ is incommensurable, because $\frac{\sqrt{3}}{\sqrt{5}}$ is an irrational number.

2.3 Compound ratio: the method

1. **Make each ratio plain first.** Form any named type (duplicate, sub-triplicate, inverse and so on) before anything else.
2. **Multiply.** ratios are compounded "by multiplying together the antecedents for a new antecedent, and the consequents for a new consequent." The reason: a ratio is a fraction, and compounding multiplies the fractions,
$$\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}.$$
3. **Reduce to lowest terms.** Cancel before multiplying to keep the numbers small. For $2:3$, $4:5$ and $5:8$, write $\frac{2 \times 4 \times 5}{3 \times 5 \times 8}$.
The two 5s cancel, and $2 \times 4 = 8$ cancels with the 8. What is left is $\frac{1}{3}$, so the compound ratio is $1:3$.

- The order of the ratios does not matter; the order inside each ratio does.
- A ratio compounded with its inverse gives $1:1$: for $7:9$ and $9:7$ the product is $63:63$.

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Ratio Operations — Revision

The compound of $A:B$ and $B:C$ is $A:C$, because B cancels (Section 2.5).

2.4 Duplicate, triplicate, their "sub" forms, and the inverse

Duplicate means squared, not doubled. Doubling both terms of $3:4$ gives $6:8$, which is the same ratio (an equivalent ratio). The duplicate ratio of $3:4$ is $9:16$. In the same way, triplicate means cubed, not multiplied by 3.

$3:4 \rightarrow 6:8$ $\qquad$ $3:4 \rightarrow 9:16$

The "sub" forms undo the others. The duplicate ratio of $4:5$ is $16:25$, and the sub-duplicate ratio of $16:25$ is $4:5$. The sub-triplicate ratio undoes the triplicate ratio in the same way.

$4:5 \rightarrow 16:25$ $\qquad$ $16:25 \rightarrow 4:5$

The root must match the name. Sub-duplicate takes the square root; sub-triplicate takes the cube root. For $1:64$, the sub-duplicate ratio is $1:8$ and the sub-triplicate ratio is $1:4$.

$1:64 \rightarrow 1:8$ $\qquad$ $1:64 \rightarrow 1:4$

Reduce first. $12:27 = 4:9$, so its sub-duplicate ratio is $2:3$.

$12:27 = 4:9 \rightarrow 2:3$

When the ratio is in lowest terms and either term is not a perfect square, the sub-duplicate ratio is incommensurable: for $3:5$ it is $\sqrt{3}:\sqrt{5}$, and it is left in that form.

$3:5 \rightarrow \sqrt{3}:\sqrt{5}$

Ratios — Inverse and Joining

Inverse.

Swap the terms: the inverse ratio of $4 : 7$ is $7 : 4$.

A ratio of fractions $\frac{1}{a} : \frac{1}{b}$ is equal to $b : a$ (multiply both terms by ab), so "in the inverse ratio of a and b" means $b : a$.

The inverse of a ratio of greater inequality is a ratio of less inequality.

2.5 Joining $a : b$ and $b : c$ into $a : b : c$

The method: the common term must have the same number in both ratios.

Take $A : B = 3 : 5$ and $B : C = 2 : 3$. B stands for 5 in the first ratio and 2 in the second; their LCM (least common multiple) is 10. So

$$\left.\begin{matrix} A : B = 3 : 5 \\ B : C = 2 : 3 \end{matrix}\right\} \rightarrow \left.\begin{matrix} A : B = 6 : 10 \\ B : C = 10 : 15 \end{matrix}\right\} \rightarrow A : B : C = 6 : 10 : 15$$

The short rule gives the same:

$$(3 \times 2) : (5 \times 2) : (5 \times 3) = 6 : 10 : 15.$$

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Ratios and the Compound Ratio

The link with the compound ratio.

$A : C$ is the compound of $A : B$ and $B : C$:

$$3 \times 2 : 5 \times 3 \longrightarrow 6 : 15 \longrightarrow 2 : 5$$

which agrees with the joined ratio.

If only $A : C$ is asked, compound the two ratios directly.

Writing them side by side as $3 : 5 : 3$ is wrong: B would stand for two different numbers.

2.6 Adding the same number to both terms

The rule (Hall and Knight):

"A ratio of greater inequality is diminished, and a ratio of less inequality is increased, by adding the same quantity to both its terms."

So the ratio moves towards 1. A ratio of equality does not change.

The ratio never crosses 1, because $a + x$ is greater than $b + x$ exactly when a is greater than b.

