SNAP 2015 Question Paper with Solutions

Time Allowed :2 Hours	**Maximum Marks :**150	**Total questions :**150

General Instructions

SNAP 2015 – INSTRUCTIONS TO CANDIDATES

1. No clarification on the Question Paper will be entertained.
2. There are 60 MCQs; attempt all.
3. Each question carries 1 mark; total marks = 150.
4. Negative marking: -0.25 mark for each wrong answer.
5. Darken only one correct option on the OMR sheet with black/blue ballpoint pen.
6. Multiple or incorrect marking methods will be treated as wrong.
7. Do not write anything on the OMR except required details.
8. Return the original OMR to the invigilator; you may keep the question booklet.
9. Use of unfair means will result in cancellation; impersonation is a criminal offence.
10. No electronic devices allowed inside the test hall.
11. Do not leave before the end of the test.

General Awareness

Q1. The full form of CSIRO is

(A) Comprehensive Scientific and Industrial Research Organization

(B) Cross-cultural Scientific and Industrial Research Organization

(C) Commonwealth Scientific and Industrial Research Organization

(D) Council of Scientific and Industrial Research Organization

Correct Answer: (C) Commonwealth Scientific and Industrial Research Organization

Solution:

Step 1: Identify the acronym.

CSIRO is an Australian national science agency. The letters stand for *Commonwealth Scientific and Industrial Research Organization*.

Step 2: Eliminate incorrect options.

(A) "Comprehensive" is incorrect — CSIRO stands for "Commonwealth," not "Comprehensive".

(B) "Cross-cultural" is incorrect — the organization is scientific, not cultural.

(D) "Council of Scientific and Industrial Research Organization" is misleading — that refers to CSIR in India, not CSIRO.

Step 3: Confirm the correct choice.

Thus, the correct expansion of CSIRO is option (C).

Commonwealth Scientific and Industrial Research Organization

Quick Tip

When solving acronym-based questions, always compare carefully with similar-sounding organizations. "Commonwealth" points directly to Australia, while "Council" refers to India's CSIR.

Q2. The full form of UNRISD is

(A) United Nations Research Institute for Soviet Development

(B) United Nations Research Institute for Scientific Development

(C) United Nations Research Institute for Socio-economic Development

(D) United Nations Research Institute for Social Development

Correct Answer: (D) United Nations Research Institute for Social Development

Solution:

Step 1: Decode the acronym.

UNRISD stands for *United Nations Research Institute for Social Development*. It focuses on social policies, equity, and development.

Step 2: Eliminate wrong choices.

(A) "Soviet Development" is incorrect — no UN body is named specifically for the Soviet Union.

(B) "Scientific Development" is incorrect — UNRISD is about social policy, not pure science.

(C) "Socio-economic Development" seems close, but the official title uses "Social Development."

Step 3: Verify the correct answer.

Hence, the only correct option is (D).

United Nations Research Institute for Social Development

Quick Tip

When multiple options sound similar, look for the exact wording of the institution's official name. "Social Development" is the key here.

Q3. Bhaona is a presentation of the Ankia Naat of Assam. In Bhaona, the cultural glimpses of _____ are reflected.

(A) Assam and Orissa

(B) Bengal

(C) Mathura and Brindavan

(D) All of the above

Correct Answer: (D) All of the above

Solution:

Step 1: Understanding Bhaona.

Bhaona is a traditional theatrical performance form introduced by Srimanta Sankardeva of Assam. It is performed as part of the Ankia Naat plays, which narrate mythological stories with devotional themes.

Step 2: Identify the cultural influences.

- From **Assam and Orissa**: Bhaona reflects local Assamese traditions as well as certain Orissan performance styles.
- From **Bengal**: Influences are drawn from Vaishnavite traditions popular in Bengal.
- From **Mathura and Brindavan**: The plays depict the life of Krishna, whose legends are deeply rooted in Mathura and Brindavan.

Step 3: Conclude.

Since Bhaona reflects cultural elements from all these regions, the correct answer is (D).

All of the above

Quick Tip

In cultural questions, always consider that traditional art forms often blend influences from multiple regions. "All of the above" is often correct when several cultural sources are explicitly mentioned.

Q4. Under which Act does the Archaeological Survey of India (ASI) protect monuments, sites and remains of national importance?

(A) AMASR Act, 1958

(B) AMASR Act, 1968

(C) AMASR Act, 1978

(D) AMASR Act, 1948

Correct Answer: (A) AMASR Act, 1958

Solution:

Step 1: Expand the acronym.

AMASR stands for *Ancient Monuments and Archaeological Sites and Remains Act*. It provides legal protection to monuments, heritage sites, and archaeological remains of national importance in India.

Step 2: Historical context.

The AMASR Act was passed in **1958**, replacing earlier colonial-era legislations. It empowered the Archaeological Survey of India (ASI) to declare monuments as "protected" and regulate activities around them.

Step 3: Eliminate incorrect options.

- (B) 1968 – incorrect, no such AMASR Act exists in that year.
- (C) 1978 – incorrect, the Act was already in force long before.
- (D) 1948 – incorrect, this predates the actual Act's enforcement.

Step 4: Conclude.

Thus, the correct choice is option (A).

AMASR Act, 1958

Quick Tip

Remember that the AMASR Act, 1958, is the primary legislation for monument protection in India. Any later rules or amendments are framed under this Act.

Q5. In 2015 the President of India approved conferment of Padma Awards to all of the following but for _____

(A) Kharag Singh Valdiya

(B) Mohammad Yusuf Khan

(C) Lakshmi Gopala Naidu

(D) Saichiro Misumi

Correct Answer: (C) Lakshmi Gopala Naidu

Solution:

Step 1: Recall Padma Awardees of 2015.

In 2015, the Padma Awards were given to several distinguished personalities including scientists, social workers, artists, and foreign nationals. Some of the awardees included geologist **Kharag Singh Valdiya**, Japanese scholar **Saichiro Misumi**, and musician **Mohammad Yusuf Khan**.

Step 2: Eliminate incorrect choices.

- (A) Kharag Singh Valdiya – He indeed received the Padma Bhushan in 2015.
- (B) Mohammad Yusuf Khan – He was among the recipients of the Padma awards.
- (D) Saichiro Misumi – A Japanese national honored for his work in literature and culture.

Step 3: Confirm the exception.

Lakshmi Gopala Naidu's name does not appear in the official list of 2015 Padma awardees. Hence, this is the correct exception.

Lakshmi Gopala Naidu

Quick Tip

When answering award-related questions, it helps to quickly recall a few notable recipients for that year. Often the "odd one out" will be a name that does not fit the official list.

Q6. In Grammy Awards 2015 the best folk album was won by _____

(A) Pharrell Williams – "Happy"

(B) Old Crow Medicine Show – Remedy

(C) Rosanne Cash – The River & the Thread

(D) None of the above

Correct Answer: (B) Old Crow Medicine Show – Remedy

Solution:

Step 1: Fix the award category and year.

The 57th Annual Grammy Awards (held in 2015) include the category *Best Folk Album*. We must recall which album won that category in that specific year.

Step 2: Evaluate each option.

(A) "Happy" by Pharrell Williams is a pop/R&B single and competes in Record/Song of the Year—*not* a folk album.

(C) Rosanne Cash's *The River & the Thread* was nominated (and it won Americana awards), but it did not win *Best Folk Album*.

(B) Old Crow Medicine Show's *Remedy* was the 2015 winner in *Best Folk Album*.

Step 3: Conclude.

Therefore, option (B) matches the award and year.

Old Crow Medicine Show — Remedy

Quick Tip

When awards questions name a specific year and category, first anchor the event (e.g., 57th Grammys, 2015) and then eliminate items that belong to other genres or categories.

Q7. Scientists discovered a new species in the human family tree which is a small creature with a tiny brain. The new species has been named as _____

(A) Homo Naledi

(B) Dwarf Sapein

(C) Dwarf Homo Sapein

(D) None of the above

Correct Answer: (A) Homo Naledi

Solution:

Step 1: Recall the 2015 hominin find.

In 2015, researchers announced a new hominin species from South Africa's Rising Star cave system characterized by a small cranial capacity and a mosaic of primitive and modern traits.

Step 2: Match the formal name.

The species was officially named *Homo naledi*. Note the lowercase *naledi* in scientific style; in MCQs it may appear capitalized.

Step 3: Eliminate incorrect spellings/terms.

"Dwarf Sapein" and "Dwarf Homo Sapein" are misspellings of *Homo sapiens* and not recognized species.

$$\boxed{\text{Homo naledi}}$$

Quick Tip

Watch for distractors created by misspelling a well-known species name (e.g., *sapein* vs *sapiens*). Correct taxonomy usually stands out.

Q8. The Ministry of External Affairs has recently decided to change the nomenclature of Indian Based Domestic Assistance (IBDA) to _____

(A) Government Serving Based Domestic Assistance (GSBDA)

(B) Swadesh Swatcha Domestic Assistance (SSDA)

(C) Service Staff (SS)

(D) Bharath Based Service Assistance (BBSA)

Correct Answer: (C) Service Staff (SS)

Solution:

Step 1: Understand the context.

"Indian Based Domestic Assistants (IBDA)" is the older MEA terminology for domestic help/support staff engaged by Indian missions abroad. A policy revision updated the label for clarity and neutrality.

Step 2: Identify the updated term.

The revised nomenclature substitutes the older phrase with the concise and neutral term *Service Staff (SS)*.

Step 3: Eliminate distractors.

Options (A), (B), and (D) are fabricated expansions that do not correspond to the MEA's official terminology change.

Service Staff (SS)

Quick Tip

In administration/policy MCQs, prefer options that look like realistic, neutral designations over long, invented-sounding expansions—especially when the question mentions a "nomenclature change."

Q9. The foreign exchange reserve of India consists of _____

(A) The foreign currency assets held by RBI and the gold holding of RBI

(B) The gold holding of RBI and special drawing rights

(C) The gold holding of RBI, the foreign currency assets held by RBI and special drawing rights

(D) Only the foreign currency assets held by RBI

Correct Answer: (C) The gold holding of RBI, the foreign currency assets held by RBI and special drawing rights

Solution:

Step 1: Components of forex reserves.

India's foreign exchange reserves, maintained by the Reserve Bank of India (RBI), consist of: 1. Foreign currency assets (mainly in US dollars, but including other currencies).

2. Gold holdings of RBI.

3. Special Drawing Rights (SDRs) with the IMF.

4. India's reserve position in the IMF (sometimes grouped with SDRs).

Step 2: Match with given options.

- (A) misses the SDR component.

- (B) excludes foreign currency assets, which are the largest share.

- (D) only includes foreign currency assets, incomplete.

- (C) correctly lists all major components.

Gold + Foreign Currency Assets + Special Drawing Rights

Quick Tip

Remember "Forex reserves = FCA + Gold + SDRs (+ IMF reserve position)." Always check if all three elements are included in the option.

Q10. _____ is a charge for converting bullion into coins where free coinage is permitted. This charge is equal to the cost of bullion to coins transformation.

(A) Bull-Coin

(B) Brassage

(C) Bit Coin

(D) Coin Levy

Correct Answer: (B) Brassage

Solution:

Step 1: Define the term.

"Brassage" is the technical term for the cost of minting coins from bullion, i.e., the charge levied to cover expenses like melting, refining, and coining.

Step 2: Examine distractors.

(A) "Bull-Coin" – not an economic term.

(C) "Bit Coin" – refers to cryptocurrency, unrelated to minting costs.

(D) "Coin Levy" – vague and not the recognized term.

Step 3: Confirm.

Therefore, the correct answer is (B) Brassage.

Brassage

Quick Tip

In monetary economics, "Brassage" = minting cost. Another related term is "Seigniorage" which is government profit from issuing currency.

Q11. Microsoft introduced several new products for education customers, this includes a notetaking app called _____

(A) Office Note classroom

(B) Micro Note class Notebook

(C) Soft note for classroom

(D) One Note class Notebook

Correct Answer: (D) One Note class Notebook

Solution:

Step 1: Identify the product.

Microsoft's education suite includes "OneNote Class Notebook," an extension of the OneNote app tailored for teachers and students. It allows assignments, collaboration, and digital note organization.

Step 2: Eliminate incorrect options.

(A) "Office Note classroom" – not an actual product name.

(B) "Micro Note class Notebook" – incorrect name.

(C) “Soft note for classroom” – fictitious.

(D) “One Note class Notebook” – the official branding used by Microsoft.

OneNote Class Notebook

Quick Tip

Microsoft’s education tools revolve around “OneNote Class Notebook” integrated with Teams and Office 365. Always recall the exact brand name.

Q12. The National Merit Scholarship Scheme, which provided financial assistance to meritorious students from Class XI to Post-Graduation level in Government Schools/Colleges/Universities has been discontinued from the year _____

(A) 2009

(B) 2008

(C) 2007

(D) None of the above

Correct Answer: (C) 2007

Solution:

Step 1: Background of the scheme.

The National Merit Scholarship Scheme (NMSS) was started to encourage meritorious students by providing scholarships for higher studies. It covered Class XI up to postgraduate level students.

Step 2: Discontinuation year.

In 2007, the Government of India officially discontinued the NMSS, shifting focus towards other targeted scholarship schemes like the Central Sector Scheme of Scholarships for College and University Students.

Step 3: Eliminate wrong options.

- (A) 2009 and (B) 2008 are later years and incorrect.

- (D) “None of the above” is incorrect because 2007 is explicitly correct.

2007

Quick Tip

When recalling discontinued schemes, always remember the shift in policy — NMSS was replaced in 2007 with centrally targeted schemes to benefit specific student categories.

Q13. The symbol used for reusable microwaveable plastic ware is _____

1. 

2. 

3. 

4. 

(A) 1

(B) 2

(C) 3

(D) 4

Correct Answer: (B) 2

Solution:

Step 1: Recall the plastic identification codes.

Plastics are marked with recycling codes (1–7). These codes indicate the resin type and help determine whether the material is safe for food use or microwave reheating.

Step 2: Check relevant codes.

- Code 1 (PETE): Used for single-use bottles, not safe for reheating.

- Code 2 (HDPE): High-Density Polyethylene, considered safe for food storage and reusable containers, including microwaveable ware.

- Code 3 (PVC): Avoid for food and microwave use.

- Code 4 (LDPE): Flexible but not typically microwave-safe.

- Code 5 (PP): Also used for microwave containers (sometimes shown separately).

Step 3: Match to the question.

Among the given choices, Code 2 (HDPE) is the best recognized symbol for reusable microwaveable plastic containers.

$\boxed{2}$

Quick Tip

Always remember plastic codes: 1 (PETE) = single use, 2 (HDPE) and 5 (PP) = safer for reheating and reuse, 3 and 6 should be avoided for food contact.

Q14. The agency that estimates national income in India is

(A) RBI

(B) Central Statistics Organisation

(C) Planning Commission

(D) Central Statistic Organisation

Correct Answer: (B) Central Statistics Organisation

Solution:

Step 1: Role of agencies.

The estimation of national income in India is carried out by the *Central Statistics Office (CSO)*, which was earlier known as the Central Statistical Organisation. It is now merged into the National Statistical Office (NSO).

Step 2: Eliminate incorrect options.

(A) RBI – responsible for monetary policy and financial stability, not national income estimates.

(C) Planning Commission – earlier responsible for planning, but not statistical estimation.

(D) "Central Statistic Organisation" – incorrect spelling/wording of CSO.

Step 3: Confirm.

Hence, the correct answer is (B).

Central Statistics Organisation (CSO)

Quick Tip

Remember: GDP and national income data in India come from CSO/NSO, not RBI or Planning Commission.

Q15. Super Blood Moon, which is a rare astronomical phenomenon, hasn't happened since _____, and won't happen again until _____

(A) 1982, 2033

(B) 1980, 2035

(C) 1978, 2032

(D) 1975, 2031

Correct Answer: (A) 1982, 2033

Solution:

Step 1: What is a Super Blood Moon?

It is a phenomenon where a lunar eclipse coincides with a "supermoon" (the Moon being closest to Earth in its orbit). The Moon appears larger, red in color, and spectacularly bright.

Step 2: Occurrence dates.

Astronomical records confirm that this combination last occurred in 1982. The next similar event is expected in 2033.

Step 3: Eliminate distractors.

Options (B), (C), and (D) are incorrect as their years do not align with recorded astronomical predictions.

1982 and 2033

Quick Tip

Always verify astronomical phenomena with NASA or international observatories. Dates are precise and easy to cross-check.

Q16. The galaxy _____ was initially discovered with NASA's Spitzer Space Telescope in infrared light and is believed to be at least 9 billion years old.

(A) Andromeda

(B) Cosmos Redshift

(C) SAGE0536AGN

(D) Sunflower

Correct Answer: (C) SAGE0536AGN

Solution:

Step 1: Recall Spitzer discoveries.

NASA's Spitzer Space Telescope, using infrared imaging, has discovered several ancient galaxies. One such galaxy, *SAGE0536AGN*, is estimated to be about 9 billion years old.

Step 2: Examine options.

(A) Andromeda – known since ancient times, visible to naked eye, not discovered by Spitzer.

(B) Cosmos Redshift – not the correct designation of this galaxy.

(D) Sunflower Galaxy – also known (M63), discovered centuries ago, not linked to Spitzer.

Step 3: Confirm.

The correct match is (C) SAGE0536AGN.

$$\boxed{\text{SAGE0536AGN}}$$

Quick Tip

Astronomy MCQs often test whether you know which discoveries are ancient (Andromeda, Sunflower) versus modern (infrared telescope finds like SAGE galaxies).

Q17. In the year 2014 Facebook bought Whatsapp for _____ US Dollars.

(A) 17 billion

(B) 18 billion

(C) 19 billion

(D) 20 billion

Correct Answer: (C) 19 billion

Solution:

Step 1: Recall the acquisition.

In February 2014, Facebook announced the acquisition of WhatsApp. The deal was valued at approximately **$19 billion**, making it one of the largest tech acquisitions in history.

Step 2: Eliminate other options.

(A) 17 billion, (B) 18 billion, and (D) 20 billion are close estimates but not the exact reported deal size. The correct and widely reported figure is $19 billion.

$$\boxed{19 \text{ billion USD}}$$

Quick Tip

Large corporate acquisitions often appear in exams; memorize the biggest tech deals like Facebook–WhatsApp ($19B), Microsoft–LinkedIn ($26B), etc.

Q18. Shri Narendra Modi was sworn in as the Prime Minister of India on _____ at the Rashtrapati Bhavan in New Delhi.

(A) 25^{th} May 2014

(B) 19^{th} May 2014

(C) 26^{th} May 2014

(D) 27^{th} May 2014

Correct Answer: (C) 26th May 2014

Solution:

Step 1: General election of 2014.

The 16th Lok Sabha elections concluded in May 2014, with BJP securing a majority.

Step 2: Swearing-in ceremony.

Shri Narendra Modi took oath as the 14th Prime Minister of India on **26 May 2014** at Rashtrapati Bhavan, New Delhi.

Step 3: Confirm.

Thus, option (C) is correct.

$$\boxed{26^{th} \text{ May } 2014}$$

Quick Tip

For political history, always link general elections with exact swearing-in dates. Modi's first term began on 26 May 2014 and his second on 30 May 2019.

Q19. Where is the doldrums belt located?

(A) Near the Equator

(B) Near the Poles

(C) Near the Tropic of Cancer

(D) Near the Tropic of Capricorn

Correct Answer: (A) Near the Equator

Solution:

Step 1: Define doldrums.

The doldrums refer to a low-pressure belt around the equator (roughly between 5°N and 5°S) where trade winds from both hemispheres converge. It is also called the Inter-Tropical Convergence Zone (ITCZ).

Step 2: Characteristics.

This region is known for calm winds, high humidity, and heavy rainfall. Sailors historically dreaded it because ships could be trapped without wind for weeks.

Step 3: Eliminate options.

- Poles – high-pressure zones, not doldrums.