One-line proof.

$$\frac{a+x}{b+x} - \frac{a}{b} = \frac{x(b-a)}{b(b+x)}.$$

With a, b and x positive, this has the sign of $b - a$: negative (the ratio falls) when a is greater than b, positive (the ratio rises) when a is less than b.

Ratio and Duplicate Ratio

Examples:

- Adding 2 to both terms of 7 : 4 gives 9 : 6 = 3 : 2, so the value falls from 1.75 to 1.5.
- Adding 3 to both terms of 3 : 5 gives 6 : 8 = 3 : 4, so the value rises from 0.6 to 0.75.

This is why the ratio of the elder person's age to the younger person's age falls towards 1.

To find the number to be added, write $(a + x) : (b + x) = p : q$ and cross-multiply (drill 6 below).

2.7 Using the duplicate ratio in problems

If two numbers are ak and bk, their squares are a^2k^2 and b^2k^2.

The squares are in the duplicate ratio $a^2 : b^2$, and the multiplier k becomes k^2.

$$ak : bk \longrightarrow (ak)^2 : (bk)^2 \longrightarrow a^2k^2 : b^2k^2 = a^2 : b^2$$

Ratios — Areas and Common Slips

Areas.

The area of a square is side × side, so the areas of two squares are in the duplicate ratio of their sides. The same holds for two circles (their radii) and, in general, for similar figures: the ratio of their areas is the square of the ratio of corresponding lengths.

Sides in the ratio 3 : 5 give areas in the ratio 9 : 25.

Going back, areas in the ratio 16 : 49 give sides in the sub-duplicate ratio 4 : 7.

$3:5 \longrightarrow 9:25$

$16:49 \longrightarrow 4:7$

"In the inverse ratio of the squares" of x and y.

means $\frac{1}{x^2} : \frac{1}{y^2} = y^2 : x^2$. This is the duplicate of the inverse ratio (squaring and swapping give the same result in either order).

For 2 and 5 it is $\frac{1}{4} : \frac{1}{25} = 25 : 4$.

Once the plain ratio is found, a total is divided in it in that ratio.

2.8 Common slips

Slip	What it looks like	The right way
Duplicate taken as double	The duplicate ratio of 5 : 4 written as 10 : 8	Square the terms: 25 : 16

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Ratio Errors and Compound Ratio Drill

1. Ratios added instead of compounded

1 : 2 and 3 : 4 "compounded" as 4 : 6.
Multiply: 3 : 8.

1 : 2
3 : 4
→ 3 : 8

2. The wrong root

The sub-triplicate ratio of 1 : 64 written as 1 : 8.
Take the cube root: 1 : 4.

1 : 64 → 1 : 4

3. The answer not reduced

The compound of 2 : 3 and 3 : 4 left as 6 : 12.
Lowest terms: 1 : 2.

2 : 3
3 : 4
→ 6 : 12 → 1 : 2

4. The inverse missed

"The inverse ratio of 2 and 3" used as 2 : 3.
Swap the terms: 3 : 2.

2 : 3 → 3 : 2

8. Drill: Eight Questions with Full Working

1. Compound ratio. Find the ratio compounded of 3 : 5, 10 : 9 and 3 : 4.

The product is $(3 \times 10 \times 3) : (5 \times 9 \times 4) = 90 : 180 = 1 : 2.$

Cancelling first: 10 with 5 leaves 2 over 1, and $3 \times 3 = 9$ cancels with 9, which leaves $2 : 4 = 1 : 2.$

Ratio Revision: Advanced Operations

2. Two types, then compounded.

Find the ratio compounded of the duplicate ratio of 3 : 4 and the sub-duplicate ratio of 64 : 9.

The duplicate ratio of 3 : 4 is 9 : 16.

The sub-duplicate ratio of 64 : 9 is 8 : 3.

The compound is 72 : 48 = 3 : 2.

3 : 4 → 9 : 16
64 : 9 → 8 : 3
→ 72 : 48 = 3 : 2

3. Working back from the triplicate ratio.

The triplicate ratio of x : y is 8 : 125. Find the duplicate ratio of x : y.

The sub-triplicate ratio of 8 : 125 gives x : y = 2 : 5, so the duplicate ratio is 4 : 25.

8 : 125 → x : y = 2 : 5 → 4 : 25

4. Joining two ratios.

A : B = 5 : 6 and B : C = 9 : 8. Find A : B : C and A : C.

B stands for 6 and 9; the LCM is 18.

A : B = 15 : 18 and B : C = 18 : 16, so A : B : C = 15 : 18 : 16 and A : C = 15 : 16.

Check by compounding: 5 × 9 : 6 × 8 = 45 : 48 = 15 : 16.

A : B = 15 : 18
B : C = 18 : 16
→ A : B : C = 15 : 18 : 16
A : C = 15 : 16

5 × 9 : 6 × 8 = 45 : 48 = 15 : 16

Ratio Revision: Chain Ratios and Added Terms

5. A chain of three ratios.

$A : B = 2 : 3$, $B : C = 4 : 5$ and $C : D = 6 : 7$. Find $A : D$.

Compound all three: $(2 \times 4 \times 6) : (3 \times 5 \times 7) = 48 : 105 = 16 : 35$.

Joined in full, $A : B : C : D = 16 : 24 : 30 : 35$,

$16 : 24 = 2 : 3$ → $24 : 30 = 4 : 5$ → $30 : 35 = 6 : 7$

6. The number to be added.

What number must be added to each term of $7 : 11$ to make it $3 : 4$?

$$(7 + x) : (11 + x) = 3 : 4.$$

Cross-multiplying, $4(7 + x) = 3(11 + x)$, so $28 + 4x = 33 + 3x$ and

$$x = 5.$$

Check: $12 : 16 = 3 : 4$.

$7 : 11$ is a ratio of less inequality, and it has risen (from about 0.64 to 0.75), as Section 2.6 says.

Ratio Problem Solving – Key Facts

7. Squares of two numbers.

Two numbers are in the ratio 4 : 7 and their squares differ by 297. Find the numbers.

The squares are $16k^2$ and $49k^2$, so $33k^2 = 297$, $k^2 = 9$ and $k = 3$.

$16k^2,\ 49k^2 \rightarrow 33k^2 = 297 \rightarrow k^2 = 9 \rightarrow k = 3$

The numbers are 12 and 21.

Check: $441 - 144 = 297$.

8. Areas of two squares.

The areas of two squares are in the ratio 49 : 81, and the side of the smaller square is 14 cm. Find the side of the larger square.

The sides are in the sub-duplicate ratio 7 : 9. The smaller side, 14 cm, is 7 parts, so one part is 2 cm and the larger side is $9 \times 2 = 18$ cm.

7 parts = 14 cm → 1 part = 2 cm → larger side = $9 \times 2 = 18$ cm

Check: $196 : 324 = 49 : 81$.

Three common exam traps

1. Duplicate is not double. The duplicate ratio of 7 : 2 is 49 : 4. Doubling both terms gives 14 : 4, which is still 7 : 2, because multiplying both terms by the same number leaves a ratio unchanged. Triplicate likewise means cubing, not tripling.

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2. Compounding means multiplying, and each named type comes first.

The compound of 1 : 3 and 3 : 5 is 3 : 15 = 1 : 5.

Adding the terms gives 4 : 8 = 1 : 2, which is wrong.

When the question names a duplicate, sub-duplicate or inverse ratio, form it before multiplying, and reduce the result to lowest terms at the end.

3. Adding the same number moves a ratio towards 1.

Adding 1 to both terms of 9 : 5 gives 10 : 6 = 5 : 3, so the value falls from 1.8 to about 1.67.

9 : 5 → 10 : 6 → 5 : 3

Adding 1 to both terms of 5 : 9 gives 6 : 10 = 3 : 5, so the value rises.

5 : 9 → 6 : 10 → 3 : 5

The ratio does not stay the same, and a ratio of greater inequality never grows this way.

MCQs

Q1. What is the ratio compounded of the triplicate ratio of 2 : 3, the sub-triplicate ratio of 729 : 1 and the ratio 3 : 4, in its lowest terms?

(1) 2 : 1 (2) 3 : 1 (3) 9 : 2 (4) 6 : 1

Q2.

Rs 3,900 is divided between two children, aged 6 years and 9 years, in the inverse ratio of the squares of their ages. How much does the younger child get?

(1) Rs 1,200

(2) Rs 1,560

(3) Rs 2,340

(4) Rs 2,700

Answer key and explanations

Q1. Answer: (1) 2 : 1

Step 1: make each ratio plain. The triplicate ratio of 2 : 3 is 8 : 27. The sub-triplicate ratio of 729 : 1 is $\sqrt[3]{729} : \sqrt[3]{1} = 9 : 1$, since $9 \times 9 \times 9 = 729$. The third ratio is 3 : 4.

Step 2: compound them.

$(8 \times 9 \times 3) : (27 \times 1 \times 4) \rightarrow 216 : 108$

Step 3: reduce.