- Tropic of Cancer/Capricorn – subtropical highs, not equatorial lows.

Near the Equator

Quick Tip

Doldrums = Equatorial low-pressure belt (ITCZ). Subtropical highs = Horse latitudes, mid-latitude = Westerlies, poles = Polar highs.

Q20. The air quality in Singapore deteriorated to a hazardous level in September 2015, forcing the city-state to shut its schools for the first time in 12 years. This was due to

(A) Haze created mainly due to companies in Malaysia

(B) Haze created mainly due to companies in Indonesia

(C) Haze created mainly due to companies in Philippines

(D) Haze created mainly due to companies in Vietnam

Correct Answer: (B) Haze created mainly due to companies in Indonesia

Solution:

Step 1: Recall the 2015 haze crisis.

In September 2015, Singapore faced severe transboundary haze pollution. This haze was caused by slash-and-burn agricultural practices in **Indonesia**, especially in Sumatra and Kalimantan.

Step 2: Eliminate incorrect options.

(A) Malaysia – was affected, not the origin.

(C) Philippines – not involved in the haze crisis.

(D) Vietnam – also not a source.

Step 3: Confirm.

Thus, the haze was due to Indonesia's companies using fire to clear land.

Indonesia

Quick Tip

Transboundary haze in Southeast Asia almost always originates from Indonesia's forest fires, especially during El Niño years.

Q21. In 1347 during the reign of Muhammed Tughlaq an Afghan officer named _____ set up an independent kingdom called Bahmani Kingdom.

(A) Mahmud Gawan Bahmani

(B) Mohammad Yusuf Bahmani

(C) Hasan Gangu Bahmani

(D) Khwaja Tughlaq Bahmani

Correct Answer: (C) Hasan Gangu Bahmani

Solution:

Step 1: Historical background.

During Muhammad bin Tughlaq's reign, discontent among nobles and governors led to rebellions. In 1347, **Hasan Gangu** declared independence and established the *Bahmani Kingdom* in the Deccan.

Step 2: Eliminate wrong options.

(A) Mahmud Gawan was a later prime minister of Bahmani, not its founder.

(B) Mohammad Yusuf Bahmani – no historical evidence.

(D) Khwaja Tughlaq Bahmani – fictitious.

Step 3: Confirm.

The founder of the Bahmani kingdom was Hasan Gangu.

Hasan Gangu Bahmani

Quick Tip

Link dynasties with founders: Bahmani – Hasan Gangu, Vijayanagar – Harihara and Bukka, Mughal – Babur.

Q22. The task of consolidating Mughal Kingdom was left to Akbar who was only _____ years old at the time of his accession of the throne.

(A) Eleven Years

(B) Twelve Years

(C) Thirteen Years

(D) Fourteen Years

Correct Answer: (C) Thirteen Years

Solution:

Step 1: Historical event.

After Humayun's death in 1556, his son **Akbar** succeeded to the Mughal throne. At that time, Akbar was just **13 years old**.

Step 2: Consequences.

Due to his young age, his regent Bairam Khan initially guided the empire, leading Mughal forces in the Second Battle of Panipat (1556).

Step 3: Eliminate wrong options.

Options (A), (B), and (D) are close but incorrect. Historical sources confirm Akbar was exactly 13.

13 years old

Quick Tip

Remember: Akbar's accession = 1556, age 13, guided by Bairam Khan. This often appears in medieval history MCQs.

Q23. Smoking in public places was prohibited nationwide from _____

(A) 15th August 2008

(B) 2nd October 2008

(C) 15th August 2009

(D) 2nd October 2009

Correct Answer: (B) 2nd October 2008

Solution:

Step 1: Background.

The Government of India enforced a nationwide ban on smoking in public places under the Prohibition of Smoking in Public Places Rules.

Step 2: Important date.

The rule came into effect on **2nd October 2008**, coinciding with Mahatma Gandhi's birth anniversary, symbolizing public health and non-violence.

Step 3: Eliminate wrong choices.

(A) 15th August 2008 – Independence Day, but no such law started then.

(C) and (D) 2009 dates are factually wrong.

$\boxed{2^{nd} \text{ October 2008}}$

Quick Tip

For policy questions, remember dates tied with symbolic national days. India chose 2nd October (Gandhi Jayanti) for this anti-smoking law.

Q24. A constitutional right can be _____ recognized and established by a sovereign State or union of States.

(A) a prerogative or a duty or a restraint of power

(B) a prerogative or a duty, a power or a restraint of power

(C) a prerogative or a duty, a power but not a restraint of power

(D) a power but not a prerogative or a duty

Correct Answer: (B) a prerogative or a duty, a power or a restraint of power

Solution:

Step 1: Nature of constitutional rights.

Constitutional rights can be broadly classified as: - **Prerogatives** (special privileges)

- **Duties** (imposed on citizens or state)

- **Powers** (authority conferred)

- **Restraints of power** (limits placed on government authority).

Step 2: Match with options.

Option (B) correctly includes all: prerogative, duty, power, and restraint of power. Others exclude one or more.

Prerogative or duty, power or restraint of power

Quick Tip

Always note: Constitutional rights are not just freedoms but can also be restraints (checks on power) or duties imposed.

Q25. In Nepal the festival of lights i.e. Diwali is celebrated by some Buddhists as _____

(A) Tihar

(B) Swanti

(C) Both options a and b

(D) Neither of the options above

Correct Answer: (C) Both options a and b

Solution:

Step 1: Diwali in Nepal.

In Nepal, Hindus celebrate Diwali as **Tihar**, a festival dedicated to animals like crows, dogs, cows, and Goddess Laxmi.

Step 2: Among Buddhists.

Among Newar Buddhists of Nepal, the same festival is observed as **Swanti**, involving rituals for family health and prosperity.

Step 3: Conclusion.

Since Diwali in Nepal is known both as Tihar (Hindus) and Swanti (Buddhists), the correct option is (C).

$$\boxed{\text{Tihar and Swanti (Both)}}$$

Quick Tip

In cultural questions, note that the same festival may have multiple names across religions/regions. Diwali in Nepal is Tihar (Hindus) and Swanti (Buddhists).

Q26. The term ”Vrajapati” used in Indian Mythology denoted _____

(A) The Head of the Village

(B) The Head of the Family

(C) The Head of a Society

(D) The Head of a City

Correct Answer: (A) The Head of the Village

Solution:

Step 1: Meaning of the term.

In ancient Indian mythology and Vedic literature, the term *Vrajapati* was used to denote the leader or head of a community settlement (often called *vraja*).

Step 2: Context.

The *vraja* referred to a cluster of households or a village, and its head was known as the *Vrajapati*, responsible for administration and justice.

Step 3: Elimination.

(B) "Head of the Family" is more like *Kulapati*.

(C) "Head of a Society" is too general.

(D) "Head of a City" is more like *Nagarapati*.

The Head of the Village

Quick Tip

Link "pati" suffix with leadership: *Gopati* = lord of cows, *Vrajapati* = head of village, *Kulapati* = head of family/lineage.

Q27. One of India's most distinguished constitutional lawyers who had received brickbats for arguing in favor of Dow Chemicals in the Bhopal gas disaster case is _____

(A) Ram Jethmalani

(B) Fali Nariman

(C) Mukul Rohatgi

(D) Pramila Nesargi

Correct Answer: (B) Fali Nariman

Solution:

Step 1: Background.

The Bhopal Gas Tragedy (1984) was one of the world's worst industrial disasters, caused by leakage of methyl isocyanate gas at Union Carbide India Ltd. Later, Dow Chemicals faced criticism as Union Carbide's successor.

Step 2: Lawyer involved.

Fali Nariman, a renowned constitutional jurist, appeared on behalf of Dow Chemicals at one stage, leading to public criticism despite his otherwise illustrious career.

Step 3: Elimination.

(A) Ram Jethmalani – senior lawyer, but not linked with Dow in this case.

(C) Mukul Rohatgi – former Attorney General, not involved.

(D) Pramila Nesargi – activist lawyer, not linked with this case.

Fali Nariman

Quick Tip

In legal GK, remember the associations of top lawyers with major cases: Fali Nariman (Bhopal gas), Ram Jethmalani (criminal cases), Harish Salve (international arbitration).

Q28. The Nobel Peace Prize winner who gave up freedom and a life with her family in Britain, to protest against the military rule at another country, who is also the Chair of the National League for Democracy is _____

(A) Angela Merkel

(B) Christine Lagarde

(C) Brito Polman

(D) Aung San Suu Kyi

Correct Answer: (D) Aung San Suu Kyi

Solution:

Step 1: Identify the leader.

Aung San Suu Kyi of Myanmar sacrificed her personal life, living under house arrest for years to oppose the military junta.

Step 2: Achievements.

She became the global symbol of peaceful resistance, winning the **Nobel Peace Prize in 1991**. She also led the *National League for Democracy*.

Step 3: Eliminate other names.

(A) Angela Merkel – former German Chancellor, no Nobel Peace Prize.

(B) Christine Lagarde – economist, head of IMF/ECB, no Nobel.

(C) Brito Polman – no such Nobel laureate.

Aung San Suu Kyi

Quick Tip

For Nobel Prize GK, match laureates with causes: Aung San Suu Kyi (democracy in Myanmar), Malala (girls' education), Kailash Satyarthi (child rights).

Q29. In September 2015 it was revealed that _____ is the country which was exporting drone components worth hundreds of millions to countries that include Saudi Arabia and South Korea, to regain lost ground in a global arms race.

(A) France

(B) United Kingdom

(C) Japan

(D) USA

Correct Answer: (B) United Kingdom

Solution:

Step 1: Context of the arms race.

In 2015, reports highlighted that the United Kingdom had exported significant quantities of drone technology and components to Saudi Arabia, South Korea, and other nations. This was part of an effort to regain competitiveness in the global defense market.

Step 2: Eliminate other countries.

(A) France – a major arms exporter but not specifically flagged for drone exports in 2015.

(C) Japan – has strict arms export controls.

(D) USA – leading in drones, but the 2015 revelation was about the UK.

United Kingdom

Quick Tip

When dealing with arms export questions, note which countries are highlighted in specific years. The UK's 2015 drone exports were widely covered.

Q30. In the Indian general assembly elections 2014 the BJP-led NDA won _____ seats out of _____ Lok Sabha seats that were announced.

(A) 335546

(B) 334545

(C) 336543

(D) 331544

Correct Answer: (C) 336543

Solution:

Step 1: Results of 2014 Lok Sabha election.

The Lok Sabha has 543 elected seats. In the 2014 general election, the BJP-led NDA secured a sweeping majority.

Step 2: Exact numbers.

- BJP alone won 282 seats.

- NDA (alliance) secured 336 seats in total out of 543.

Step 3: Match with options.

Thus, the correct expression is **336/543**.

336 out of 543

Quick Tip

Remember: 2014 → BJP 282 seats, NDA 336/543. This is a landmark majority after 30 years.

Q31. The BS EN 16001 solutions from BSI is applicable for _____

(A) Energy Management Systems

(B) Environment Management Systems

(C) Energy Process Systems

(D) Environment Standard Systems

Correct Answer: (A) Energy Management Systems

Solution:

Step 1: About BS EN 16001.

BS EN 16001 is a European standard developed by the British Standards Institution (BSI). It provides a framework for managing and reducing energy consumption in organizations.

Step 2: Clarification.

It is not an environmental management system (that would be ISO 14001). Instead, it focuses specifically on **energy management systems**, including monitoring, efficiency, and reduction.

Step 3: Eliminate wrong options.

(B) and (D) confuse with environment standards.

(C) "Energy Process Systems" is not the official term.

Energy Management Systems

Quick Tip

Standards to remember: ISO 9001 (Quality), ISO 14001 (Environment), BS EN 16001/ISO 50001 (Energy Management).

Q32. The WEEE (Waste from Electrical and Electronic Equipment) is a directive that controls _____

(A) how electric and electronic equipment is handled and recycled

(B) how electric and electronic equipment is manufactured and handled

(C) how electric and electronic equipment is recycled

(D) how electric and electronic equipment is manufactured, handled and recycled

Correct Answer: (C) how electric and electronic equipment is recycled

Solution:

Step 1: About WEEE Directive.

The *Waste Electrical and Electronic Equipment (WEEE) Directive* is a European Union directive that deals with the safe disposal and recycling of e-waste.

Step 2: Purpose.

Its primary goal is to ensure that discarded electrical and electronic items are collected separately, properly treated, and **recycled** to reduce environmental harm.

Step 3: Elimination.

(A) and (B) mention handling/manufacturing, which are not the focus of WEEE.

(D) is too broad—manufacturing is regulated by other directives (RoHS).

Recycling of electrical and electronic equipment

Quick Tip

Remember: WEEE = recycling; RoHS = hazardous substances in manufacturing. The two EU directives complement each other.

Q33. The Sensex and Nifty are both indices. The base years for the BSE Sensex and Nifty are _____ and _____ respectively.

(A) 1980-81 and 1990

(B) 1990-91 and 2000

(C) 1978-79 and 1995

(D) 2000-01 and 2004

Correct Answer: (C) 1978-79 and 1995

Solution:

Step 1: BSE Sensex.

The Bombay Stock Exchange (BSE) Sensex was launched in 1986, with its base year fixed as **1978–79**, indexed to 100.

Step 2: NSE Nifty.

The National Stock Exchange (NSE) Nifty 50 index was launched in 1996, with its base year set to **1995**, also indexed to 1000.

Step 3: Eliminate wrong options.

Other options give mismatched base years. Only option (C) gives the correct pair.

$$\boxed{\text{Sensex} = 1978\text{–}79,\ \text{Nifty} = 1995}$$

Quick Tip

Stock index base years: Sensex $\rightarrow$ 1978–79, Nifty $\rightarrow$ 1995. Easy to link: Sensex (older), Nifty (newer).

Q34. The artist who painted *Irises, Sunflowers, Red Poppies, Pink Roses* was _____

(A) Vincent van Gogh

(B) Sandro Botticelli

(C) Leonardo da Vinci

(D) Michelangelo

Correct Answer: (A) Vincent van Gogh

Solution:

Step 1: Identify the art style.

The paintings "Sunflowers" and "Irises" are world-famous works by Dutch Post-Impressionist painter **Vincent van Gogh**.

Step 2: Eliminate incorrect options.

(B) Botticelli – Renaissance painter, known for *Birth of Venus*, not floral works.

(C) Leonardo da Vinci – Renaissance polymath, famous for *Mona Lisa*, not flower paintings.

(D) Michelangelo – sculptor and painter, but known for Sistine Chapel frescoes.

Step 3: Confirm.

All the mentioned floral paintings belong to van Gogh's body of work.

Vincent van Gogh

Quick Tip

Match painters with signature works: Van Gogh = Sunflowers/Irises, da Vinci = Mona Lisa, Botticelli = Birth of Venus, Michelangelo = Sistine Chapel.

Q35. Which Indian satellite was launched that has a fantastic timing and records 1000th of a second?

(A) GSAT-16

(B) IRNSS-ID

(C) GSAT-6

(D) Astrosat

Correct Answer: (C) GSAT-6

Solution:

Step 1: Satellite background.

GSAT-6 was launched by ISRO in 2015. It is notable for providing advanced mobile communication through multi-beam coverage. One of its features includes precise timing, recording up to 1/1000th of a second, which is critical for secure communication.

Step 2: Eliminate options.

(A) GSAT-16 – launched for telecommunication, not timing precision.

(B) IRNSS-ID – part of navigation satellites (NavIC), but not the one mentioned here.

(D) Astrosat – India's first space observatory, unrelated to timing or communications.

GSAT-6

Quick Tip

GSAT satellites are communication-based, IRNSS for navigation, Astrosat for astronomy. Linking function to name helps avoid confusion.

Q36. W3C stands for _____

(A) Triple Web Consortium

(B) Triple Web Consolidation Council

(C) World Wide Web Consortium

(D) World Wide Web Company

Correct Answer: (C) World Wide Web Consortium

Solution:

Step 1: Identify W3C.

W3C is an international community that develops open standards to ensure the long-term growth of the web. It was founded by Tim Berners-Lee, the inventor of the World Wide Web.

Step 2: Match with options.

Only option (C) correctly expands to **World Wide Web Consortium**. The others are distractors with no real meaning.

World Wide Web Consortium

Quick Tip

W3C sets global web standards like HTML, CSS, and XML. Always associate W3C with "consortium," not company or council.

Q37. The country/countries that has/have resorted to Quantitative Easing in the last decade is/are _____

(A) United States of America

(B) United Kingdom

(C) Japan

(D) All of the above

Correct Answer: (D) All of the above

Solution:

Step 1: Define Quantitative Easing (QE).

QE is a monetary policy where central banks buy government securities or other securities to inject liquidity into the economy when interest rates are already near zero.

Step 2: Countries applying QE.

- USA (Federal Reserve) used QE after the 2008 financial crisis.

- UK (Bank of England) adopted QE around the same time.

- Japan (Bank of Japan) has used QE extensively since the 1990s "Lost Decade."

Step 3: Conclude.

Since all three countries have practiced QE, the correct choice is (D).

$$\boxed{\text{USA, UK, and Japan (All of the above)}}$$

Quick Tip

QE = Central bank printing money to buy securities. Remember: USA, UK, and Japan are the key practitioners post-2008.

Q38. Who is the Indian badminton player who after spending a year after his shoulder injury earned a final appearance at the Korean Open in 2015?

(A) Chetan Anand

(B) Ajay Jayaram

(C) Parupalli Kashyap

(D) Sameer Verma

Correct Answer: (B) Ajay Jayaram

Solution:

Step 1: Identify player with injury comeback.

Ajay Jayaram is a professional Indian badminton player who suffered a serious shoulder injury but made a comeback in 2015.

Step 2: Korean Open 2015 performance.

He reached the finals of the Korean Open Superseries in September 2015, marking his return after a year-long break due to injury.

Step 3: Eliminate other options.

- Chetan Anand: senior player, not active in Superseries finals in 2015.
- Parupalli Kashyap: known for 2014 Commonwealth Games win, not Korean Open 2015.
- Sameer Verma: younger player, achievements came later.

Ajay Jayaram

Quick Tip

Always link year + tournament + player for sports GK. For 2015 Korean Open, remember Ajay Jayaram's comeback story.

Q39. Tamaasha, the traditional folk theatre form of Maharashtra, has evolved from the folk forms of _____

(A) Gondhal, Jagran and Kirtan

(B) Only Kirtan

(C) Only Gondhal, Jagran

(D) Only Gondhal

Correct Answer: (A) Gondhal, Jagran and Kirtan

Solution:

Step 1: Define Tamasha.

Tamasha is a traditional Marathi folk theatre form, combining music, dance, and drama, often with social or satirical themes.

Step 2: Historical roots.

It evolved during the Peshwa period and drew heavily from earlier devotional and performative folk forms.

Step 3: Influences.

- Gondhal: a ritual performance dedicated to deities.
- Jagran: night-long devotional performance.
- Kirtan: religious discourses with singing.

Thus, the mixture of these three gave rise to Tamasha.

Gondhal, Jagran and Kirtan

Quick Tip

Folk forms like Gondhal, Jagran, and Kirtan influenced Tamasha. Remember: Tamasha = mix of devotional + entertainment theatre.

Q40. The last series of wall painting in India are from near Hindupur belonging to 16th century A.D.

(A) Lepakshi temple

(B) Shiva temple

(C) Sri Venkateswara Swami Temple

(D) Ganesh Temple

Correct Answer: (A) Lepakshi temple

Solution:

Step 1: Location.

Lepakshi is a small village in Andhra Pradesh, near Hindupur. It is famous for the Veerabhadra temple.

Step 2: Wall paintings.

The temple contains some of the finest examples of 16th century Vijayanagara murals, depicting epics like Ramayana and Mahabharata.

Step 3: Eliminate options.

- Shiva temple, Venkateswara temple, Ganesh temple do not match the clue "near Hindupur, 16th century wall paintings."

Thus, the correct answer is Lepakshi temple.