$216 : 108 \rightarrow 2 : 1$

Cancelling first: $9 \times 3 = 27$ cancels with 27, and 8 with 4 leaves 2 with 1.

Why (2) is wrong: 3 : 1 comes from squaring for the triplicate ratio. 4 : 9 compounded with 9 : 1 and 3 : 4 gives 108 : 36 = 3 : 1.

Whg (4) is wrong:

6 : 1 comes from taking the square root for the sub-triplicate ratio.

$\sqrt{729} = 27$, so 27 : 1 is used in place of 9 : 1, and

$8 \times 27 \times 3 : 27 \times 1 \times 4 \rightarrow 648 : 108 \rightarrow 6 : 1$

Why (3) is wrong:

9 : 2 comes from tripling the terms of 2 : 3 instead of cubing them for the triplicate ratio.

6 : 9 compounded with 9 : 1 and 3 : 4 gives

$6 \times 9 \times 3 : 9 \times 1 \times 4 \rightarrow 162 : 36 \rightarrow 9 : 2$

Since 6 : 9 is the same ratio as 2 : 3, leaving out the triplicate step gives the same wrong figure.

Q2. Answer: (4) Rs 2,700

Worked solution, step 1: the squares of the ages are 36 and 81.

The inverse ratio of the squares is

$\frac{1}{36} : \frac{1}{81} \rightarrow 81 : 36 \rightarrow 9 : 4$

(multiply both terms by 324).

The younger child has the larger share.

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Question: A sum of Rs 3,900 is to be divided between two children aged 6 years and 9 years in the inverse ratio of the squares of their ages. What is the share of the younger child?

(1) Rs 1,200 (2) Rs 1,560 (3) Rs 2,340 (4) Rs 2,700

Step 2: divide Rs 3,900 in the ratio 9 : 4.

There are 13 parts, and one part is $3,900 \div 13 = \text{Rs } 300$.

Younger child's share	→	$9 \times 300 = \text{Rs } 2,700$
Elder child's share	→	$4 \times 300 = \text{Rs } 1,200$

Check: each share × the square of that child's age gives the same product ($2,700 \times 36 = 1,200 \times 81 = 97,200$), as it must when the shares are in the inverse ratio of the squares.

Why (1) is wrong: Rs 1,200 uses the direct ratio of the squares, $36 : 81 = 4 : 9$, and forgets to invert it, giving the younger child 4 parts out of 13. It is also the elder child's correct share, so reading off the wrong child gives the same figure.

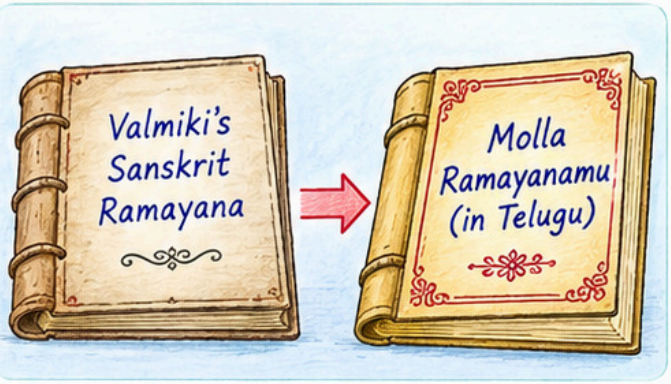
Why (2) is wrong: Rs 1,560 neither inverts nor squares. It divides in the ratio of the ages, $6 : 9 = 2 : 3$, and gives the younger child $\frac{2}{5}$ of 3,900.

Why (3) is wrong: Rs 2,340 inverts but does not square. It divides in the ratio $9 : 6 = 3 : 2$ and gives the younger child $\frac{3}{5}$ of 3,900.

Atukuri Molla: a distinctive voice in Telugu literature

THE POET AND HER WORK

- Atukuri Molla is also known as Mollamamba. She composed Molla Ramayanamu in Telugu, retelling Valmiki's Sanskrit Ramayana.
- Her work belongs to the medieval Telugu literary tradition. Its distinctive contribution is accessible expression, not being the first Telugu Ramayana.



FAMILY AND DEVOTION

- Her father is named Kesana Setti, also written as Kesaya Setti or Kesan Setty. He is traditionally associated with pottery and devotion to Shiva.
- Molla is traditionally associated with the Kummari community, but she does not identify her caste in her own work.
- She credits Srikantha Malleswara of Gopavaram for her gift of poetry and dedicates the Ramayana to Rama, not to a mortal king.



PLACE AND PERIOD

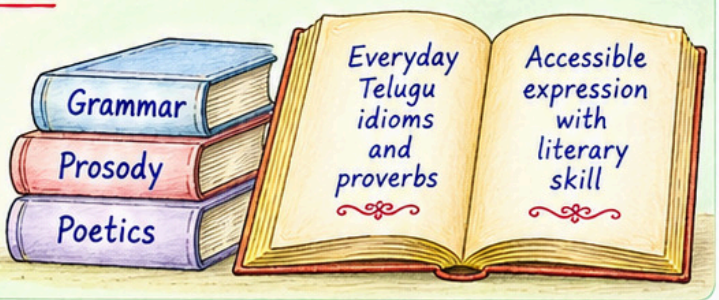
- Gopavaram is named in her preface. Its district identification is disputed between Nellore and Kadapa; do not assert an unqualified district.
- Her exact birth year is uncertain. She names Srinatha among earlier poets, placing her after him rather than in Tikkana's thirteenth century.



⚠ Disputed place and date: district (Nellore or Kadapa) and exact birth year are uncertain.

PLAIN LANGUAGE, LITERARY SKILL

- Molla valued everyday Telugu idioms and proverbs rather than obscure vocabulary.
- Her modest disclaimers of expertise in grammar, prosody and poetics are a literary self-presentation; they do not prove that she lacked learning.
- Her work shows engagement with classical literary traditions.



THREE DISTINCTIONS

Molla → Telugu Ramayana, not Mahabharata.



Gopavaram → named place, but district identification is debated.



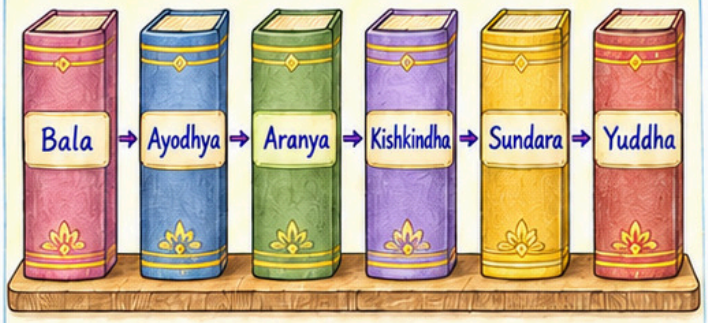
Accessible expression → literary choice, not absence of craftsmanship.



Molla Ramayanamu: structure, dedication and style

SIX KANDAS

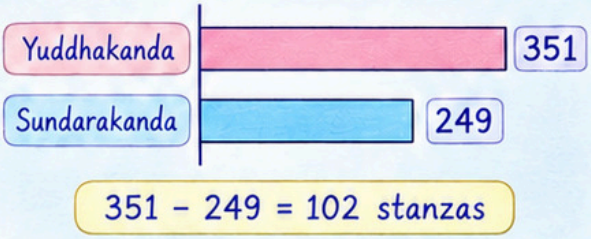
- The work has a preface and six kandas, from Bala to Yuddha:



- It omits the Uttarakanda, the post-war section.
- The Yuddhakanda contains three ashvasas; each other kanda has one.

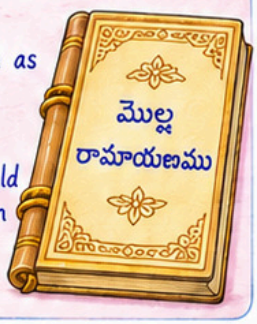
WHERE THE EMPHASIS FALLS

- Yuddhakanda is the longest section: 351 stanzas.
- Sundarakanda has 249 stanzas.
- The difference is 102 stanzas, not the combined total.
- The six-kanda structure is distinct from assuming every retelling follows all seven sections of another version.



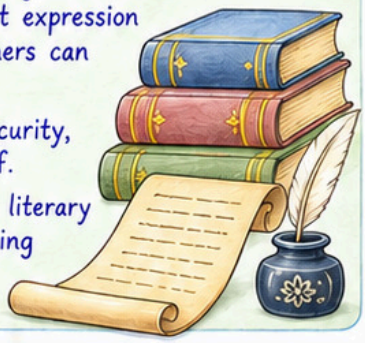
DEDICATION

- The work is dedicated to Rama, not to a king.
- Molla presents her composition as undertaken at Rama's behest.
- Her devotion to Shiva and composition of a Ramayana should not be treated as a contradiction in her literary identity.