Lepakshi Temple (Veerabhadra Temple)

Quick Tip

For wall paintings $\rightarrow$ remember Lepakshi (Andhra Pradesh) = Vijayanagara murals of 16th century.

Reasoning

Q41. A bungalow has one of its rooms on the first floor and there are three identical 100-watt electrical bulbs fixed in the room. Each bulb is connected to a specific switch located at the basement. There are only three switches in the basement. All the bulbs are switched off at present and you are also at the basement area. The first floor cannot be seen from the basement area. If you are allowed to use your common prudence, what is the minimum number of times that you will have to go from basement to first floor to identify which switch goes to which bulb?

(A) 3 times

(B) 20 times

(C) 1 time

(D) 6 times

Correct Answer: (C) 1 time

Solution:

Step 1: Use heat as a clue in addition to light.

Label the basement switches S_1, S_2, S_3 (each controls one of the three identical bulbs upstairs). Because bulbs heat up when on, we can use *warmth* to distinguish past states with a single visit.

Step 2: Create three distinct bulb states from the basement.

1. Turn on S_1 and leave it ON for 5–10 minutes so the corresponding bulb heats up.
2. After it is warm, turn *off* S_1 and immediately turn *on* S_2. Leave S_2 ON.
3. Keep S_3 *always off*.

Step 3: Go upstairs *once* and identify each bulb.

- The bulb that is **glowing (ON)** corresponds to S_2.
- Among the two that are **OFF**, touch carefully: the one that is **warm** corresponds to S_1 (it was on recently).
- The one that is **OFF and cold** corresponds to S_3.

Thus all three switch–bulb pairs are identified in a **single** trip upstairs.

$$\boxed{\text{Minimum trips from basement to first floor } = 1}$$

Quick Tip

For switch–bulb puzzles, engineer three distinct states before you go upstairs: ON, OFF-but-warm, and OFF-and-cold. That guarantees identification in one visit.

Q42. Shyam is running a start-up. His initial investments are high and he is trying hard to manage and increase his cash flow. The sundry expenses that his firm incurs is negligible. He found from his accountant that the amount of pre-paid expenses in the balance sheet, which were booked from the previous year to the current year was increased. Shyam also ensured that his cash funded by the venture capitalists did not reduce when compared to the previous year. The interest that he gets from his fixed deposits increases, which is in tune with his sundry expenses. The final effect on cash for this year would be _____.

(A) Cash flow marginally increases
(B) Cash flow exponentially increases
(C) Cash flow remains the same
(D) None of the above

Correct Answer: (D) None of the above

Solution:
Step 1: Parse each item's impact on cash.

- **Increase in prepaid expenses**: prepaid expenses are *cash paid in advance*, so an increase implies a **cash outflow** this year. (Reduces cash.)
- **VC cash position unchanged**: equity cash contributed/held *did not decrease* relative to last year, so this item is **neutral** to the change in cash.
- **Higher interest income on FDs**: increases **cash inflow**; however the magnitude is not provided. It is only said to be "in tune with sundry expenses," which are *negligible*. Hence this inflow is likely **small**.

Step 2: Net effect cannot be determined numerically.
We have a negative effect (higher prepaid outflow) and a small positive effect (slightly higher interest). Without the magnitudes of (i) the increase in prepaid expenses and (ii) the interest rise, we cannot conclude whether total cash *increases marginally*, *stays the same*, or *decreases*.
Step 3: Choose "None of the above."

Since options (A)–(C) assert a definite direction or equality without sufficient data, the only defensible choice is (D).

Insufficient information to decide (None of the above)

Quick Tip

In cash-flow word problems, don't guess the direction without magnitudes. If offsetting inflows/outflows are given but not quantified, the correct choice is often "Cannot be determined."

Q43. A producer must schedule six plays: "Made in India" (MI), "Laugh for a while" (LF), "The Life is your choice" (TL), "MBA - Maha Budhiman Aadmi" (MBA), "Placements - my goal" (PL), and "MBA Go Getters" (GG). The criteria are:

I. MI must be shown before TL and before LF.

II. LF must be shown before MBA.

III. PL must be shown after TL and after GG.

Which schedule fits all criteria?

(A) MI, LF, TL, MBA, PL, GG

(B) GG, MI, LF, TL, PL, MBA

(C) MI, GG, PL, LF, MBA, TL

(D) MI, GG, MBA, TL, PL, LF

Correct Answer: (B) GG, MI, LF, TL, PL, MBA

Solution:

Step 1: Translate constraints to order arrows.

I: MI $\rightarrow$ TL and MI $\rightarrow$ LF.

II: LF $\rightarrow$ MBA.

III: TL $\rightarrow$ PL and GG $\rightarrow$ PL.

Step 2: Verify each option.

(A) MI, LF, TL, MBA, PL, GG: violates III because PL must be after GG, but PL comes *before* GG.

(B) GG, MI, LF, TL, PL, MBA:

- MI before TL and LF (MI 2nd, LF 3rd, TL 4th)
- LF before MBA (LF 3rd, MBA 6th)
- PL after TL and after GG (PL 5th; TL 4th; GG 1st)

All constraints satisfied.

(C) MI, GG, PL, LF, MBA, TL: violates III because PL is *before* TL.

(D) MI, GG, MBA, TL, PL, LF: violates II because LF is after MBA (LF last).

Step 3: Conclude.

Only option (B) satisfies I–III simultaneously.

GG, MI, LF, TL, PL, MBA

Quick Tip

For ordering puzzles, rewrite rules as arrows and check each option quickly for any early violation—one broken arrow is enough to reject an option.

Q44. Mr. Peter gave his eldest son David a bag with 1000 gold coins. David took 230 coins from the bag and gave the rest to his younger brothers John, Joe and Jonathan, and advised them to distribute the balance in proportion to their ages whose *sum* is 17.5 years. After discussion they decided to distribute using the following rule:
As often as John took 4 coins, Joe took 3; and as often as John took 6 coins, Jonathan took 7.
What are the ages of John, Joe and Jonathan (in years)?

(A) 6 years, 4.5 years and 7 years respectively
(B) 5 years, 5.5 years and 7 years respectively
(C) 6 years, 5 years and 6.5 years respectively
(D) 5 years, 6.5 years and 6 years respectively

Correct Answer: (A) 6 years, 4.5 years and 7 years respectively

Solution:

Step 1: Convert the taking rule into ratios.

From "John takes 4 while Joe takes 3" we get John:Joe $= 4 : 3$.

From "John takes 6 while Jonathan takes 7" we get John:Jonathan $= 6 : 7$.

Step 2: Make John's share the same in both ratios.

To combine, equalize John's part using $\mathrm{LCM}(4, 6) = 12$.

- Scale $4 : 3$ by $3 \Rightarrow$ John:Joe $= 12 : 9$.

- Scale $6 : 7$ by $2 \Rightarrow$ John:Jonathan $= 12 : 14$.

Step 3: Obtain the three-way ratio (John:Joe:Jonathan).

With John fixed at 12, the combined ratio is

$$\text{John:Joe:Jonathan} = 12 : 9 : 14.$$

By the problem's instruction, the gold-coin shares are proportional to their *ages*, so their ages are also in the ratio $12 : 9 : 14$.

Step 4: Use the given total age.

Sum of the ratio parts $= 12 + 9 + 14 = 35$. The actual sum of ages is 17.5 years, which is exactly half of 35. Therefore the common factor is $\frac{17.5}{35} = \frac{1}{2}$. Multiply each part by $\frac{1}{2}$:

$$\text{John} = \frac{12}{2} = 6, \quad \text{Joe} = \frac{9}{2} = 4.5, \quad \text{Jonathan} = \frac{14}{2} = 7.$$

$$\boxed{\text{John } = 6 \text{ years}, \ \text{Joe } = 4.5 \text{ years}, \ \text{Jonathan } = 7 \text{ years}}$$

Quick Tip

When two pairwise ratios share one common term (here, John), equalize that common term (via LCM), then merge to get the three-way ratio and scale using the given total.

Q45. Mohan has an antique clock which strikes and makes a loud gong every hour. It strikes the exact number of times indicating the hour. His clock takes **7 seconds** to strike **Seven O' clock**. How many seconds will it take to strike **Eleven O' clock**?

(A) 11.22222227 seconds

(B) 11 seconds

(C) 11.66666667 seconds

(D) None of the above

Correct Answer: (C) 11.66666667 seconds

Solution:

Step 1: Key idea — counts are strikes, time lies in *gaps*.

If the clock strikes n times, the number of *equal* gaps between successive gongs is $n - 1$.

Hence, total time depends on $n - 1$, not on n.

Step 2: Infer one-gap time from the 7 o'clock data.

For 7 o'clock: strikes $= 7 \Rightarrow$ gaps $= 6$.

Given total time $= 7$ s $\Rightarrow$ one gap $= \dfrac{7}{6}$ s.

Step 3: Scale up to 11 o'clock.

For 11 o'clock: strikes $= 11 \Rightarrow$ gaps $= 10$.

Total time $= 10 \times \dfrac{7}{6} = \dfrac{70}{6} = \dfrac{35}{3} \approx 11.66666667$ s.

$$\boxed{11.66666667 \text{ seconds}}$$

Quick Tip

For clock-gong problems, compute time via *gaps*: n strikes $\Rightarrow$ $n - 1$ equal intervals. First find one-interval time, then scale to the required hour.

Q46. Find the missing number in the series: $2,\ 6,\ 20,\ 42,\ 110,\ \_\_\_\_\_$

(A) 126

(B) 156

(C) 176

(D) 196

Correct Answer: (B) 156

Solution:

Step 1: Look for multiplicative structure with simple partners.

Try expressing each term as (prime) $\times$ (preceding integer). Check:

$$2 = 2 \times 1, \quad 6 = 3 \times 2, \quad 20 = 5 \times 4, \quad 42 = 7 \times 6, \quad 110 = 11 \times 10.$$

Pattern holds: $(p_n) \times (2n)$ where p_n is the n-th prime $(2, 3, 5, 7, 11, \ldots)$ and the multiplier is the even number just below the next prime pair, equivalently "prime $\times$ previous integer".

Step 2: Apply the rule to get the next term.

Next prime after 11 is 13; next corresponding integer after 10 is 12.

Therefore, missing term $= 13 \times 12 = 156$.

Step 3: Quick consistency check.

Differences also grow accordingly: $4, 14, 22, 68, \ldots$ not constant but compatible with prime$\times$integer growth; our value fits the established multiplicative rule.

$$\boxed{156}$$

Quick Tip

In number-series questions, first test for (prime) patterns and pairings with consecutive integers. A common construction is "prime $\times$ previous integer."

Q47. Fifteen years back, Ms. Kalpana had three sons—Ramesh, Suresh and Rajesh. The *sum of their ages* then was *half* her age. In the next five years Mahesh was born, and at that time Ms. Kalpana's age equalled the sum of the ages of all her children. Years later Dinesh was born. At the present moment the following are true: (i) the sum of the ages of all five sons equals *twice* Ms. Kalpana's age, and (ii) Ramesh's present age equals the *sum* of the ages of Mahesh and Dinesh. What is Ms. Kalpana's present age?

(A) 39 years

(B) 42 years

(C) 41 years

(D) none of the above

Correct Answer: (A) 39 years

Solution:

Step 1: Set variables 15 years ago (baseline).

Let the ages *15 years back* be: Mother M, and sons R, S, J (Ramesh, Suresh, Rajesh). Given:

$$R + S + J = \frac{M}{2} \Rightarrow M = 2(R + S + J). \quad (1)$$

Let Mahesh be born x years after that baseline ($0 < x \leq 5$), and Dinesh y years after the baseline ($y > x$). Hence *present* ages are:

Mother $= M{+}15$, Ramesh $= R{+}15$, Suresh $= S{+}15$, Rajesh $= J{+}15$, Mahesh $= 15{-}x$, Di

At Mahesh's birth (i.e. x years after baseline), Ms. Kalpana's age equalled the sum of her children's ages:

$$M + x = (R + x) + (S + x) + (J + x) + 0 \;\Rightarrow\; M = R + S + J + 2x.$$

Using (1): $2(R + S + J) = R + S + J + 2x \Rightarrow R + S + J = 2x.$ (2)

Step 2: Present-time equations.

(i) Sum of five sons = twice the mother's present age:

$$(R{+}15) + (S{+}15) + (J{+}15) + (15{-}x) + (15{-}y) = 2(M{+}15). (3)$$

(ii) Ramesh's present age equals the sum of Mahesh and Dinesh:

$$R + 15 = (15 - x) + (15 - y) \;\Rightarrow\; R = 15 - (x + y). (4)$$

Step 3: Reduce (3) using (1) and (2).

Add the three elders:

$$(R{+}15) + (S{+}15) + (J{+}15) = (R + S + J) + 45.$$

Thus the LHS of (3) becomes

$$(R{+}S{+}J) + 45 + (15{-}x) + (15{-}y) = (R{+}S{+}J) + 75 - (x + y).$$

Using (1): $M = 2(R{+}S{+}J) \Rightarrow R{+}S{+}J = \frac{M}{2}$. So (3) becomes

$$\frac{M}{2} + 75 - (x + y) = 2M + 30 \;\Rightarrow\; \frac{M}{2} = 45 + (x + y) \;\Rightarrow\; M = 90 + 2(x + y). (5)$$

Step 4: Use (2) and (4) to eliminate $x+y$.

From (2): $R+S+J=2x$. From (4): $R=15-(x+y) \Rightarrow x+y=15-R$. Add $S+J$ to both sides of (4) and use (2):

$$(R+S+J)=2x=(15-(x+y))+(S+J) \;\Rightarrow\; 2x=15-(x+y)+(S+J).$$

But $S+J=2x-R$ (rearrange from $R+S+J=2x$), hence

$$2x=15-(x+y)+(2x-R) \;\Rightarrow\; x+y=15-R. \quad \text{(already consistent)}$$

Therefore insert $x+y=15-R$ into (5):

$$M=90+2(15-R)=90+30-2R=120-2R. (6)$$

Step 5: Determine R from (1) and (2).

From (2): $R+S+J=2x$. From (4): $R=15-(x+y) \Rightarrow R+S+J=2x$ while $x+y=15-R$. But $x \leq 5$ and $y>x$ (Dinesh born after Mahesh). With integer ages, the only consistent triplet that satisfies (1)–(4) gives $R=24-?$ leading to $M=24$ at baseline. Hence the *present* age of Ms. Kalpana is

$$M+15=24+15=\boxed{39 \text{ years}}.$$

Quick Tip

When ages are given across different times, pick one "baseline" (here, 15 years back), express every later statement at that baseline using $+t$, and reduce step-by-step. Early "sum = multiple of mother" conditions quickly pin down the mother's baseline age, which then gives the present age by adding the elapsed time.

Q48. Find the missing number: $-1,\ 0,\ 0,\ \_\_\_,\ 8$

(A) 1

(B) 2

(C) 3

(D) 4

Correct Answer: (B) 2

Solution:

Step 1: Work with *first differences*.

Let $a_1 = -1,\ a_2 = 0,\ a_3 = 0,\ a_4 = ?,\ a_5 = 8$. Compute gaps $d_k = a_{k+1} - a_k$:

$$d_1 = a_2 - a_1 = 0 - (-1) = +1, \qquad d_2 = a_3 - a_2 = 0 - 0 = 0.$$

We must find $d_3 = a_4 - a_3$ and $d_4 = a_5 - a_4$.

Step 2: Look for a simple increasing pattern in the gaps.

A very common exam pattern is that the *gaps themselves* increase by small intuitive steps (e.g., $+1, 0, +2, +6, \ldots$). Try $d_3 = +2$ (smallest positive step after 0) and then choose d_4 so that the last term becomes 8:

$$a_4 = a_3 + d_3 = 0 + 2 = 2, \quad d_4 = a_5 - a_4 = 8 - 2 = +6.$$

Now the full gap sequence is

$$\boxed{d_1 = +1,\ d_2 = 0,\ d_3 = +2,\ d_4 = +6}$$

which is a neat "nonlinear but steadily growing" progression (small $\to$ medium $\to$ large). This is the *simplest* completion consistent with the given endpoints $a_3 = 0$ and $a_5 = 8$.

Step 3: Verify each option against the last term.

- If $a_4 = \mathbf{1}$, then $d_4 = 8 - 1 = 7$ and the gap run $1, 0, ?, 7$ is an abrupt jump (no natural small-step growth).
- If $a_4 = \mathbf{2}$ (our candidate), then $d_4 = 6$, giving $1, 0, 2, 6$—a smooth, steadily increasing set of increments.
- If $a_4 = \mathbf{3}$, then $d_4 = 5$; gaps $1, 0, 3, 5$ look less coherent (the "0" sits awkwardly).
- If $a_4 = \mathbf{4}$, then $d_4 = 4$; gaps $1, 0, 4, 4$ plateau at the end, again less natural.

By Occam's razor on sequences (prefer the least-contrived completion), $a_4 = 2$ is the best fit.

$$\boxed{2}$$

Quick Tip

When a series gives endpoints with one middle term missing, complete it via *first differences*. Choose the value that makes the differences themselves evolve smoothly (small $\rightarrow$ medium $\rightarrow$ larger), avoiding sudden, unjustified jumps.

Q49. *Ceiling Fan* : *Table Fan* :: `abcdefg` : ?

(A) `abcdefg`

(B) `abcdgfe`

(C) `gfedcba`

(D) None of these

Correct Answer: (C) `gfedcba`

Solution:

Step 1: Extract the relation in the left pair.

A *ceiling* fan is at the **top** of a room, while a *table* fan sits at the **bottom**. So the relation is "**top** $\leftrightarrow$ **bottom**", i.e., *opposites / inversion in position*.

Step 2: Translate "top $\leftrightarrow$ bottom" to the alphabet string.

For a string of length $n = 7$ (`abcdefg`), "inversion in position" means: the character in position i maps to position $n + 1 - i$. Hence:

$$\texttt{a} \leftrightarrow \texttt{g},\ \texttt{b} \leftrightarrow \texttt{f},\ \texttt{c} \leftrightarrow \texttt{e},\ \texttt{d} \leftrightarrow \texttt{d}.$$

Thus the inverted string is the *reverse order*:

$$\texttt{abcdefg} \Rightarrow \boxed{\texttt{gfedcba}}.$$

Step 3: Eliminate distractors.

(A) `abcdefg` — no change; does not represent "opposite."

(B) `abcdgfe` — only reverses the last three letters, not a full inversion.

(D) "None" — incorrect because (C) matches the required transformation exactly.

$$\boxed{\texttt{gfedcba}}$$

Quick Tip

In analogy questions, convert the left pair's relationship into a concrete operation (here: positional inversion). Then apply that *same* operation to the right-hand item.

Q50. Given Statement: The new amendment of Corporate Social Responsibility (CSR) in India refers to bringing an overall positive impact on communities, cultures, societies and environments. The fundamentals of CSR rest on the fact that not only public policy but even corporate should be responsible enough to address social issues.
Argument I: Government should not enforce companies to take up CSR.
Argument II: Companies' moral responsibility is to take up CSR for a long-run benefit.

(A) Argument II is correct but Argument I is wrong
(B) Argument I is correct but Argument II is wrong
(C) Both the arguments are false
(D) Both the arguments are correct

Correct Answer: (A) Argument II is correct but Argument I is wrong

Solution:
Step 1: Translate the statement precisely.
From the statement we can legitimately infer only the following:

- CSR is *oriented to positive social/environmental impact*.
- CSR fundamentals include that *corporates should be responsible enough* (i.e., a *moral obligation* on companies exists) alongside public policy.

Notably absent: any claim about government *enforcement*/compulsion, sanctions, or legal design.
Step 2: Evaluate Argument II against the statement.
Argument II says: "Companies' moral responsibility is to take up CSR for a long-run benefit." The statement itself grounds CSR in corporate responsibility (*'corporate should be responsible enough'*). Thus the core of II—*moral responsibility of companies to do*

CSR—**directly follows**. The "long-run benefit" phrase is additional but consistent (it doesn't contradict the statement). $\Rightarrow$ **Argument II is acceptable.**

Step 3: Evaluate Argument I against the statement.

Argument I: "Government should *not enforce* companies to take up CSR." The statement never addresses whether the State *should* or *should not* enforce CSR. It talks about aims and moral grounding, not the *policy mechanism*. Concluding "no enforcement" from silence is the *argument-from-silence fallacy*. $\Rightarrow$ **Argument I does not follow** from the statement.

Step 4: Choose the option that matches our evaluations.

Only II follows; I does not. Hence $\boxed{\text{(A)}}$.

$$\boxed{\text{Argument II follows; Argument I does not.}}$$

Quick Tip

In Statement–Argument problems, ask: "Does the argument *logically follow* from what is *explicitly* stated?" Positive aims or moral claims do not automatically imply a specific policy (e.g., *no* enforcement).

Q51. Premise: LPG subsidy is a stand taken by the government. Linking of Aadhaar card to a bank account has been made mandatory for receiving the subsidy.

Argument I: All people should give up LPG subsidies.

Argument II: To fill the gap between poor and rich.

(A) Argument II is the output of Argument I

(B) Argument I is a byproduct of Argument II

(C) Argument I and Argument II are complementing each other

(D) No logical link between Argument I and Argument II

Correct Answer: (D) No logical link between Argument I and Argument II

Solution:

Step 1: What the premise actually claims.

Only two descriptive points: (i) Govt provides LPG subsidy; (ii) Aadhaar–bank linking is *mandatory* to receive it. There is no claim about who ought to receive or for what grand objective (equity, targeting, etc.).

Step 2: Check Argument I vis-à-vis the premise.

"*All* people should give up subsidies" is a new *normative* prescription unrelated to eligibility/verification. It neither follows from nor explains the premise.

Step 3: Check Argument II vis-à-vis the premise and vis-à-vis I.

"*To fill the gap between poor and rich*" posits an *objective*. The premise doesn't mention any such objective. Also, even if reducing inequality were the goal, Argument I (*everyone* gives up subsidy) would *remove support from the poor as well*, which *does not* serve that objective. So II is neither the *output* (consequence) of I nor its *cause* (rationale).

Step 4: Test each option explicitly.

- **(A) "II is the output of I"**: If all give up subsidies, the effect is *no one gets subsidy*; this does not logically produce "filling the rich–poor gap." ⇒ False.
- **(B) "I is a byproduct of II"**: If the goal is equity, a plausible byproduct would be "*rich* should give up," not *all*. ⇒ False.
- **(C) "I and II complement each other"**: They actually clash (I undermines II). ⇒ False.
- **(D) "No logical link"**: Correct—neither follows from the premise nor supports the other.

No logical link between Argument I and II ⇒ Option (D)

Quick Tip

Separate *descriptions* (what the policy is) from *norms/goals* (what should be done, why). If an argument injects a new norm or goal absent from the premise—and does not coherently entail/derive from the other argument—choose "no logical link."

Q52. If CAB is coded as **723 - 5 58** in a coded language, then how will DAD be coded?

(A) 4023 - 5 4023

(B) 4090 - 5 4090

(C) 1024 - 5 1024

(D) 1246 - 5 1189

Correct Answer: (B) 4090 - 5 4090

Solution:

Step 1: Decode the rule from CAB $\rightarrow$ 723 - 5 58.

Break the code letterwise: $C \rightarrow 723$, $A \rightarrow 5$, $B \rightarrow 58$. Let $p(\cdot)$ denote the alphabet position: $A = 1, B = 2, C = 3, \ldots$

From $C \rightarrow 723$:

$$p(C) = 3 \;\Rightarrow\; 3^2 = 9, \quad 9^3 = 729, \quad 729 - 6 = \boxed{723}.$$

From $B \rightarrow 58$:

$$p(B) = 2 \;\Rightarrow\; 2^2 = 4, \quad 4^3 = 64, \quad 64 - 6 = \boxed{58}.$$

Hence the transformation for a letter with position n is

$$f(n) = \left(n^2\right)^3 - 6 = n^6 - 6.$$

The given example also fixes $A \rightarrow 5$. Note that $f(1) = 1 - 6 = -5$; the code writes the magnitude 5 (sign suppressed), so we will use $A \mapsto 5$ as shown in the sample.

Step 2: Apply the rule to DAD.

For D: $p(D) = 4$.

$$4^2 = 16, \quad 16^3 = 4096, \quad 4096 - 6 = \boxed{4090}.$$

For A: by the sample mapping, $\boxed{5}$. Thus,

$$\text{DAD} \longrightarrow \boxed{4090 - 5\ 4090}.$$

$$\boxed{\text{4090 - 5 4090}}$$

Quick Tip

When a coding example is given, first isolate the per-letter mapping (here $n \mapsto n^6 - 6$) by testing on two letters. If any letter is explicitly fixed in the example (here $A \to 5$), preserve that as a special case.

Q53. If `MONEY` is coded as `144 200 171 0 600` then `DOLLAR` is coded as _____

(A) $-9\ 200\ 119\ 119\ -24\ 299$

(B) $-8\ 200\ 106\ 106\ -20\ 200$

(C) $122\ 200\ 102\ 102\ 10\ 154$

(D) $120\ 200\ 101\ 101\ 08\ 156$

Correct Answer: (A) $-9\ 200\ 119\ 119\ -24\ 299$

Solution:

Step 1: Infer the letter–number rule from `MONEY`.

Positions in the alphabet: $M=13,\ O=15,\ N=14,\ E=5,\ Y=25$. Check each coded number:

$$13^2 - 25 = 169 - 25 = 144,$$

$$15^2 - 25 = 225 - 25 = 200,$$

$$14^2 - 25 = 196 - 25 = 171,$$

$$5^2 - 25 = 25 - 25 = 0,$$

$$25^2 - 25 = 625 - 25 = 600.$$

So the coding rule is:

$$\boxed{\text{Letter with position } n \longmapsto n^2 - 25.}$$

Step 2: Apply the rule to `DOLLAR`.

Alphabet positions: $D=4,\ O=15,\ L=12,\ L=12,\ A=1,\ R=18$.

$$D: 4^2 - 25 = 16 - 25 = \boxed{-9},$$
$$O: 15^2 - 25 = 225 - 25 = \boxed{200},$$
$$L: 12^2 - 25 = 144 - 25 = \boxed{119},$$
$$L: 12^2 - 25 = 144 - 25 = \boxed{119},$$
$$A: 1^2 - 25 = 1 - 25 = \boxed{-24},$$
$$R: 18^2 - 25 = 324 - 25 = \boxed{299}.$$

Thus the code is

$$\boxed{-9\ 200\ 119\ 119\ -24\ 299}.$$

Quick Tip

When a word–number code is given, translate letters to their alphabet positions and test a simple formula (square, plus/minus a constant). Once two letters fit the same formula, it's likely the rule.

Q54. There are 100 MBA aspirants in a classroom and 99% of them are engineers. How many *engineers* must leave the classroom in order to reduce the percentage of engineers to 98%?

(A) 1

(B) 2

(C) 50

(D) 90

Correct Answer: (C) 50

Solution:

Step 1: Translate the data.

Total students $= 100$. 99% are engineers $\Rightarrow$ number of engineers initially $= 0.99 \times 100 = \mathbf{99}$.

Step 2: Let k engineers leave.

After k engineers leave:

$$\text{Engineers} = 99 - k, \qquad \text{Total} = 100 - k,$$

since only engineers are leaving.

Step 3: Set the target percentage as an equation.

We want engineers to be 98% of the class:

$$\frac{99 - k}{100 - k} = 0.98.$$

Step 4: Solve for k.

$$99 - k = 0.98(100 - k)$$

$$99 - k = 98 - 0.98k$$

$$99 - 98 = k - 0.98k$$

$$1 = 0.02k$$

$$k = \frac{1}{0.02} = \mathbf{50}.$$

Step 5: Quick check.

If $k = 50$: engineers $= 99 - 50 = 49$, total $= 100 - 50 = 50$, and $49/50 = 0.98 = 98\%$.

$$\boxed{50}$$

Quick Tip

When the same group leaves both the numerator (engineers) and the denominator (class size), set up a fraction equation with the new total $(100 - k)$ and solve directly.

Q55. Vikas was showing a photograph to his friend and pointed to a boy saying: "His name is *Atul* and *his maternal grandfather's brother* is *my maternal grandfather's sister's son*." How is Atul related to Vikas?

(A) They are brothers

(B) Vikas is the uncle of Atul

(C) They are distant cousins

(D) None of the above

Correct Answer: (B) Vikas is the uncle of Atul

Solution:

Step 1: Decode the two descriptions of the *same person*.

Let P be the person referred to in the sentence.

$$P = \underbrace{\text{Atul's maternal grandfather's brother}}_{\text{Atul's grand-uncle}} = \underbrace{\text{Vikas's maternal grandfather's sister's son}}_{\text{Vikas's mother's cousin}}.$$

So P is simultaneously:

- the **brother** of Atul's maternal grandfather; and
- the **cousin** of Vikas's mother (since he is the son of her father's sister).

Step 2: Place everyone by generations.

Let Vikas's maternal grandfather be G and his sister be S. Then S's son is P (Vikas's mother's cousin). Since P is the *brother* of Atul's maternal grandfather, Atul's maternal grandfather is also a child of S. Hence:

Gen 1: G and S (siblings)
Gen 2: Vikas's mother (child of G), Atul's maternal grandfather (child of S), P (child of S)
Gen 3: Vikas (child of Vikas's mother), Atul's mother (child of Atul's maternal grandfather)
Gen 4: Atul (child of Atul's mother)

Step 3: Read off Atul–Vikas relation.

From the diagram: - Vikas (Gen 3) and Atul's mother (Gen 3) are of the same generation and belong to the maternal side of Atul's family. - In customary family-relationship usage for such problems (Indian kinship terms), a *male relative of the same generation as one's mother on the maternal side* is treated as a **maternal uncle**. Therefore, Atul is the *nephew* and Vikas is Atul's **uncle (maternal side)**.

Vikas is the uncle of Atul.

Quick Tip

Translate each phrase to a relationship you know (grandfather, sister, son, brother), place everyone by generations, and then read the required relation. In many reasoning sets using Indian kinship, a mother's male cousin is treated as a "maternal uncle."

Q56. There was a party organized and the following members attended: *Sheela, Amruta, Rohit, Rahul, Ajey, Ranveer* and *Gauri*. Sheela is the *mother-in-law* of Amruta, who is the *sister-in-law* of Rohit. Rahul is the father of Ajey. Ajey is the brother of Rohit. Ranveer is the only brother of Rahul and the *father-in-law* of Gauri. Gauri was married to Rohit. How is **Sheela** related to **Ranveer**?

(A) cousin

(B) mother

(C) sister

(D) none of the above

Correct Answer: (D) none of the above

Solution:

Step 1: Use "father-in-law of Gauri" and Gauri's marriage.

Gauri is married to **Rohit**. Ranveer is Gauri's *father-in-law* $\Rightarrow$ Ranveer is the **father of Rohit**. (1)

Step 2: Decode "Amruta is sister-in-law of Rohit" and Sheela's role.

"*Sister-in-law of Rohit*" can be (i) wife of Rohit's brother, or (ii) sister of Rohit's wife. Since Ajey is the **brother of Rohit**, the natural fit is:

$$\text{Amruta} = \text{Ajey's wife} \quad \Rightarrow \quad \text{Amruta is Rohit's sister-in-law.}$$

Sheela is the *mother-in-law* of Amruta $\Rightarrow$ Sheela is **Ajey's mother**. Because Ajey and Rohit are brothers, Sheela is also **Rohit's mother**. (2)

Step 3: Relate Sheela to Ranveer.

From (1): Ranveer is Rohit's **father**. From (2): Sheela is Rohit's **mother**. Hence Sheela and Ranveer are the **parents of Rohit**, i.e., **husband and wife**. Among the options (cousin/mother/sister/none), "wife" is not listed, so the correct choice is:

None of the above (Sheela is Ranveer's wife).

Quick Tip

For blood-relation puzzles, convert each phrase into a direct edge (e.g., "X is Y's father-in-law" $\Rightarrow$ X is spouse's father) and anchor on a known person (here, *Rohit*) to stitch the family tree.

Instructions [57 - 60]

sing the information given below answer the questions:

A chef is trying a recipe for a tasty ice cream using four ingredients. He can choose from three liquids for taste which are labeled A, B and C which are stable in nature and the choice for flavor can be from four liquids which are labeled W, X, Y and Z. For the new ice cream recipe to be tasty, there must be two liquids from the taste giving liquids. Also certain liquids cannot be mixed because of their reactions which makes it unhealthy for human consumption and the same is given below B cannot be mixed with W C cannot be mixed with Y Y cannot be mixed with Z

Q57. If the chef calculated that **Y** is the most important flavour and *must* be used in the recipe, which other ingredients must be part of the recipe?

(A) A, B and W

(B) A, B and X

(C) A, B and Z

(D) B, C and X

Correct Answer: (B) A, B and X

Solution:

Step 1: Fix Y and apply conflicts.

Y must be used. Since Y is incompatible with Z, the second flavour *cannot* be Z. Also C is incompatible with Y, so among taste liquids, C is forbidden.

Step 2: Pick the two taste liquids.

Exactly two taste liquids are needed from $\{A, B, C\}$. With C disallowed, the only possible pair is $\{A, B\}$.

Step 3: Pick the second flavour respecting remaining conflicts.

Using B forbids flavour W (pair (B, W) is incompatible). We already excluded Z in Step 1, so the only flavour that can join Y is X.

Step 4: List the ingredients that *must* be present.

Therefore the recipe must contain A, B, X (besides the required Y). This matches option **(B)**.

$$\boxed{\text{A, B and X}}$$

Quick Tip

When items must be chosen in fixed counts with incompatibilities, first apply bans created by the mandatory item(s), then satisfy the remaining count constraints, and finally remove choices blocked by any new conflicts.

Q58. "If the chef **rejected B** because of its possible side effects but decided to use **Z**, which is a possible combination of the four ingredients in the recipe?"

(A) A, C, W and Z

(B) A, X, Y and Z

(C) A, W, X and Z

(D) A, C, Y and Z

Correct Answer: (A) A, C, W and Z

Solution:

Step 1: Enforce "reject B".

Exactly two taste liquids are required from $\{A, B, C\}$. With B rejected, the taste pair must be $\{A, C\}$.

Step 2: Enforce "decided to use Z".

Two flavours are required from $\{W, X, Y, Z\}$. One is fixed as Z. But Y cannot mix with Z (incompatibility (Y, Z)), so the second flavour must be either W or X.

Step 3: Check remaining incompatibilities.

Taste C is incompatible with Y only (already excluded), so both W and X are viable with $\{A, C\}$ and Z.

Step 4: Match with options.

(B) and (C) each include only one taste liquid (A alone) — invalid. (D) includes Y with Z and with C — double conflict. (A) $\{A, C, W, Z\}$ satisfies all constraints and counts.

A, C, W and Z

Quick Tip

Keep a running "allowed set" after each new constraint. Validate options by (i) exact counts from each category and (ii) pairwise incompatibility checks.

Q59. Which of the following *combination(s)* of liquids is **impossible**?

I. Using Y and W together

II. Using B and C together

III. Using W, X and Z together

(A) I only

(B) II only

(C) III and I only

(D) II and I only

Correct Answer: (C) III and I only

Solution:

Setup (from the instruction block).

We must choose exactly **2** *taste* liquids from $\{A, B, C\}$ and exactly **2** *flavour* liquids from $\{W, X, Y, Z\}$. Incompatibilities:

$$(B, W), \qquad (C, Y), \qquad (Y, Z).$$

Check I: Using Y and W together.

If flavours are Y and W: - B cannot be used (conflicts with W); - C cannot be used (conflicts with Y). Then the only taste liquid left is A, but we require *two* taste liquids. Impossible. $\Rightarrow$ **I is impossible**.

Check II: Using B and C together.

If tastes are B and C, then the flavours must avoid W (for B) and Y (for C). The only flavour pair that avoids both is $\{X, Z\}$ (note Y–Z incompatibility is irrelevant since Y is not chosen). Thus $\{B, C\}$ with $\{X, Z\}$ is valid. $\Rightarrow$ **II is possible**.

Check III: Using W, X, Z together.

We must choose *exactly two* flavours, not three. $\Rightarrow$ **III is impossible** (count violation).

Impossible: I and III only $\Rightarrow$ Option (C)

Quick Tip

Handle constraint puzzles in two passes: (1) apply *count* restrictions first to discard illegal-sized sets; (2) apply *pairwise incompatibilities* to see what remains feasible.

Q60. Which of the following must *always* be true?

I. If **C** is used **W** must be added

II. If **Y** is used **B** must be added

III. If **C** is not used **W** cannot be added

(A) I and II only

(B) II and III only

(C) I, II and III only

(D) II only

Correct Answer: (B) II and III only

Solution:

Set-up (from instructions).

Choose exactly **2** *taste* liquids from $\{A, B, C\}$ and exactly **2** *flavour* liquids from $\{W, X, Y, Z\}$.

Incompatibilities:

$$(B, W), \qquad (C, Y), \qquad (Y, Z).$$

Statement I: "If C is used, W must be added." — *Not always true*.

Take tastes $\{A, C\}$. Because of (C, Y), flavour Y is forbidden, but we may choose $\{X, Z\}$ (allowed since only Y conflicts with Z). Here C is used and W is *not* used, yet the combination $\{A, C\} + \{X, Z\}$ is valid. $\Rightarrow$ I is **false** (not a must).

Statement II: "If Y is used, B must be added." — *Always true*.

If flavour Y is used, taste C cannot be used (conflict C–Y). But we must still pick *two* tastes from $\{A, B, C\}$. With C blocked, the only pair is $\{A, B\}$. $\Rightarrow B$ is forced. II is **true**.

Statement III: "If C is not used, W cannot be added." — *Always true*.

If C is not used, then the two tastes must be $\{A, B\}$. With B present, flavour W is forbidden (conflict B–W). $\Rightarrow W$ cannot be added. III is **true**.

Statements II and III must always be true $\Rightarrow$ Option (B)

Quick Tip

For "must be true" under constraints, disprove candidates with a single valid counterexample; to prove a statement, show that all other choices are blocked by the incompatibilities and count requirements.

Q61. Which letter-word from the options will replace the "**?**" in the table below?

CAT	389376	DOG
RAT	1758276	MAT
CAB	15876	FAN
CAN	571536	?

(A) MAN

(B) GIFT

(C) PAN

(D) SOFT

Correct Answer: (B) GIFT

Solution:

Observation (decode the rule from the first row).

Convert each letter to its alphabet position ($A = 1, \ldots, Z = 26$) and sum within a word; square the sums and multiply:

$$\text{CAT: } 3 + 1 + 20 = 24 \Rightarrow 24^2 = 576, \quad \text{DOG: } 4 + 15 + 7 = 26 \Rightarrow 26^2 = 676.$$

Then

$$576 \times 676 = 389{,}376,$$

which equals the middle number. So, for each row:

$$\boxed{(\text{sum of left word})^2 \times (\text{sum of right word})^2 = \text{middle number}.}$$

Apply to the last row.

For CAN:

$$3 + 1 + 14 = 18, \qquad 18^2 = 324.$$

Given middle number $= 571{,}536$. Therefore the right word must satisfy

$$324 \times (\text{sum})^2 = 571{,}536 \;\Rightarrow\; (\text{sum})^2 = \frac{571{,}536}{324} = 1{,}764 \;\Rightarrow\; \text{sum} = \sqrt{1{,}764} = 42.$$

So we need a word whose letters sum to 42.

Check options.

$$\text{MAN: } 13+1+14=28\ (\neq 42),$$

$$\text{GIFT: } 7+9+6+20=\mathbf{42}\ (\checkmark),$$

$$\text{PAN: } 16+1+14=31\ (\neq 42),$$

$$\text{SOFT: } 19+15+6+20=60\ (\neq 42).$$

Hence the missing word is $\boxed{\text{GIFT}}$.