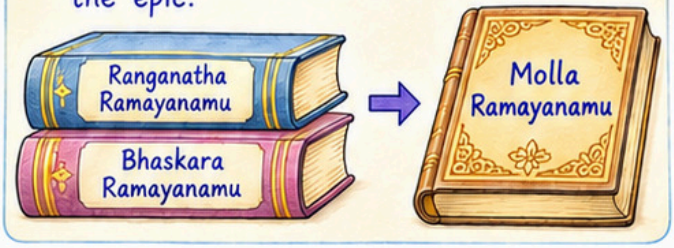
STYLE

- She prefers familiar Telugu idioms and proverbs, aiming at expression that readers and listeners can understand.
- Her objection is to obscurity, not to poetic skill itself.
- The work uses classical literary techniques while retaining accessible expression.



LITERARY POSITION

- Ranganatha and Bhaskara Ramayanas preceded Molla's version.
- Molla Ramayanamu is an important classical Telugu Ramayana, but it is not the first Telugu rendering of the epic.



REVISION CHECK

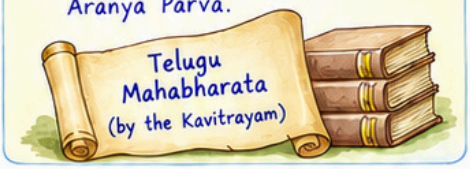
Six kandas:	yes.
Uttarakanda:	omitted.
Longest:	Yuddhakanda.
Dedication:	Rama.
Language:	Telugu.
Priority claim:	not the first Telugu Ramayana.

Molla among Telugu poets: match the author and the work

THE KAVITRAYAM

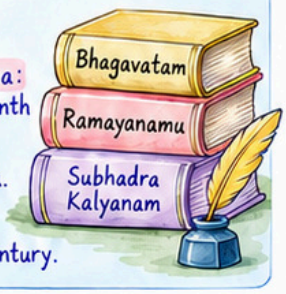
Nannaya, Tikkana and Errana are the three poets associated with the Telugu Mahabharata.

- **Nannaya:** eleventh century; court of Rajaraja Narendra; began Adi and Sabha Parvas and part of Aranya Parva. He is called Adi Kavi.
- **Tikkana:** thirteenth century; wrote fifteen parvas, from Virata onwards.
- **Errana:** fourteenth century; completed the unfinished Aranya Parva.



OTHER DISTINCT CONTRIBUTIONS

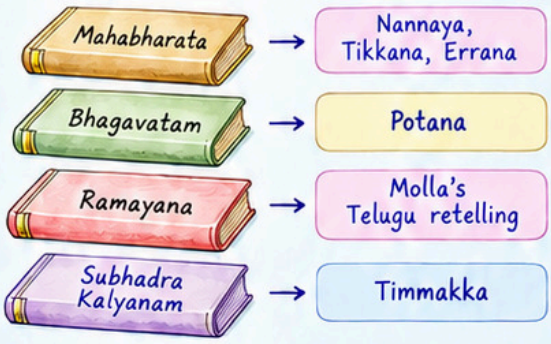
- **Bammera Potana:** Telugu Bhagavatam, not Molla Ramayanamu.
- **Tallapaka Timmakka, also called Tirumalamma:** Subhadra Kalyanam; associated with the fifteenth century and the family of Annamacharya.
- **Molla:** Molla Ramayanamu, in accessible Telugu.
- **Ashtadiggajas:** eight poets associated with Krishnadevaraya's court in the early sixteenth century.



ADI KAVI AND ADI KAVAYITRI

- Adi Kavi is associated with Nannaya.
- Molla is honoured with the title Adi Kavayitri.
- An honorary designation must not be treated as proof of undisputed chronological priority among all Telugu women poets.
- Timmakka is also recognised as an early Telugu woman poet.

KEEP THE EPICS SEPARATE



AUTHOR – WORK MATCHING MATRIX

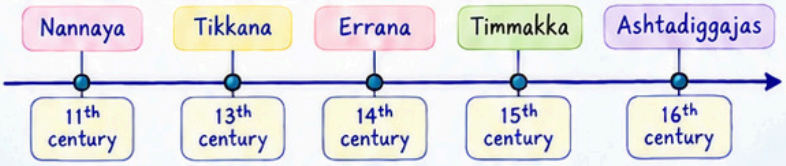
Author / Poet	Work / Contribution
Nannaya	Telugu Mahabharata: began Adi and Sabha Parvas and part of Aranya Parva.
Tikkana	Telugu Mahabharata: wrote fifteen parvas, from Virata onwards.
Errana	Telugu Mahabharata: completed the unfinished Aranya Parva.
Potana	Telugu Bhagavatam.
Timmakka (Tirumalamma)	Subhadra Kalyanam.
Molla	Molla Ramayanamu, in accessible Telugu.