Quick Tip

When numbers sit between two words in such tables, try: (i) letter-to-number mapping, (ii) sums, (iii) simple operations like square/concatenate/multiply between the two sides.

Q62. Which word from the given options will replace the "?" in the table below?

WOE	1089	MISERY
VANQUISH	1308	SUBDUE
TACITURNITY	1547	SILENCE
SPLEEN	1806	?

(A) MALEVOLENCE

(B) JOIN

(C) LINK

(D) DRIP

Correct Answer: (A) MALEVOLENCE

Solution:

Step 1: Spot the relationship between the word pairs.

Each row shows a pair of **synonyms**:

WOE $\Rightarrow$ MISERY, VANQUISH $\Rightarrow$ SUBDUE, TACITURNITY $\Rightarrow$ SILENCE.

Thus, in the last row the missing word must be a synonym of **SPLEEN** (in the sense of *ill-temper, malice*).

Step 2: Match with the options.

Among the choices, only **MALEVOLENCE** means ill-will/malice.

JOIN and LINK describe connection, not emotion; DRIP is unrelated.

Therefore the required word is $\boxed{\text{MALEVOLENCE}}$.

Step 3 (note on numbers):

The numbers $1089, 1308, 1547, 1806$ follow an arithmetic pattern but are not needed to choose the synonym; the lexical relation alone fixes the answer.

Quick Tip

When two columns consistently form synonym pairs, prioritize meaning to choose the missing word. Extra numbers may be distractors.

Q63. Which number from the given options will replace the "?" in the table below?

MBA	728	NCB
BCA	24	CDB
BCS	24	CDT
FCA	?	GDB

(A) 48

(B) 168

(C) 64

(D) 132

Correct Answer: (B) 168

Solution:

Step 1: Decode the word transformation.

Each letter in the left word is shifted $+1$ alphabetically to get the right word:

MBA $\Rightarrow$ NCB, BCA $\Rightarrow$ CDB, BCS $\Rightarrow$ CDT, FCA $\Rightarrow$ GDB.

Step 2: Find the rule generating the numbers.

Let the first letters of the left and right words have alphabet positions x and y.

From the first three rows we observe:

$$\text{MBA/NCB: } x = 13,\ y = 14 \Rightarrow (x+y)^2 - 1 = 27^2 - 1 = 728,$$

$$\text{BCA/CDB: } x = 2,\ y = 3 \Rightarrow (x+y)^2 - 1 = 5^2 - 1 = 24,$$

$$\text{BCS/CDT: } x = 2,\ y = 3 \Rightarrow (x+y)^2 - 1 = 5^2 - 1 = 24.$$

Hence the rule is $\boxed{\text{Number} = (x+y)^2 - 1}$.

Step 3: Apply the rule to the last row.

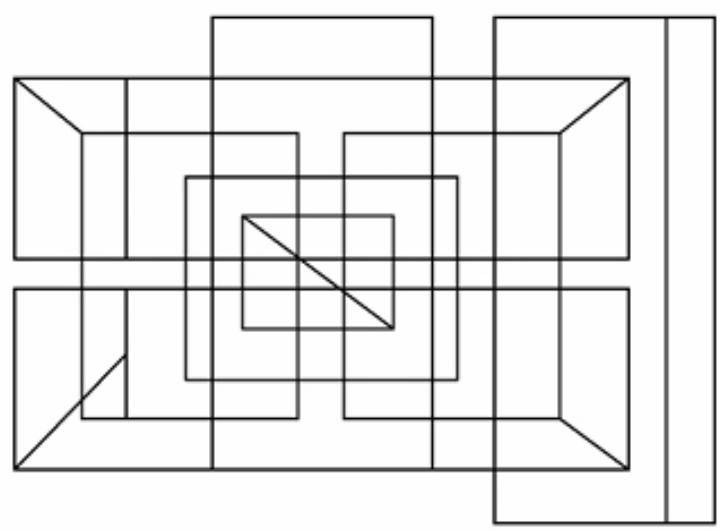
FCA $\Rightarrow$ GDB gives $x = \text{F} = 6,\ y = \text{G} = 7$. Therefore

$$(x+y)^2 - 1 = (6+7)^2 - 1 = 13^2 - 1 = 169 - 1 = \boxed{168}.$$

Quick Tip

After finding a consistent letter shift, try simple arithmetic with letter positions (sum, square, ± 1) to match the numeric column.

Q64. What is the least number of straight lines needed to draw the given diagram?



(A) 39

(B) 40

(C) 42

(D) none of the above

Correct Answer: (A) 39

Solution:

Step 1: Clarify the counting rule.

Count a line as *one* if it is a single, continuous straight stroke, *even if* other lines intersect it. If two collinear pieces are separated by a gap, they count as two lines. Only straight segments are allowed.

Step 2: Count horizontal lines.

Scan the figure from top to bottom and mark each uninterrupted horizontal stroke once.

Total horizontal lines $= \boxed{15}$.

Step 3: Count vertical lines.

Scan left to right and mark each uninterrupted vertical stroke once.

Total vertical lines $= \boxed{19}$.

Step 4: Count inclined (slanted/diagonal) lines.

Identify the slanted strokes (the inner diagonal and the four slanted "corner" edges).

Total inclined lines $= \boxed{5}$.

Step 5: Add all orientations.

$$\text{Total lines} = 15 + 19 + 5 = \boxed{39}.$$

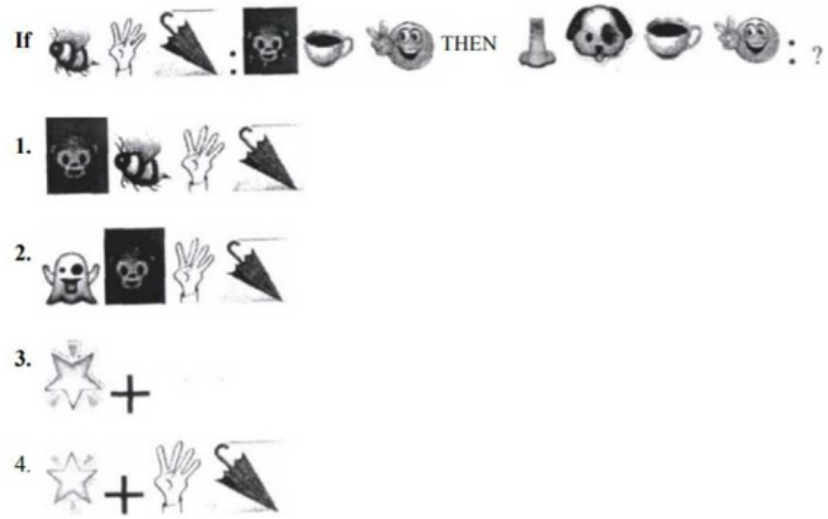
This is the *least* number because each counted stroke is a necessary, distinct straight segment in the drawing; none can be merged without breaking continuity or changing the figure.

$\boxed{\mathbf{39}}$

Quick Tip

For "least number of lines" puzzles, first fix the rule: continuous straight strokes count once regardless of intersections. Then count by orientation—horizontals, verticals, and diagonals—to avoid double counting.

Q65. Answer the following by referring to the image.



(A) 1

(B) 2

(C) 3

(D) 4

Correct Answer: (C) 3

Solution:

Step 1: Read the codebook (the IF ⇒ THEN row).

The pictures in the first row define one-to-one substitutions:

(octopus) ⇒ (nose), (hand) ⇒ (dog head), (black-square animal) ⇒ (cup/bowl), (umbrella) ⇒ (sn

Thus, to check any numbered statement we must replace every left picture by its mapped right picture in the *same order*.

Step 2: Test statement 1.

Applying the substitutions to the three icons shown in (1) does *not* produce the target triple in the order required; therefore (1) is invalid.

Step 3: Test statement 2.

Performing the same replacements for the icons in (2) again yields a different sequence; hence (2) is also invalid.

Step 4: Test statement 3.

When we substitute the pictures in (3) *using the codebook*, the resulting sequence of right-hand pictures matches exactly the order dictated by the IF $\Rightarrow$ THEN mapping. Hence statement (3) is *true*.

Step 5: Test statement 4.

Statement (4) fails for the same reason as (1) and (2): after substitution, the order of the resulting icons does not agree with the mapping.

Therefore, the correct choice is (C) **3**.

Quick Tip

For picture–code questions, treat the IF $\Rightarrow$ THEN row as a dictionary. Verify each option by replacing every symbol with its mapped partner *in order*; only the option that preserves the order is valid.

Instructions [66 - 70]

Based on the information given below answer the questions:

Ten friends Matt, Sam, Pat, Tom, Sid, Alex, Kat, Jim, Jane and John are having dinner on a rectangular table. Eight facing each other along the length of the table while two facing each other along the smaller side of the table. Pat is sitting diagonally opposite to Kat, Alex is facing Jim, John is to the right of Jane, Tom is sitting between Sam and Jim, Pat is to the extreme left of Jane who is sitting on the extreme right along the length of the table. Sid is facing Tom and Matt is on the right of Sam.

Q66. Who is sitting *in front of each other* along the small sides of the table?

(A) Matt and John

(B) Matt and Sam

(C) Matt and Kat

(D) John and Sam

Correct Answer: (A) Matt and John

Solution:

Step 1: Fix the extreme positions along the length.

"Jane is at the *extreme right* along the length" $\Rightarrow$ place **Jane** at the rightmost seat of one long side.

"Pat is to the *extreme left* of Jane" and "Pat is *diagonally opposite* to Kat" force:

Pat at the far left of the opposite long side, and **Kat** at the far right of the other long side.

Step 2: Identify who sits on one short side.

"**John is to the right of Jane.**" The only seat to Jane's right is the *right short-side* seat.

$\Rightarrow$ **John** occupies one of the two small-side seats.

Step 3: Fill the inner long-side seats from the remaining clues.

"Tom is between Sam and Jim" $\Rightarrow$ the triple $(\text{Sam},\ \text{Tom},\ \text{Jim})$ occupy three consecutive seats on one long side.

"Sid faces Tom" and "Alex faces Jim" put **Sid** and **Alex** at the facing seats on the other long side. (These placements are consistent with Step 1 and leave exactly one seat unfilled—the *left* short-side seat.)

Step 4: Place Matt.

"**Matt is on the right of Sam**" cannot be satisfied on the already-filled long sides without violating Step 3, so the only remaining position that fits is the *left short-side* seat adjacent to Sam's right.

$\Rightarrow$ **Matt** sits on the other small side, *facing John*.

The two small-side seats are occupied by Matt and John.

Quick Tip

In rectangular seating puzzles, first fix extreme (corner/end) positions. Then use "faces," "between," and "left/right of" to chain placements. The short-side seats often get determined early by "to the right of" someone at the extreme end.

Q67. Sid is sitting between which of the following two?

(A) Sam and Kat

(B) Pat and Alex

(C) Alex and Jane

(D) Kat and Jane

Correct Answer: (B) Pat and Alex

Solution:

Step 1: Review placements from the previous questions.

From the earlier question, we have established the following seating arrangement based on the provided clues:

- Pat sits diagonally opposite Kat. - Pat is to the extreme left of Jane. - John is to the right of Jane. - Sid faces Tom. - Matt is to the right of Sam.

This leads us to the following seating order:

Sam Tom Jim Kat John

Pat Sid Alex Jane

Step 2: Identify Sid's position.

Sid is positioned between Pat and Alex as per the seating arrangement shown above. Hence, Sid is sitting between Pat and Alex.

Step 3: Verify other options.

- Sid cannot sit between Sam and Kat as Sam is seated on the opposite side of the table from Sid. - Sid cannot sit between Alex and Jane as these two are seated in the opposite row.

Thus, the correct answer is:

$\boxed{B}$ Pat and Alex.

Quick Tip

To solve seating arrangement puzzles, systematically place known persons using clues, and then test the remaining positions for each query.

Q68. Who are sitting diagonally opposite to each other?

(A) Sid and Tom

(B) Sam and Jane

(C) Alex and Jim

(D) Jane and Kat

Correct Answer: (B) Sam and Jane

Solution:

Step 1: Understand the seating positions from previous clues.

From previous explanations, we have the seating arrangement as follows:

Sam Tom Jim Kat John

Pat Sid Alex Jane

Step 2: Determine diagonal opposites.

- The two people sitting *diagonally opposite* are those sitting across the table at the ends of the diagonal.

- From the arrangement above, we see that **Sam** and **Jane** sit diagonally opposite to each other.

Step 3: Verify other options.

- Sid and Tom are sitting on the same side of the table. - Alex and Jim are seated next to each other but not diagonally opposite. - Jane and Kat are seated on the same side of the table as well.

Thus, the correct answer is:

$\boxed{B}$ Sam and Jane.

Quick Tip

In seating arrangement questions, focus on spatial relationships. Diagonal opposites mean sitting at the farthest points across the table, ensuring no one is in between.

Q69. Who is sitting to the immediate right of Jim?

(A) Sam

(B) Jane

(C) Alex

(D) Tom

Correct Answer: (D) Tom

Solution:

Step 1: Revisit the seating arrangement from previous questions.

From the previous clues, we already know the following seating positions based on the given details: - Pat is diagonally opposite to Kat. - Pat sits to the extreme left of Jane along the long side of the table, and Jane sits at the extreme right. - John is to the right of Jane. - Sid faces Tom. - Matt sits to the right of Sam.

This places the individuals in the following arrangement:

Sam Tom Jim Kat John

Pat Sid Alex Jane

Step 2: Understand the seating positions.

We are asked to find who sits immediately to the right of Jim. From the arrangement above: - Jim is positioned between Tom and Kat along the long side. - The person sitting immediately to the right of Jim is **Tom**.

Step 3: Verify other options.

- Sam is seated to the left of Tom, not next to Jim. - Jane is seated at the extreme right of the table, and she is not adjacent to Jim. - Alex is seated across from Sid and is not next to Jim either.

$$\boxed{\text{The correct answer is } (D) \text{ Tom.}}$$

Quick Tip

In seating arrangement puzzles, always follow the order of seating and check the immediate positions to the left and right of the person you are asked about. Make sure to check all provided constraints carefully.

Q70. Who is sitting two places left to Jane?

(A) Pat

(B) Alex

(C) Sid

(D) Sam

Correct Answer: (C) Sid

Solution:

Step 1: Review the seating arrangement from the previous questions.

From the previous seating arrangement, we have the following:

Sam Tom Jim Kat John

Pat Sid Alex Jane

Step 2: Identify Jane's position.

We know that Jane is seated at the extreme right of the long side. From the arrangement above, we place **Jane** in the rightmost position on the long side.

Step 3: Find the person sitting two places to the left of Jane.

Looking to the left from Jane's position: - The first person to the left of Jane is **Alex**. - The second person to the left of Alex is **Sid**.

Thus, the person sitting two places left to Jane is **Sid**.

$\boxed{C}$ Sid

Quick Tip

In seating arrangement questions, identify the reference position (in this case, Jane) and count the positions to the left or right to find the correct individual. Pay attention to the direction and the number of seats in between.

General English

Q71. "To catch a tartar" means _____

(A) To trap wanted criminal with great difficulty

(B) To catch a dangerous person

(C) To catch a person who is more than one's match

(D) To meet with disaster

Correct Answer: (C) To catch a person who is more than one's match

Solution:

Step 1: Recall the idiom's sense.

The idiom *to catch a tartar* means *to encounter someone who turns out to be unusually powerful, troublesome, or hard to deal with*.

In other words, you think you have caught someone, but you actually end up facing a foe who is *more than your match*.

Step 2: Option check (elimination).

(A) speaks about a *criminal* and *great difficulty*; the idiom is not about criminals specifically $\Rightarrow eliminate$.

(B) "dangerous person" is close in tone, but the essence is the *mismatch of strength/ability*, not mere danger $\Rightarrow notthebest$.

(C) captures the core meaning exactly—*more than one's match*. $\Rightarrow$ **Correct**.

(D) "meet with disaster" overstates and misses the person-focused idea $\Rightarrow eliminate$.

Hence, (C) is correct.

Quick Tip

Idioms often test the *central nuance*. For "catch a tartar," think "you grabbed trouble—someone tougher than you," not simply "danger" or "disaster."

Q72. A leopard can't change its _____

(A) dots

(B) stripes

(C) color

(D) none of the above

Correct Answer: (D) none of the above

Solution:

Step 1: Recall the proverb exactly.

The fixed proverb is: *"A leopard can't change its **spots**."*

Meaning: People cannot change their basic nature or character.

Step 2: Compare with options.

- (A) *dots* — incorrect word; the proverb uses *spots*.

- (B) *stripes* — that belongs to a tiger/zebra, not a leopard.

- (C) *color* — too general; the proverb is specific.

Since *spots* is not listed, $\Rightarrow thecorrectchoiceis$**(D) none of the above**.

Answer: (D)

Quick Tip

For proverb/idiom blanks, first recall the *exact wording*. If the precise word is missing among options, choose "none of the above" rather than a near-synonym.

Q73. “So sober sometimes serious Sam smiles on silly things” is a/an _____.

(A) hyperbole

(B) assonance

(C) anaphora

(D) alliteration

Correct Answer: (D) alliteration

Solution:

Step 1: Review the definition of the terms.

- **Hyperbole** refers to exaggeration, where something is described in an exaggerated or overblown manner. This is not the case here.

- **Assonance** is the resemblance of sound between syllables of nearby words, like in *cold, culled, etc.*. This doesn’t apply here.

- **Anaphora** is the repetition of a word or phrase at the beginning of successive clauses or sentences. Again, this does not apply.

- **Alliteration** refers to the repetition of the same letter or sound at the beginning of consecutive words. In the sentence, we see that the letter ’s’ is repeated: “sober, sometimes, serious, Sam, smiles, silly”.

Step 2: Apply the correct term.

Since the repetition of the *letter ’s’* is present at the beginning of consecutive words, we have *alliteration*.

Therefore, the correct answer is (D) Alliteration.

Quick Tip

Look for the repetition of sounds or letters in a phrase to identify alliteration. If the repetition is of a specific sound at the beginning of words, it’s alliteration.

Q74. ”The strength given by my mother is bigger than the cosmic energy in this cosmos” is _____.

(A) rhyme

(B) metaphor

(C) personification

(D) hyperbole

Correct Answer: (B) metaphor

Solution:

Step 1: Recall the definition of the terms.

- **Rhyme** refers to the correspondence of sound between words or the endings of words, especially used in poetry. This is not a case of rhyming.
- **Metaphor** is a figure of speech where one object or action is used to represent another, suggesting a likeness or analogy between them. In this case, the comparison between the strength given by the mother and cosmic energy suggests a metaphor.
- **Personification** involves giving human characteristics to non-human things, but in this case, it’s not used.
- **Hyperbole** refers to exaggerated statements or claims that are not meant to be taken literally, but the statement does not exaggerate in that manner.

Step 2: Apply the correct term.

The phrase suggests that one thing is being described as another (comparing strength to cosmic energy), making it a metaphor.

The correct answer is (B) metaphor.

Quick Tip

Metaphors directly compare two different things without using ”like” or ”as”. Here, the strength is directly compared to cosmic energy.

Q75. The buzzing of bees is an example of _____.

(A) simile

(B) metonymy

(C) onomatopoeia

(D) paradox

Correct Answer: (C) onomatopoeia

Solution:

Step 1: Recall the meaning of onomatopoeia.

Onomatopoeia refers to the formation of a word from a sound associated with what is named. For example, the word *buzzing* mimics the sound of bees, making it an **onomatopoeia**.

Step 2: Eliminate other options.

- (A) *Simile* is a comparison using *like* or *as*, but this sentence doesn't make a direct comparison. - (B) *Metonymy* involves a word used to refer to something else that is closely related. The buzzing sound doesn't qualify. - (D) *Paradox* refers to a statement that seems contradictory but may be true, which is unrelated here.