A SAFE CHRONOLOGICAL INFERENCE

- Molla praises Srinatha as an earlier poet.
- Her exact dates remain uncertain; a precise birth year should not be guessed from later commemorative claims.



CENTURY TIMELINE (KEY FIGURES)



Molla: after Srinatha; exact dates uncertain.

TITLE VERSUS CHRONOLOGY: A CLEAR COMPARISON

Aspect	Key point
Titles (honorary)	Adi Kavi – Nannaya; Adi Kavayitri – Molla.
Chronology (century-wise)	Nannaya – 11th; Tikkana – 13th; Errana – 14th; Timmakka – 15th; Ashtadiggajas – 16th; Molla – after Srinatha, dates uncertain.
Main takeaway	Titles indicate honour and significance, not a definitive and undisputed chronological order among all Telugu poets.



Molla Jayanti: the State function and its literary significance

THE COMMEMORATION

- Molla Jayanti commemorates Atukuri Mollamamba, the Telugu poet associated with Molla Ramayanamu.
- The annual observance is on 13 March.
- The 2025 consolidated State-functions order already included Molla's birth anniversary. The 2026 State-functions order also includes it.
- The March 2026 announcement therefore should not be described as the first-ever recognition of Molla Jayanti.

THE 2026 ARRANGEMENTS

- On 11 March 2026, Minister S. Savitha announced the observance as an official State festival.
- The announced State-level venue was Tummalapalli Kalakshetram, Vijayawada. District administrations were directed to organise commemorative events.
- An announced venue is not, by itself, proof that an event was subsequently held there.



Announced venue: Vijayawada

ADMINISTRATIVE AND LITERARY FACTS

- G.O.Rt.No.15 of 5 January 2026 names B.C. Welfare as the nodal department, not Youth Advancement, Tourism and Culture.
- Gopavaram is associated with the poet's literary biography; Vijayawada was the announced State-level venue in 2026. Do not interchange them.
- Commemorative anniversary counts do not settle a disputed medieval birth year.



REMEMBER THE CONNECTION

13 March	: Molla Jayanti.
Mollamamba	: Atukuri Molla.
Work	: Molla Ramayanamu.
Language	: Telugu.
Distinctive quality	: accessible expression using familiar idioms and proverbs.

2025 listed → 2026 listed → 11 March announcement → 13 March observance

Gopavaram
Associated with the poet's literary biography.

≠

Vijayawada
The announced State-level venue in 2026.

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Practice question 1

Q1. Consider the following statements about Molla Jayanti and the Molla Ramayanamu:

1. The State's consolidated order on State functions for 2026 names the Youth Advancement, Tourism and Culture Department as the nodal department for Molla's birth anniversary.
2. The Molla Ramayanamu has six kandas, from the Balakanda to the Yuddhakanda, and leaves out the Uttarakanda.
3. Molla dedicated her Ramayana to the Vijayanagara king Krishnadevaraya.
4. In 2026 the State-level celebration of Molla Jayanti was to be held at Gopavaram.

Which of the statements given above is/are correct?

(1) 1 and 2 only
(2) 2 only
(3) 3 and 4 only
(4) 1, 3 and 4 only

Practice question 2

Q2. Consider the following statements about the poet Atukuri Molla:

1. In her preface, Molla credits the blessing of Srikantha Malleswara of Gopavaram for her gift of poetry.
2. In her preface, Molla says that a poem made of obscure words pleases the learned more than one built from everyday idioms and proverbs.
3. Molla's praise of Srinatha as an earlier poet is used as an argument against a 13th-century date for her.
4. Bammera Potana, the author of the Telugu Bhagavatam, was a court poet of the Eastern Chalukya king Rajaraja Narendra.

Which of the statements given above is/are correct?

(1) 1 only
(2) 2, 3 and 4 only
(3) 1 and 3 only
(4) 1, 2 and 4 only

Explanation 1

Q1. Answer: (2) 2 only

Approach

- Check each statement against the facts given in G.O.Rt.No.15 of 5 January 2026 and the details of Atukuri Mollamamba's work.
- Mark each statement as True (Correct) or False (Wrong) with the reason.
- Then, eliminate the options and arrive at the answer.

Key facts (for quick memory)

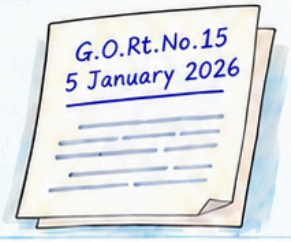
- G.O.Rt.No.15 of 5 January 2026: B.C. Welfare Department is the nodal department for the birth anniversary of Atukuri Mollamamba.
- Her work: tells the story in six kandas, from the Balakanda to the Yuddhakanda; leaves out the Uttarakanda.
- Dedication: to Rama; she says she wrote it at Rama's behest.
- Announced State-level venue: Tummalapalli Kalakshetram, Vijayawada.
- Gopavaram: the place named in her preface.

Statement-by-statement analysis

Statement 1: G.O.Rt.No.15 of 5 January 2026 names the Youth Advancement, Tourism and Culture Department as the nodal department for the birth anniversary of Atukuri Mollamamba.

False (Wrong)

- The G.O. names the B.C. Welfare Department as the nodal department for this birth anniversary.
- The Youth Advancement, Tourism and Culture Department is the nodal department for some other functions in the same list, which is why the statement looks plausible.



Statement 2: She tells the story in six kandas, from the Balakanda to the Yuddhakanda, and leaves out the Uttarakanda.

True (Correct)

- This is correct.
- She narrates the story in six kandas, from the Balakanda to the Yuddhakanda, and omits the Uttarakanda, the part after the war.



Statement 3: She dedicated the work to a king, not to Rama.

False (Wrong)

- She dedicated the work to Rama, not to any king.
- She also says she wrote it at Rama's behest.



Statement 4: The State-level function was to be held at Gopavaram.

False (Wrong)

- The State-level function was to be held at Tummalapalli Kalakshetram in Vijayawada, not at Gopavaram.
- Gopavaram is the place named in her preface, which is why the statement looks plausible.



Memory comparison (purposive)

Item	Correct / Actual	Often confused with (but for a different purpose)
Nodal department (for this birth anniversary)	B.C. Welfare Department	Youth Advancement, Tourism and Culture Department (for some other functions)
Kandas in the work	Six: Balakanda to Yuddhakanda	Uttarakanda (omitted)
Dedication	To Rama; written at Rama's behest	To a king (not correct)
State-level function venue	Tummalapalli Kalakshetram, Vijayawada	Gopavaram (mentioned in her preface)

Option elimination

- Option (1): includes statement 1, which is wrong. Hence, eliminate.
- Option (3): leaves out statement 2 and includes statements 3 and 4, both wrong. Hence, eliminate.
- Option (4): leaves out statement 2 and includes statements 1, 3 and 4, all wrong. Hence, eliminate.

Therefore, the correct option is (2) 2 only.

Explanation 2

Q2. Answer: (3) 1 and 3 only

Statement-by-statement analysis

Statement 1: Correct (True)	Statement 1 is correct: in her preface she says she gained her poetry by the blessing of the renowned Srikantha Malleswara of Gopavaram.
Statement 2: Wrong (False)	Statement 2 is wrong: it reverses her view. In her preface she compares a poem of obscure words to a conversation between the mute and the deaf, and says that everyday idioms and proverbs, well put together, make Telugu verse pleasing to the learned.
Statement 3: Correct (True)	Statement 3 is correct: her praise of Srinatha among earlier poets rules out a 13th-century date for her. Tikkana belongs to the 13th century; Srinatha, the court poet of the Reddi rulers, came later.
Statement 4: Wrong (False)	Statement 4 is wrong: the court poet of Rajaraja Narendra was Nannaya, of the 11th century. Potana belongs to the 15th century and lived in the territory of Sarvajna Singama.

Memory comparison: key persons, period and relation

Person	Century	Role / Association	Purpose for this question
Nannaya	11th century	Court poet of Rajaraja Narendra	Shows that the court poet of Rajaraja Narendra was Nannaya (not Potana).
Tikkana	13th century	A major poet of the 13th century	Gives the 13th-century reference point in the comparison.
Srinatha	Later than 13th century	Court poet of the Reddi rulers	Molla praises Srinatha as an earlier poet; this places Molla after him.
Potana	15th century	Lived in the territory of Sarvajna Singama	Shows that Potana is from the 15th century and not the court poet of Rajaraja Narendra.

Why the other options are wrong

(1) leaves out statement 3, which is correct.

(2) includes statements 2 and 4, both wrong, and leaves out statement 1.

(4) includes statements 2 and 4, both wrong, and leaves out statement 3.

Option elimination (complete)

Option	Statements included	Result
(1)	1 only	Reject: omits statement 3 (correct).
(2)	2, 3 and 4	Reject: includes 2 and 4 (wrong), omits 1 (correct).
(3)	1 and 3	Accept: both correct.
(4)	1, 2 and 4	Reject: includes 2 and 4 (wrong), omits 3 (correct).