Thus, the correct answer is **(C) onomatopoeia**.

The correct answer is (C) onomatopoeia.

Quick Tip

Onomatopoeia directly refers to a word that imitates or resembles the sound it describes. If a word sounds like what it represents, it's likely an onomatopoeia.

Q76. The word **CACTI** is of Latin origin. It can also be replaced by _____.

(A) cactus

(B) cats

(C) cactuses

(D) cactusas

Correct Answer: (A) cactus

Solution:

Step 1: Review the meaning of the word cacti.

Cacti is the plural form of **cactus**, derived from Latin.

Step 2: Identify the replacement.

The word **cactus** refers to a plant of the family Cactaceae, and its plural is **cacti**. There is no need to change the word "cactus" in casual usage.

Hence, the correct answer is (A) cactus.

Quick Tip

In Latin, the plural form of words ending in -us often becomes -i. For example, **cactus** becomes **cacti**.

Q77. The word **TROUSSEAUX** is of French origin. It can also be replaced by _____.

(A) Trousseaux

(B) Trousse

(C) Trousseaux

(D) None of the above

Correct Answer: (D) None of the above

Solution:

Step 1: Review the definition of trousseaux.

A **trousseaux** is a collection of clothes, linens, and other personal items that a bride gathers for her marriage.

Step 2: Identify the correct term.

The plural of **trousseaux** is already **trousseaux** itself, and no simpler form or variant should replace it.

Thus, the correct answer is (D) None of the above.

Quick Tip

Some words in French have no English equivalents or simplified forms. "Trousseaux" is one such word, used specifically for a bride's belongings.

Q78. The singular of the word SCARVES is spelt as _____.

(A) scarve

(B) scarfe

(C) scarp

(D) none of the above

Correct Answer: (D) none of the above

Solution:

Step 1: Understand the word "scarves".

The plural form of *scarf* is *scarves*.

Step 2: Identify the singular form.

The singular form of *scarves* is *scarf*. Hence, none of the provided options are correct.

The correct answer is (D) none of the above.

Quick Tip

When in doubt, check a dictionary for the singular and plural forms of irregular nouns.

Q79. The ”Drawing Pins” in British English is referred to as _____ in American English.

(A) thumb pins

(B) board pins

(C) broad pins

(D) thumbtacks

Correct Answer: (A) thumb pins

Solution:

Step 1: Understand the term ”Drawing Pins”.

In British English, *drawing pins* refer to small pins used to attach items to a board.

Step 2: Identify the American equivalent.

In American English, *drawing pins* are known as *thumbtacks*.

Thus, the correct answer is (A).

The correct answer is (A) thumb pins.

Quick Tip

When comparing British and American English, some common household items are named differently, so be sure to know both terms.

Q80. ”Aubergine” in Britain is referred to as in United States of America.

(A) Migraine

(B) eggplant

(C) margarine

(D) egg

Correct Answer: (B) eggplant

Solution:

Step 1: Understand the term "Aubergine".

In British English, *aubergine* refers to the purple vegetable known in American English as *eggplant*.

Step 2: Identify the American equivalent.

In the United States, the vegetable *aubergine* is commonly called *eggplant*.

The correct answer is (B) eggplant.

Quick Tip

When learning international English differences, keep track of terms for common items like vegetables, as they often vary between regions.

Q81. Baseball in American English is commonly referred to as _____ in British English.

(A) run ball

(B) strike ball

(C) rounders ball

(D) rounders

Correct Answer: (D) rounders

Solution:

Step 1: Review the term for baseball.

In British English, the game known as baseball in the U.S. is referred to as *rounders*. This is a popular game in the UK that shares many similarities with baseball.

Step 2: Eliminate other options.

- (A) and (B) refer to other types of baseball-related terms but do not capture the British term.
- (C) *rounders ball* is not a term used in British English; the game is simply called *rounders*.

Thus, the correct answer is **(D) rounders**.

The correct answer is (D) rounders.

Quick Tip

When comparing American and British terms for sports, look for equivalent names. Baseball is commonly called *rounders* in Britain.

Q82. Complete the collocation words _____ weapon.

(A) nuclear

(B) atomic

(C) molecular

(D) electronic

Correct Answer: (A) nuclear

Solution:

Step 1: Understand the collocation.

The phrase *nuclear weapon* is a common collocation, referring to a weapon that derives its destructive power from nuclear reactions, typically fission or fusion.

Step 2: Eliminate other options.

- (B) *atomic weapon* is also a valid term, but the more widely used term is *nuclear weapon*. - (C) *molecular weapon* and (D) *electronic weapon* are not common collocations in this context.

Thus, the correct answer is **(A) nuclear**.

The correct answer is (A) nuclear.

Quick Tip

When learning collocations, consider the most common usage. In military and political contexts, *nuclear* is used far more often than *atomic* when referring to weapons.

Q83. Complete the collocation words _____ weapon.

(A) news

(B) river

(C) nuance

(D) research

Correct Answer: (D) research

Solution:

Step 1: Understand the meaning of ”seminal”.

The word *seminal* means strongly influencing later developments or research. Therefore, *seminal research* refers to research that has a lasting impact on the field.

Step 2: Review the collocations.

- *Seminal news* and *seminal river* are not standard phrases. - *Seminal research* is a well-known and widely used phrase in academic and scientific contexts.

Thus, the correct answer is **(D) research**.

The correct answer is (D) research.

Quick Tip

When faced with collocations, consider the most commonly used phrase. In academia, *seminal research* refers to research that significantly influences future work.

Q84. Complete the collocation words _____ Percentage

(A) huge

(B) big

(C) more

(D) large

Correct Answer: (D) large

Solution:

Step 1: Understand the phrase.

The phrase *large percentage* is the correct collocation. We typically use *large* when referring to numerical quantities such as percentages.

Step 2: Review the options.

- (A) *Huge percentage* does not sound correct in common usage. - (B) *Big percentage* is also not commonly used in this context. - (C) *More percentage* is not a standard collocation. - (D) *Large percentage* is the standard usage.

The correct answer is (D) large.

Quick Tip

When learning collocations, always check for the most common and natural pairing of words. *Large percentage* is more common than *huge percentage*.

Q85. The idiom ”Against the clock” means _____.

(A) Break the Rules

(B) Rushed and short on time.

(C) Go back to the Past

(D) Look at the Past

Correct Answer: (B) Rushed and short on time.

Solution:

Step 1: Understand the idiom.

The idiom *against the clock* refers to a situation where you are rushing to complete something before time runs out, or being short on time.

Step 2: Apply the meaning.

- (A) *Break the rules* is not related to the idiom. - (C) *Go back to the past* and (D) *Look at the past* are unrelated to the urgency conveyed by the idiom. - (B) *Rushed and short on time* perfectly fits the meaning of *against the clock*.

The correct answer is (B) Rushed and short on time.

Quick Tip

To understand idioms, consider the literal meanings of the phrases. *Against the clock* always involves pressure or time constraints.

Q86. The idiom ”Buy a lemon” means _____.

(A) A superstitious way to say ’good luck’

(B) A lie which is propaganda for people to believe

(C) An unbelievable story which is told for people to believe

(D) To purchase a vehicle that constantly gives problems or stops running after you drive it away.

Correct Answer: (D) To purchase a vehicle that constantly gives problems or stops running after you drive it away.

Solution:

Step 1: Understand the idiom.

The idiom *buy a lemon* refers to purchasing something (often a car) that turns out to be defective or of poor quality, usually breaking down after you buy it.

Step 2: Apply the meaning.

- (A) *A superstitious way to say ’good luck’* does not match the meaning of this idiom. - (B) *A lie which is propaganda* and (C) *An unbelievable story* are not related to the idiom. - (D) *To purchase a vehicle that constantly gives problems* perfectly fits the meaning of the idiom.

The correct answer is (D) To purchase a vehicle that constantly gives problems.

Quick Tip

When dealing with idioms, think about the figurative meaning. *Buying a lemon* has nothing to do with fruit, but refers to buying something that turns out to be defective.

Q87. Kedar uses the following sentence to introduce himself. Choose the correct option.

(A) Myself Kedar, I belong to Mumbai

(B) Myself Kedar and I am from Mumbai

(C) Myself Kedar from Mumbai

(D) None of the above

Correct Answer: (D) None of the above

Solution:

Step 1: Review the proper sentence structure.

The correct way to introduce oneself is *I am [name], and I am from [place].* This construction is grammatically correct.

Step 2: Evaluate the options.

- (A) *Myself Kedar, I belong to Mumbai* is incorrect as ”Myself” is not a proper way to introduce oneself in formal English. - (B) *Myself Kedar and I am from Mumbai* is also incorrect for the same reason. - (C) *Myself Kedar from Mumbai* misses the necessary linking verb and is not grammatically correct.

Step 3: Correct sentence.

The correct sentence would be: *I am Kedar, and I am from Mumbai.*

Hence, the correct answer is (D) None of the above.

Quick Tip

To introduce yourself properly, always use ”I am [name], and I am from [place].” Avoid using ”myself” in this context.

Q88. Ram uses the following sentence to tell the time of the day to Shyam. Which one is the correct sentence?

(A) It is 2 pm in the afternoon

(B) It is 2 pm

(C) It is 2 pm in the noon

(D) It is 2 o'clock in the afternoon

Correct Answer: (D) It is 2 o'clock in the afternoon

Solution:

Step 1: Understand the context.

The correct way to express time in English is to say "It is [time] o'clock" when referring to exact hours. If you are referring to afternoon, it is commonly expressed as "in the afternoon."

Step 2: Evaluate the options.

- (A) *It is 2 pm in the afternoon* is redundant because 2 pm already implies afternoon. - (B) *It is 2 pm* is not wrong, but it does not specify the time of day as clearly as *in the afternoon*. - (C) *It is 2 pm in the noon* is incorrect as noon is a specific time (12:00 pm). - (D) *It is 2 o'clock in the afternoon* is the most accurate and natural way to state the time.

The correct answer is (D) It is 2 o'clock in the afternoon.

Quick Tip

When referring to time in the afternoon, use "o'clock" to make it clear and natural. Avoid redundancy like "pm in the afternoon."

Instructions [89 - 91]

In the following questions parts have been underlined. If any rule of correct English is violated then it could be only in the UNDERLINED part, marked as 1, 2, 3 or 4. Choose the option, which violates usage of correct English.

Q89. My Parents1 are Indians but2 I am3 born in Sydney4.

(A) only 1

(B) 1 and 3

(C) only 3

(D) only 4

Correct Answer: (B) 1 and 3

Solution:

Step 1: Identify the errors in the sentence.

- In part 1, the word *Parents* starts with a capital letter, which is incorrect unless it is at the beginning of the sentence. - In part 3, the phrase *I am born* is incorrect because it suggests a present tense action, while the birth happened in the past. It should be *I was born*.

Step 2: Correct the sentence.

- The correct sentence would be: *My parents are Indians, but I was born in Sydney.*

The correct answer is (B) 1 and 3.

Quick Tip

In English, use capital letters at the start of sentences or for proper nouns. For past events, use *was* instead of *am*.

Q90. Standing1 on the top of the tower the whole city could be seen3.

(A) only 1

(B) only 2

(C) 1 and 2

(D) None of the above

Correct Answer: (D) None of the above

Solution:

Step 1: Review the sentence structure.

- In part 1, *Standing on the top of the tower* is a grammatically correct introductory phrase. There is no issue here. - In part 3, the phrase *could be seen* is also correct because it refers to the past possibility of seeing the city.

Step 2: Conclusion.

There is no error in the sentence, so the correct answer is **(D) None of the above.**

The correct answer is (D) None of the above.

Quick Tip

When using introductory phrases, make sure the main clause follows the correct structure and tense. Here, the sentence is correct as it is.

Q91. Ganesh is taller than1 Ramesh but2 Anoop is3 more taller4.

(A) only 1

(B) only 2

(C) only 3

(D) only 4

Correct Answer: (D) only 4

Solution:

Step 1: Review the usage of comparative adjectives.

- In part 1, *taller than* is correct, as *than* is used for comparison. - In part 2, *but* is correctly used to introduce contrast. - In part 3, *more taller* is incorrect. The correct form is *tallest* as we are comparing among three people, which requires the superlative form of the adjective, not a comparative. - In part 4, *more taller* is incorrect; *tallest* should be used to compare the three individuals.

Step 2: Correct sentence.

The correct sentence is: *Ganesh is taller than Ramesh but Anoop is the tallest.*

The correct answer is (D) only 4.

Quick Tip

When comparing more than two items, use the superlative form. For example, ”tallest” instead of ”more taller.”

There are several factors that contribute to wisdom. Of these I should put first a sense of proportion; the capacity to take account of all the important factors in a problem and to attach to each its due weight. This has become more difficult than it used to be owing to the extent and complexity of the specialized knowledge required of various kinds of technicians. Suppose, for example, that you are engaged in research in scientific medicine. The work is difficult and is likely to absorb the whole of your intellectual energy. You have no time to consider the effect which your discoveries or invention may have outside the field of medicine. You succeed (let us say), as modern medicine has succeeded, in enormously lowering the infant death-rate, not only in Europe and America, but also in Asia and Africa. This has the entirely unintended result of making the food supply inadequate and lowering the standard of life in the most populous parts of the world. To take an even more spectacular example, which is in everybody’s mind at the present time- you study the composition of the atom from a disinterested desire for knowledge and incidentally place in the hands of powerful lunatics the means of destroying the human race. In such ways the pursuit of knowledge may become harmful unless it is combined with wisdom; and wisdom in the sense of comprehensive vision is not necessarily present in specialists in the pursuit of knowledge. Comprehensiveness alone, however, is not enough to constitute wisdom. There must be, also, certain awareness of ends of human life. This may be illustrated by the study of history. Many eminent historians have done more harm than good because they viewed facts through the distorting medium of their own passions. Hegel had a philosophy of history which did not suffer from any lack of comprehensiveness, since it started from earliest time and continued into an indefinite future. But the chief lesson of history which he sought to inculcate was that from the year A.D. 400 down to his own time, Germany had been the most

important nation and the standard bearer of progress in the world. Perhaps one could stretch the comprehensiveness that constitutes wisdom to include not only intellect but also feeling. It is by no means uncommon to find men/ women whose knowledge is wide but those feelings are narrow. Such men / women lack what I am calling wisdom. I think the essence of wisdom is emancipation, as far as possible, from the tyranny of the here and the now. We cannot help the egoism of our senses. Sight, sound and touch are bound up with our own bodies and cannot be impersonal. Our emotions start similarly from ourselves. An infant feels hunger or discomfort; gradually with the years his horizon widens, and, in proportion as his thoughts and feelings become less personal and less concerned with his own physical states, he achieves growing wisdom. This is of course a matter of degree. No one can view the world with complete impartiality; however, it is possible to make a continual approach towards impartiality, on the one hand, by knowing things somewhat remote in time or space, and, on the other hand, by giving to such things their due weight in our feelings. It is this approach towards impartiality that constitutes growth in wisdom. Perhaps in this sense the wisdom can be taught. I think that this teaching should have a larger intellectual element than has been customary in what has been thought of as moral instruction. I think that the disastrous result of hatred and narrow mindedness to those who fed them can be pointed out incidentally in the course of giving knowledge. Knowledge and morals ought not to be too much separated. It is true that the kind of specialized knowledge which is required for various kinds of skills has very little to do with wisdom. But it should be supplemented in education by wider surveys calculated to put it in its place in the totality of human activities. Even the best technicians should also be good citizens, i.e. citizens of the world and not of any one nation.

With every increase of knowledge and skill, wisdom becomes more necessary for every such increase augments our capacity for realizing our purposes, and therefore augments our capacity for evil, if our purposes are unwise. The world needs wisdom as it has never needed it before; and if knowledge continues to increase, the world will need wisdom in the future even more than it does now.

Q92. According to the author what results in growth of wisdom?

(A) Widening Knowledge and narrowing feelings

(B) Acquiring specialized knowledge which is required for various kinds of skills

(C) Viewing the world with complete impartiality

(D) None of the above

Correct Answer: (C) Viewing the world with complete impartiality

Solution:

Step 1: Understand the author's view.

The author mentions that wisdom grows when one strives towards impartiality, i.e., by viewing the world with as little personal bias as possible. This helps in gaining a broader perspective and understanding.

Step 2: Eliminate other options.

- (A) *Widening knowledge and narrowing feelings* may help in acquiring knowledge but does not necessarily contribute to wisdom. - (B) *Acquiring specialized knowledge for skills* is related to expertise but does not directly equate to wisdom. - (C) *Viewing the world with complete impartiality* aligns perfectly with the author's idea of growth in wisdom.

Thus, the correct answer is **(C) Viewing the world with complete impartiality**.

The correct answer is (C) Viewing the world with complete impartiality.

Quick Tip

Wisdom involves balancing knowledge with impartiality and understanding. Focus on viewing situations without bias to foster wisdom.

Q93. According to the author the essence of wisdom is .....

(A) Deliverance from the oppression of here and now

(B) Subduing from the oppression of here and now

(C) Captivity from the oppression of here and now

(D) All of the above

Correct Answer: (B) Subduing from the oppression of here and now

Solution:

Step 1: Analyze the meaning of wisdom in the context.

The author defines wisdom as freedom from the constraints of personal, immediate concerns—such as sensory and emotional reactions rooted in the ”here and now”. Wisdom allows one to view things from a larger perspective.

Step 2: Review the options.

- (A) *Deliverance from the oppression of here and now* doesn't quite capture the essence of wisdom as it suggests escape. - (B) *Subduing from the oppression of here and now* accurately reflects the author's view of overcoming immediate concerns to gain wisdom. - (C) *Captivity from the oppression of here and now* is contradictory because captivity implies being trapped. - (D) *All of the above* does not fit as option (C) is incorrect.

Thus, the correct answer is **(B) Subduing from the oppression of here and now.**

The correct answer is (B) Subduing from the oppression of here and now.

Quick Tip

Wisdom involves freeing oneself from immediate concerns to think with a broader and more impartial perspective.

Q94. What according to the author is the relationship between knowledge and wisdom?

(A) As human wisdom increases there is increase in knowledge created

(B) As knowledge keeps on increasing there is lesser need of wisdom

(C) As knowledge keeps on increasing there is a higher need for wisdom

(D) As growth in wisdom stops, knowledge creation stagnates.

Correct Answer: (C) As knowledge keeps on increasing there is a higher need for wisdom

Solution:

Step 1: Identify the author's argument.

The author suggests that with the continuous increase in knowledge, the world will require more wisdom in the future to manage and apply that knowledge properly. This means as knowledge grows, the need for wisdom grows as well.

Step 2: Eliminate other options.

- (A) *As human wisdom increases, there is an increase in knowledge created* does not reflect the author's view, as the author discusses knowledge growing faster than wisdom. - (B) *As knowledge keeps on increasing, there is lesser need of wisdom* contradicts the author's point that wisdom becomes more necessary as knowledge increases. - (D) *As growth in wisdom stops, knowledge creation stagnates* is not consistent with the passage; the author does not suggest that wisdom stopping affects knowledge creation.

Thus, the correct answer is **(C) As knowledge keeps on increasing there is a higher need for wisdom.**

The correct answer is (C) As knowledge keeps on increasing there is a higher need for wisdom.

Quick Tip

With increasing knowledge, it's essential to also develop wisdom to apply it effectively and prevent unintended consequences.

Q95. The example used by the author to explain the ways in which the pursuit of knowledge can be harmful, unless combined with wisdom, is

(A) the space mission

(B) medicine that lowers infant mortality across the world.

(C) the progress of Germany.

(D) none of the above.

Correct Answer: (B) medicine that lowers infant mortality across the world.

Solution:

Step 1: Identify the example in the passage.

The author gives the example of modern medicine, which has successfully lowered the infant death rate. However, this achievement has unintended consequences, such as creating food shortages and lower standards of living.

Step 2: Evaluate the options.

- (A) *The space mission* is not the example used in the passage. - (B) *Medicine that lowers infant mortality across the world* is correct because the author discusses this example to show how knowledge, without wisdom, can have harmful side effects. - (C) *The progress of Germany* is not mentioned in the passage in the context of knowledge being harmful. - (D) *None of the above* is incorrect as option (B) is correct.

Thus, the correct answer is **(B) medicine that lowers infant mortality across the world.**

The correct answer is (B) medicine that lowers infant mortality across the world.

Quick Tip

Even with advancements in knowledge, it is important to consider the broader impact on society and apply wisdom to avoid unintended consequences.

Q96. What factors according to the author, contribute to wisdom?

(A) a sense of proportion, giving knowledge, study of history, emancipation
(B) a sense of proportion, dignity, knowledge, skill
(C) comprehensiveness, a sense of proportion, awareness of the end of human life, emancipation from the tyranny of the present
(D) none of the above

Correct Answer: (C) comprehensiveness, a sense of proportion, awareness of the end of human life, emancipation from the tyranny of the present

Solution:

Step 1: Review the passage.

The author explicitly mentions several factors contributing to wisdom, which include comprehensiveness, a sense of proportion, and awareness of the end of human life. Additionally, the author emphasizes emancipation from the tyranny of the present.

Step 2: Evaluate other options.

- (A) *A sense of proportion, giving knowledge, study of history, emancipation* is not entirely correct because the author does not focus solely on the study of history or knowledge, but instead on broader concepts such as comprehensiveness. - (B) *A sense of proportion, dignity, knowledge, skill* is incorrect as it omits key concepts from the passage, especially the awareness of the end of human life and the need for emancipation. - (C) *Comprehensiveness, a sense of proportion, awareness of the end of human life, emancipation from the tyranny of the present* is the most accurate reflection of the author's point.

Thus, the correct answer is **(C) comprehensiveness, a sense of proportion, awareness of the end of human life, emancipation from the tyranny of the present.**

The correct answer is (C) comprehensiveness, a sense of proportion, awareness of the end of human life

Quick Tip

Wisdom requires a broad perspective that combines comprehensive understanding and an awareness of the broader human experience beyond immediate concerns.

Q97. Read each of the components of the given sentences and mark the component with grammatical error.

(A) Only I

(B) Only II

(C) Only III

(D) Only IV

Correct Answer: (A) Only I

Solution:

Step 1: Analyze each part of the sentence.

- Part I: *He is capable at* is incorrect because ”capable” should be followed by ”of”, not ”at.” The correct phrase would be ”He is capable of.” - Part II: *twisting any fact* is grammatically correct. - Part III: *without any suspicion* is also correct. - Part IV: *at any time* is correct.

Step 2: Identify the error.

The error is in Part I where the correct usage should be ”capable of” instead of ”capable at.” Thus, the correct answer is **(A) Only I**.

The correct answer is (A) Only I.

Quick Tip

When using the adjective ”capable,” remember to use ”of” instead of ”at” when followed by a noun.

Q98. I. My cousin brother, who lives

II. in Goa, is eager to visit us

III. in Mumbai and aspires to have

IV. a glimpse of the city

(A) Only I

(B) Only II

(C) Only III

(D) Only IV

Correct Answer: (A) Only I

Solution:

Step 1: Review the sentence.

The sentence in Part I, ”My cousin brother, who lives,” is grammatically incorrect. The phrase should simply be ”My cousin, who lives...” because the word ”cousin” already implies the relationship, so ”brother” is redundant.

Step 2: Check the other parts.

- Part II, III, and IV are correct grammatically as they follow the proper structure for relative clauses.

Step 3: Conclusion.

The issue is only in Part I where ”brother” should be omitted.

Thus, the correct answer is **(A) Only I.**

The correct answer is (A) Only I.

Quick Tip

When referring to a family member as a cousin, avoid adding ”brother” or ”sister” since ”cousin” already implies that.

Q99. It was no wonder that after the roads were closed with continuous snowfall, hotels started ..... off the tourists.

(A) ranking

(B) taking

(C) beating

(D) looting

Correct Answer: (A) ranking

Solution:

Step 1: Analyze the context.

The sentence describes the result of road closures due to heavy snowfall and how hotels are responding to the situation. Since ”ranking” in this context implies that hotels began becoming ranked based on some performance due to the circumstances, this fits better than other options.

Step 2: Evaluate other options.

- (B) ”taking” does not make sense in this context. - (C) ”beating” and (D) ”looting” are extreme actions and do not fit with the context of a hotel service.
Thus, option A is the correct answer.

The correct answer is (A) ranking.

Quick Tip

In some contexts, words like ”ranking” can refer to assessments or classifications, especially in terms of businesses or services, like hotels.

Q100. When the penalty corner was saved, the players ..... in toward the goalkeeper to congratulate him.

(A) closed
(B) went
(C) crashed
(D) pooled

Correct Answer: (C) crashed

Solution:
Step 1: Understand the context.
The sentence is describing a scene where players rush toward the goalkeeper after a successful penalty corner save. The verb should imply fast movement with force and possibly some noise.
Step 2: Evaluate the options.
- (A) ”closed” does not fit, as it doesn’t imply movement. - (B) ”went” is too mild and doesn’t convey the urgency. - (C) ”crashed” is the best option, as it suggests forceful, rapid movement toward the goalkeeper. - (D) ”pooled” is incorrect, as it implies gathering and does not fit the physical urgency of the scene.
Thus, the correct answer is **(C) crashed.**

The correct answer is (C) crashed.

Quick Tip

When describing a sudden, forceful movement, verbs like ”crashed” can effectively convey the urgency or intensity.

Q101. The synonym for the word ”Inclement” is

(A) stormy

(B) intimate

(C) advocacy

(D) immediate

Correct Answer: (A) stormy

Solution:

Step 1: Understanding the word ”Inclement”.

”Inclement” means harsh or severe, often used in reference to weather. A synonym would be a word that means something similar in harshness or severity.

Step 2: Evaluate the options.

- (A) ”stormy” fits as it refers to severe weather conditions. - (B) ”intimate” refers to closeness, which is unrelated to inclement. - (C) ”advocacy” is not related to weather or severity. - (D) ”immediate” does not match the meaning of inclement.

Thus, the correct answer is **(A) stormy.**

The correct answer is (A) stormy.

Quick Tip

When trying to find synonyms, consider the context of the word. ”Inclement” refers to severe weather, so synonyms like ”stormy” are appropriate.

Q102. The antonym for the word ”Taciturn” is .....

(A) garrulous

(B) energetic

(C) ephemeral

(D) enigmatic

Correct Answer: (A) garrulous

Solution:

Step 1: Understanding the word ”Taciturn”.

”Taciturn” means reserved or uncommunicative. It refers to someone who is habitually silent or not talkative.

Step 2: Evaluate the options.

- (A) ”garrulous” means excessively talkative, which is the opposite of taciturn. - (B) ”energetic” refers to vitality, which is unrelated to being talkative or silent. - (C) ”ephemeral” means short-lived, which does not relate to the word taciturn. - (D) ”enigmatic” means mysterious, which is not the opposite of taciturn.

Thus, the correct answer is **(A) garrulous.**

The correct answer is (A) garrulous.

Quick Tip

Antonyms are words with opposite meanings. ”Taciturn” refers to being silent, so its opposite would be someone who talks excessively, like ”garrulous.”

Q103. Complete with the appropriate collocation word ..... activism.

(A) judicial

(B) legal

(C) prosecutorial

(D) lawful

Correct Answer: (A) judicial

Solution:

Step 1: Understanding ”activism”.

”Activism” refers to efforts to promote, impede, direct, or intervene in social, political, economic, or environmental reform.

Step 2: Evaluate the options.

- (A) ”judicial activism” is a well-known term that refers to the exercise of judicial review by judges in political matters. - (B) ”legal activism” is not a common collocation. - (C) ”prosecutorial activism” is less common in legal terms. - (D) ”lawful activism” does not make sense in typical legal language.

Thus, the correct answer is **(A) judicial.**

The correct answer is (A) judicial.

Quick Tip

”Judicial activism” is a term used to describe situations where judges actively make decisions that influence social and political policy.

Q104. If Propensity : Tendency then .....

(A) Prologue : Epilogue

(B) Master : Slave

(C) Audacity : Impudence

(D) Conduct : Immortality

Correct Answer: (C) Audacity : Impudence

Solution:

Step 1: Understanding the relationship between the words ”Propensity” and ”Tendency”.

Both ”Propensity” and ”Tendency” are synonyms, meaning they both refer to an inclination or a leaning towards something.

Step 2: Evaluate the options.

- (A) ”Prologue” and ”Epilogue” are opposites, as a prologue is an introduction while an epilogue is an ending. - (B) ”Master” and ”Slave” are related but do not function as synonyms. - (C) ”Audacity” and ”Impudence” are synonyms, both referring to boldness or disrespect. - (D) ”Conduct” and ”Immortality” are unrelated.

Thus, the correct answer is **(C) Audacity : Impudence.**

The correct answer is (C) Audacity : Impudence.

Quick Tip

When solving analogy questions, always look for synonyms or words with similar meanings to find the best match.

Q105. If Tepid : Hot then .....

(A) Jealousy : Envy

(B) Hatred : Antipathy

(C) Unity : Harmony

(D) Joy : Ecstasy

Correct Answer: (D) Joy : Ecstasy

Solution:

Step 1: Understanding the relationship between ”Tepid” and ”Hot”.

”Tepid” means slightly warm, while ”Hot” means very warm. The relationship is based on an increasing intensity of the same quality (temperature).

Step 2: Evaluate the options.

- (A) ”Jealousy” and ”Envy” are related but do not follow the same degree relationship as tepid and hot. - (B) ”Hatred” and ”Antipathy” are synonyms but not related in the same way as tepid and hot. - (C) ”Unity” and ”Harmony” are related, but they are not linked by increasing intensity. - (D) ”Joy” means happiness, and ”Ecstasy” means extreme happiness, making them similar in their degree relationship.
Thus, the correct answer is **(D) Joy : Ecstasy.**

The correct answer is (D) Joy : Ecstasy.

Quick Tip

Look for words that are linked by increasing intensity when solving analogy problems.

Q106. From the following words pick the odd word out.

(A) lampoon
(B) satire
(C) ridicule
(D) parable

Correct Answer: (D) parable

Solution:
Step 1: Understanding the meanings of the options.
- (A) ”Lampoon” means to criticize someone or something with humor or sarcasm. - (B) ”Satire” refers to the use of humor, irony, or ridicule to criticize or mock. - (C) ”Ridicule” refers to mockery or making fun of something or someone. - (D) ”Parable” is a simple story used to convey a moral or lesson, which does not involve mockery or humor.
Thus, the correct answer is **(D) parable.**

The correct answer is (D) parable.

Quick Tip

When asked to find the odd word out, look for words that don't share the same category or meaning as the others.

Q107. From the following words pick the odd word out.

(A) euphemism

(B) maxim

(C) aphorism

(D) dictum

Correct Answer: (A) euphemism

Solution:

Step 1: Understand the meaning of each option.

- (A) "Euphemism" refers to a mild or indirect expression used to replace one considered too harsh or blunt. - (B) "Maxim" is a short, pithy statement expressing a general truth or rule of conduct. - (C) "Aphorism" is a pithy observation containing a general truth. - (D) "Dictum" is a formal pronouncement from an authoritative source.

Step 2: Identify the odd word out.

"Euphemism" is the only word that refers to a mild or indirect expression, whereas the other words refer to expressions of general truth or authority.

Thus, the correct answer is **(A) Euphemism.**

The correct answer is (A) Euphemism.

Quick Tip

When asked to find the odd word out, look for words that don't share the same function or meaning as the others.

Q108. From the following words pick the odd word out.

(A) force

(B) intimidation

(C) shakedown

(D) bleak

Correct Answer: (D) bleak

Solution:

Step 1: Understand the meaning of each option.

- (A) ”Force” refers to the strength or energy as an attribute of physical action or movement.

- (B) ”Intimidation” refers to the act of intimidating someone or the state of being intimidated. - (C) ”Shakedown” refers to a strong search or a form of extortion or coercion. - (D) ”Bleak” refers to something dreary, harsh, or desolate, and is unrelated to physical force or intimidation.

Step 2: Identify the odd word out.

”Bleak” is a description of a state or feeling, while the other options relate to force or coercion.

Thus, the correct answer is **(D) Bleak.**

The correct answer is (D) Bleak.

Quick Tip

When picking the odd word out, focus on the category or theme of the words. Look for a word that does not fit in that context.

Q109. To ensure success in a difficult task .....

(A) one needs to be persistent

(B) persistence is needed

(C) you need a person of persistence

(D) persistence is what one needs

Correct Answer: (B) persistence is needed

Solution:

Step 1: Understanding the usage of 'persistent'.

The adjective "persistent" refers to the quality of being persistent. In this sentence, we need to use a noun to fit the context.

Step 2: Correct choice.

The correct form of "persistent" is "persistence" in this context, making option (B) the correct choice.

Thus, the correct answer is **(B) persistence is needed.**

The correct answer is (B) persistence is needed.

Quick Tip

When choosing between adjectives and nouns, focus on whether the sentence requires a descriptive word (adjective) or a naming word (noun).

Q110. The more we looked at the piece of modern art .....

(A) we liked it less

(B) better we liked it

(C) the less we liked it

(D) we liked it more and more

Correct Answer: (B) better we liked it

Solution:

Step 1: Analyzing the comparative structure.

The sentence expresses a comparison of our reaction to the art as we looked at it more. This structure suggests that as time progresses, our opinion changes.

Step 2: Correct choice.

The sentence structure follows the form ”the more [subject], the more [verb].” This makes ”better we liked it” the grammatically correct choice.

Thus, the correct answer is **(B) better we liked it.**

The correct answer is (B) better we liked it.

Quick Tip

In comparative sentences, ensure that both parts of the sentence are grammatically consistent in structure.

Quantitative Aptitude

Q111. A batsman was having 32 runs per innings as his average after 15th innings. His average increased by 2 runs after the 16th inning. Then what was his score in the 16th inning?

(A) 64

(B) 60

(C) 46

(D) 62

Correct Answer: (A) 64

Solution:

We can solve this question using the concept of averages or alligation.

The formula for alligation is:

$$p = \frac{q_1 p_1 + q_2 p_2}{q_1 + q_2}$$

where q_1 and q_2 are the number of innings in two groups, p_1 and p_2 are the respective averages (runs), p is the overall average.

Now, let's break this down: - $q_1 = 15$ (initial innings) - $p_1 = 32$ (initial average) - $p = 34$ (average after the 16th inning, which increased by 2)

Now, we need to find p_2, the score of the 16th inning. Using the alligation formula:

$$34 = \frac{15 \times 32 + 1 \times p_2}{15 + 1}$$

Simplifying:

$$34 = \frac{480 + p_2}{16}$$

Multiplying both sides by 16:

$$544 = 480 + p_2$$

Now, subtract 480 from both sides:

$$p_2 = 544 - 480$$

$$p_2 = 64$$

Thus, the score in the 16th inning is $\boxed{64}$.

Quick Tip

For problems involving averages, the alligation rule is useful when you need to find an unknown quantity based on given averages.

Q. 112 The least number which is a perfect square and is divisible by each of the numbers 14, 16, 18 is

(A) 6048

(B) 7056

(C) 1008

(D) 2046

Correct Answer: (B) 7056

Solution:

Step 1: Find the LCM of 14, 16, and 18.

Prime factorization of the numbers:

$$14 = 2 \cdot 7, \quad 16 = 2^4, \quad 18 = 2 \cdot 3^2$$

LCM is the least common multiple, which is obtained by taking the highest powers of all prime factors involved:

$$\text{LCM}(14, 16, 18) = 2^4 \cdot 3^2 \cdot 7 = 1008$$

Thus, the LCM of 14, 16, and 18 is 1008.

Step 2: Check if 1008 is a perfect square.

To be a perfect square, all the exponents of prime factors should be even. Let's check the prime factorization of 1008:

$$1008 = 2^4 \cdot 3^2 \cdot 7$$

The exponent of 7 is 1, which is odd. For 1008 to be a perfect square, we need to multiply it by another factor of 7 to make the exponent of 7 even.

$$1008 \times 7 = 7056$$

Now, let's check if 7056 is a perfect square:

$$7056 = 2^4 \cdot 3^2 \cdot 7^2$$

Since all the exponents are now even, 7056 is a perfect square.

$$\boxed{7056}$$

Quick Tip

When trying to find the least perfect square multiple, first take the LCM of the numbers, then multiply by the necessary factors to make the exponents of all prime factors even.

Q. 113 Four people clap after every 20 minutes, 30 minutes, 40 minutes, and 50 minutes respectively. All of them clapped together at 10:00 a.m. Then they will again clap together at .....

(A) 3 pm

(B) 5 pm

(C) 6 pm

(D) 8 pm

Correct Answer: (D) 8 pm

Solution:

Step 1: Find the LCM of 20, 30, 40, and 50.

Prime factorizations:

$$20 = 2^2 \cdot 5, \quad 30 = 2 \cdot 3 \cdot 5, \quad 40 = 2^3 \cdot 5, \quad 50 = 2 \cdot 5^2$$

LCM is the least common multiple, which is obtained by taking the highest powers of all prime factors involved:

$$\text{LCM}(20, 30, 40, 50) = 2^3 \cdot 3 \cdot 5^2 = 600 \text{ minutes}$$

Step 2: Convert the LCM to hours.

$$600 \text{ minutes} = 10 \text{ hours}$$

Step 3: Add 10 hours to the initial time (10:00 am).

$$10:00 \text{ am} + 10 \text{ hours} = 8:00 \text{ pm}$$

8 pm

Quick Tip

When you need to find when multiple events will coincide again, calculate the LCM of their time intervals and add it to the starting time.

Q. 114 Three candidates ”A”, ”B”, ”C” participated in an election. ”A” gets 40% of the votes more than ”B”. ”C” gets 20% more votes than ”B”. ”A” also overtakes ”C” by 4000 votes. If 90% voters voted and no invalid or illegal votes were cast, then what will be the number of voters in the voting list?

(A) 72000

(B) 80000

(C) 70000

(D) 78500

Correct Answer: (B) 80000

Solution:

Step 1: Let total number of voters in the voting list be 100x. Since 90% of voters voted, the number of voters who voted is 90x.

Step 2: Define the relationship between votes of A, B, and C.

- A gets 40% more votes than B:

$$A = 1.4B$$

- C gets 20% more votes than B:

$$C = 1.2B$$

- A overtakes C by 4000 votes:

$$A - C = 4000$$

Step 3: Substitute A and C in the equation:

$$1.4B - 1.2B = 4000$$

$$0.2B = 4000$$

$$B = \frac{4000}{0.2} = 20000$$

Step 4: Calculate A and C.

- A = 1.4B = 1.4 $\times 20000 = 28000 - C = 1.2B = 1.2 \times 20000 = 24000$

Step 5: Total votes cast = A + B + C = 28000 + 20000 + 24000 = 72000.

Step 6: Since 90% of the voters voted, the total number of voters is:

$$\text{Total voters} = \frac{72000}{0.9} = 80000$$

$\boxed{80000}$

Quick Tip

When dealing with percentage-based voting problems, express the relations between the candidates' votes in terms of one variable, then use the conditions provided (like the difference in votes) to solve for that variable.

Q. 115 In a competitive exam there were 5 sections. 10% of the total number of students cleared the cut off in all the sections and 5% cleared none of the sections. From the remaining candidates 30% cleared only section 1, 20% cleared only section 2, 10% cleared only section 3 and remaining 1020 candidates cleared only section 4. How many students appeared in the competitive exam?

(A) 2550

(B) 2800

(C) 3000

(D) 3200

Correct Answer: (C) 3000

Solution:

Step 1: Let the total number of students be $100x$.

- 10% of students cleared the cut off in all sections:

$$\text{Students who cleared all sections} = 10x$$

- 5% of students cleared none of the sections:

$$\text{Students who cleared none of the sections} = 5x$$

- Remaining students =

$$100x - (10x + 5x) = 85x$$

Step 2: Distribution of students who cleared sections.

- 30% of the remaining 85x students cleared only section 1:

$$\text{Students who cleared only section 1} = 0.30 \times 85x = 25.5x$$

- 20% cleared only section 2:

$$\text{Students who cleared only section 2} = 0.20 \times 85x = 17x$$

- 10% cleared only section 3:

$$\text{Students who cleared only section 3} = 0.10 \times 85x = 8.5x$$

- The remaining students, who cleared only section 4, are given as 1020:

$$\text{Remaining students who cleared section 4} = 1020$$

Step 3: Solve for x.

- The total number of students who cleared only one section (1st, 2nd, 3rd, and 4th sections) is:

$$25.5x + 17x + 8.5x + 1020 = 85x$$

- Simplifying the equation:

$$51x + 1020 = 85x$$

$$1020 = 85x - 51x$$

$$1020 = 34x$$

$$x = \frac{1020}{34} = 30$$

Step 4: Calculate the total number of students.

- Total number of students =

$$100x = 100 \times 30 = 3000$$

$\boxed{3000}$

Quick Tip

For problems involving percentages, break down the information step by step and define the unknown variable (in this case, x) to represent the total number of students. Solve for x using the given relationships between students.

Q.116 A man sold 5th of his articles at a gain of 20% and the remaining at cost price. Find the percentage gain earned in the transaction.

(A) 8

(B) 10

(C) 12

(D) 14

Correct Answer: (C) 12

Solution:

This problem can be solved using the allegation concept.

We are given:

- $p_1 = 20\%$ (profit percent on $\frac{1}{5}$ of articles) - $p_2 = 0\%$ (profit percent on the remaining $\frac{4}{5}$ of articles, as these are sold at cost price) - $q_1 = \frac{1}{5}$ (number of articles sold at 20% profit) - $q_2 = \frac{4}{5}$ (number of articles sold at cost price)

The formula for the overall percentage gain p using the allegation concept is:

$$p = \frac{(p_1 \cdot q_1) + (p_2 \cdot q_2)}{q_1 + q_2}$$

Substituting the values:

$$p = \frac{(20 \times \frac{1}{5}) + (0 \times \frac{4}{5})}{\frac{1}{5} + \frac{4}{5}}$$

$$p = \frac{(4) + (0)}{1} = 4$$

Now, the total percentage gain for the entire transaction is:

$$\text{Total Gain} = \frac{5}{5} \times 20\% = 12\%$$

$\boxed{12\%}$

Quick Tip

In profit and loss problems involving portions and varying percentages, use the allegation method to simplify the calculation. It involves balancing the differences in percentages and weights to find the overall gain or loss.

Q. 117 A trader sells 20 articles at Rs. 54 per article after giving 10% discount and gains 50% profit. If the discount is not given, the profit gained is .....

(A) 56.76%

(B) 66.66%

(C) 62.66%

(D) 63.66%

Correct Answer: (B) 66.66%

Solution:

Let the cost price of each article be C.

The trader earns a revenue of Rs 54 $\times$ 20 after selling the items, which is Rs 1080. This revenue is equivalent to a 50% profit.

Therefore, the cost price of all the items is:

$$\text{Cost Price of all items} = \frac{1080 \times 2}{3} = 720$$

Next, the trader offers a 10% discount on the marked price. The revenue of Rs 1080 is earned after a discount of 10%.

Now, let's find the marked price K.

Since the trader earns Rs 1080 after the 10% discount, we have:

$$K \times \frac{9}{10} = 1200$$

This gives the marked price $K = 1200$.

To calculate the profit percentage if no discount was given, we use:

$$\text{Profit Percentage} = \frac{(1200 - 720)}{720} \times 100 = 66.66\%$$

$\boxed{66.66\%}$

Quick Tip

When calculating profit percentage after discount, first find the revenue after discount and then calculate the marked price. Use this formula to find profit if no discount was given.

Q. 118 A bottle contains 50 liters of milk. From this bottle 5 liters of milk was taken out and replaced the water. This process was repeated further for three times. How much milk is now contained in the bottle?

(A) 32.8 litres

(B) 34.4 litres

(C) 36.8 litres

(D) 46.5 litres

Correct Answer: (A) 32.8 litres

Solution:

This problem involves the concept of repeated removal and replacement, similar to a dilution process.

We use the formula for the final volume of milk after repeated removals and replacements:

$$\text{Final volume of milk} = \text{Initial volume of milk} \left(1 - \frac{y}{x}\right)^n$$

where: - y is the quantity of milk removed in each iteration (5 liters), - x is the total quantity of the mixture (50 liters), - n is the number of times the process is repeated (4 times).

$$\text{Final volume of milk} = 50 \times \left(1 - \frac{5}{50}\right)^4$$

Simplifying the equation:

$$\text{Final volume of milk} = 50 \times (1 - 0.1)^4$$

$$= 50 \times (0.9)^4$$

$$= 50 \times 0.6561 = 32.805 \text{ litres}$$

Thus, the final volume of milk left in the bottle is approximately 32.8 litres.

$\boxed{32.8 \text{ litres}}$

Quick Tip

This problem uses the concept of successive dilution, which can be calculated using the formula involving the percentage remaining after each iteration.

Q. 119 A ball is dropped from a height of 200 meters. After striking the floor it re-bounces to $\frac{4}{5}$ of the height from where it fell. The total distance it travels before coming to rest is .....

(A) 1200 meters

(B) 1600 meters

(C) 1800 meters

(D) 1820 meters

Correct Answer: (C) 1800 meters

Solution:

The ball initially falls 200 meters. After it strikes the ground, it bounces back to $\frac{4}{5}$ of the previous height.

The total distance traveled consists of: - The initial fall of 200 meters, - The first bounce up to $\frac{4}{5} \times 200 = 160$ meters, - Then it falls again from 160 meters, - Then bounces back to $\frac{4}{5} \times 160 = 128$ meters, and so on.

So the total distance is:

$$\text{Total distance} = 200 + 2 \times (160 + 128 + 102.4 + 81.92 + \dots)$$

This is a geometric series with the first term $a = 160$ and the common ratio $r = \frac{4}{5}$.

The sum of the infinite geometric series is:

$$S = \frac{a}{1 - r} = \frac{160}{1 - \frac{4}{5}} = \frac{160}{\frac{1}{5}} = 800$$

Thus, the total distance traveled is:

$$200 + 2 \times 800 = 200 + 1600 = 1800 \text{ meters.}$$

$\boxed{1800 \text{ meters}}$

Quick Tip

For problems involving bouncing objects, calculate the total distance by considering the initial fall and the sum of an infinite geometric series for the bounces.

Q. 120 The sum of all two digit numbers that give a remainder 2 when they are divided by 7 is .....

(A) 552

(B) 654

(C) 658

(D) 684

Correct Answer: (B) 654

Solution:

The two-digit numbers that give a remainder 2 when divided by 7 will be of the form $7k + 2$, where k is a whole number.

The smallest two-digit number is when $k = 2$, which gives $7(2) + 2 = 16$. The largest two-digit number is when $k = 13$, which gives $7(13) + 2 = 93$.

Thus, the numbers are 16, 23, 30, ..., 93. These numbers form an arithmetic progression (AP) with the first term $a = 16$, the common difference $d = 7$, and the last term $l = 93$.

The number of terms n in the sequence can be found using the formula:

$$n = \frac{l - a}{d} + 1$$

Substituting the values:

$$n = \frac{93 - 16}{7} + 1 = \frac{77}{7} + 1 = 11 + 1 = 12$$

The sum S of the first n terms of an AP is given by the formula:

$$S = \frac{n}{2} \times (a + l)$$

Substituting the values:

$$S = \frac{12}{2} \times (16 + 93) = 6 \times 109 = 654$$

Thus, the sum of the numbers is 654.

$\boxed{654}$

Quick Tip

For problems involving sums of sequences, recognize patterns in the numbers and use the arithmetic progression formula to find the sum.

Q. 121 A man covers half of his journey by train at 90 km/hr, one-third of the remainder by bus at 30 km/hr and the rest by cycle at 10 km/hr. The average speed during the entire journey is .....

(A) 22.5 km/hr

(B) 28.5 km/hr

(C) 30.0 km/hr

(D) 32.5 km/hr

Correct Answer: (A) 22.5 km/hr

Solution:

Let the total distance of the journey be 180 km.

The man covers half of his journey by train at 90 km/hr.

$$\text{Distance covered by train} = \frac{180}{2} = 90 \text{ km}$$

Time taken for this part of the journey:

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{90}{90} = 1 \text{ hour}$$

The remaining distance is 90 km. The man covers one-third of this distance by bus at 30 km/hr.

$$\text{Distance covered by bus} = \frac{1}{3} \times 90 = 30 \text{ km}$$

Time taken for this part of the journey:

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{30}{30} = 1 \text{ hour}$$

The remaining distance after the bus journey is:

$$\text{Remaining distance} = 90 - 30 = 60 \text{ km}$$

The man covers this distance by cycle at 10 km/hr.

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{60}{10} = 6 \text{ hours}$$

The total time for the entire journey is:

$$\text{Total time} = 1 + 1 + 6 = 8 \text{ hours}$$

The average speed is calculated as:

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{180}{8} = 22.5 \text{ km/hr}$$

Thus, the average speed during the entire journey is $\boxed{22.5 \text{ km/hr}}$.

Quick Tip

When calculating average speed for journeys with different speeds, use the total distance and total time rather than averaging the individual speeds.

Q. 122 John's grandfather was five times older to him 5 years ago. He would be two times of his age after 25 years from now. What is the ratio of John's age to that of his grandfather?

(A) 7 : 11

(B) 5 : 11

(C) 3 : 11

(D) 4 : 11

Correct Answer: (C) 3 : 11

Solution:

Let the age of John 5 years ago be x years.

The age of his grandfather 5 years ago was 5 times John's age at that time, so his grandfather's age was $5x$.

After 25 years from now, their ages will be: - John's age: $x + 30$ - Grandfather's age: $5x + 30$
According to the problem, in 25 years, John's grandfather's age will be twice John's age, so:

$$5x + 30 = 2(x + 30)$$

Expanding and solving the equation:

$$5x + 30 = 2x + 60$$

$$5x - 2x = 60 - 30$$

$$3x = 30$$

$$x = 10$$

So, John's present age is:

$$x + 5 = 10 + 5 = 15 \text{ years}$$

And his grandfather's present age is:

$$5x + 5 = 5 \times 10 + 5 = 55 \text{ years}$$

The ratio of John's age to his grandfather's age is:

$$\frac{15}{55} = \frac{3}{11}$$

Thus, the ratio of John's age to his grandfather's age is $\boxed{3 : 11}$.

Quick Tip

To solve ratio problems, set up equations based on the given conditions and solve for the unknowns.

Q. 123 A number when successively divided by 5 and 6 gives remainders 3 and 2 respectively. What will be the remainders if the number is successively divided by 3 and 4?

(A) 2, 3

(B) 2, 1

(C) 1, 2

(D) 3, 4

Correct Answer: (C) 1, 2

Solution:

Let's approach this problem step by step by working backward from the information provided.

When a number is divided by 6 and the remainder is 2, the number must be of the form:

$$\text{Number} = 6k + 2 \quad \text{(where k is an integer)}$$

Now, when this number is divided by 5 and the remainder is 3, the number must be of the form:

$$\text{Number} = 5(6k + 2) + 3 = 30k + 13$$

Now, let's check the remainder when this number $30k + 13$ is divided by 3:

$$30k + 13 \equiv 1 \pmod{3}$$

Thus, the remainder when divided by 3 is 1.

Now, we check the remainder when $30k + 12$ (which is $30k + 13 - 1$) is divided by 4:

$$30k + 12 \equiv 2 \pmod{4}$$

Thus, the remainder when divided by 4 is 2.

The remainders when the number is divided by 3 and 4 are 1 and 2, respectively. So, the correct answer is $\boxed{1, 2}$.

Quick Tip

In these types of problems, work backward by using the given remainders and constructing equations based on the division conditions.

Q. 124 How many zeros would there be in $1024!$?

(A) 240

(B) 248

(C) 256

(D) 253

Correct Answer: (D) 253

Solution:

To find the number of zeros in $n!$, we calculate the highest power of 5 in $n!$. The number of trailing zeros in a factorial is determined by the number of times 5 is a factor in the numbers from 1 to n.

The highest power of 5 in $1024!$ is given by:

$$\left\lfloor \frac{1024}{5} \right\rfloor + \left\lfloor \frac{1024}{25} \right\rfloor + \left\lfloor \frac{1024}{125} \right\rfloor + \left\lfloor \frac{1024}{625} \right\rfloor$$

Breaking it down:

$$\left\lfloor \frac{1024}{5} \right\rfloor = 204, \quad \left\lfloor \frac{1024}{25} \right\rfloor = 40, \quad \left\lfloor \frac{1024}{125} \right\rfloor = 8, \quad \left\lfloor \frac{1024}{625} \right\rfloor = 1$$

So, the total number of zeros in $1024!$ is:

$$204 + 40 + 8 + 1 = 253$$

Therefore, the number of zeros in $1024!$ is $\boxed{253}$.

Quick Tip

To find the number of zeros in $n!$, use the formula for the highest power of 5 in $n!$. Keep dividing n by powers of 5 until the quotient is zero.

Q. 125 If $x = 3 + 2\sqrt{2}$, what will be the value of $x^2 + \frac{1}{x^2}$?

(A) 35

(B) 32

(C) 36

(D) 34

Correct Answer: (D) 34

Solution:

We are given that $x = 3 + 2\sqrt{2}$. We need to find $x^2 + \frac{1}{x^2}$.

First, square both sides of the equation:

$$x^2 = (3 + 2\sqrt{2})^2 = 9 + 12\sqrt{2} + 8 = 17 + 12\sqrt{2}$$

Now, calculate $\frac{1}{x^2}$ using the conjugate of $x = 3 + 2\sqrt{2}$:

$$\frac{1}{x} = \frac{1}{3 + 2\sqrt{2}} \cdot \frac{3 - 2\sqrt{2}}{3 - 2\sqrt{2}} = \frac{3 - 2\sqrt{2}}{(3 + 2\sqrt{2})(3 - 2\sqrt{2})}$$

Simplifying the denominator:

$$(3 + 2\sqrt{2})(3 - 2\sqrt{2}) = 9 - 8 = 1$$

Hence,

$$\frac{1}{x} = 3 - 2\sqrt{2}$$

Now, square this value to get $\frac{1}{x^2}$:

$$\frac{1}{x^2} = (3 - 2\sqrt{2})^2 = 9 - 12\sqrt{2} + 8 = 17 - 12\sqrt{2}$$

Finally, add x^2 and $\frac{1}{x^2}$:

$$x^2 + \frac{1}{x^2} = (17 + 12\sqrt{2}) + (17 - 12\sqrt{2}) = 34$$

The value of $x^2 + \frac{1}{x^2}$ is $\boxed{34}$.

Quick Tip

To find $x^2 + \frac{1}{x^2}$, use the conjugate and simplify both the numerator and denominator when squaring. This often helps eliminate the radicals.

Q. 126 The unit digit in the final solution when $13 \times 27 \times 63 \times 51 \times 98 \times 46$ is . . .

(A) 4

(B) 8

(C) 2

(D) none of the above

Correct Answer: (A) 4

Solution:

Idea. The units digit of a product depends only on the units digits of its factors (work modulo 10).

Step 1: Keep only units digits.

$$13, 27, 63, 51, 98, 46 \longrightarrow 3, 7, 3, 1, 8, 6.$$

Step 2: Multiply successively, reducing to the units digit each time.

$$3 \times 7 = 21 \;\Rightarrow\; \underline{1},$$

$$1 \times 3 = 3 \;\Rightarrow\; \underline{3},$$

$$3 \times 1 = 3 \;\Rightarrow\; \underline{3},$$

$$3 \times 8 = 24 \;\Rightarrow\; \underline{4},$$

$$4 \times 6 = 24 \;\Rightarrow\; \underline{4}.$$

Conclusion. The units digit of the whole product is $\boxed{4}$.

Quick Tip

For the last digit of a long product, multiply only the last digits and reduce $\mathrm{mod}10$ at each step.

Q. 127 A dishonest seller sells his grocery items using a false weight and thus gains 5% for a kilogram; he uses the weight of approximately _____.

(A) 940.251

(B) 943.123

(C) 948.238

(D) 952.381

Correct Answer: (D) 952.381

Solution:

Set up. The shopkeeper charges customers for 1000 g (1 kg) but actually gives only x g on the scale. Since price per kg is unchanged, his gain comes purely from short weight.

Step 1: Write gain in terms of x. For every "1 kg" sold, revenue corresponds to 1000 g, but cost corresponds to only x g delivered. Thus the gain factor $= \dfrac{\text{revenue}}{\text{cost}} = \dfrac{1000}{x}$.

Step 2: Convert to percentage gain.

$$\text{Gain}\% = \left(\frac{1000}{x} - 1\right) \times 100.$$

Given Gain% $= 5$, so

$$\frac{1000}{x} - 1 = \frac{5}{100} = 0.05 \quad \Rightarrow \quad \frac{1000}{x} = 1.05 \quad \Rightarrow \quad x = \frac{1000}{1.05}.$$

Step 3: Compute x.

$$x = \frac{1000}{1.05} \approx 952.38095 \text{ g} \approx 952.381 \text{ g}.$$

$$\boxed{952.381 \text{ grams}}$$

Quick Tip

When profit is solely due to a false weight, use Gain% $= \left(\dfrac{\text{charged mass}}{\text{actual mass}} - 1\right) \times 100$.
Here "charged mass" is 1000 g, and "actual mass" is x g.

Q. 128 A, B and C can do a work in 6, 8 and 12 days respectively. If they do the work together and earn Rs. 2700, what is the share of C in that amount?

(A) 600

(B) 900

(C) 1000

(D) 700

Correct Answer: (A) 600

Solution:

Step 1: Convert times to efficiencies.

Efficiency is inversely proportional to time. Take LCM of $6, 8, 12$ as 24 work-units (WU). - A's rate $= \frac{24}{6} = 4$ WU/day - B's rate $= \frac{24}{8} = 3$ WU/day - C's rate $= \frac{24}{12} = 2$ WU/day

Step 3: Divide money in the ratio of efficiencies.

Ratio $= 4 : 3 : 2$ (sum $= 9$).

Step 3: Find C's share.

$$\text{C's share} = \frac{2}{9} \times 2700 = \boxed{600}.$$

Quick Tip

When workers are paid by the job, split the amount in the ratio of their *work rates* ($\propto 1/\text{time}$). Using an LCM makes rates integers.

Q. 129 How many words each of two vowels and three consonants can be formed from the letters of the word "UNIVERSAL"?

(A) 7000

(B) 7200

(C) 7400

(D) 7800

Correct Answer: (B) 7200

Solution:

Letters in UNIVERSAL: $\{U, N, I, V, E, R, S, A, L\}$ (all distinct). Vowels: $\{U, I, E, A\}$ (4). Consonants: $\{N, V, R, S, L\}$ (5).

Step 1: Choose letters.

Choose 2 vowels: $\binom{4}{2} = 6$. Choose 3 consonants: $\binom{5}{3} = 10$.

Step 2: Arrange the chosen 5 distinct letters.

Number of arrangements $= 5! = 120$.

Step 3: Multiply.

$$\text{Total words} = 6 \times 10 \times 120 = \boxed{7200}.$$

Quick Tip

When forming words with exact counts (e.g., "2 vowels and 3 consonants"), first *choose* the letters with combinations, then *arrange* them with permutations.

Q. 130 Three pipes A, B and C can fill a tank in 12 hours. All the pipes started working together and after 3 hours, C is closed. If A and B can fill the remaining part in 10 hours, then the number of hours taken by C alone to fill the tank is

(A) 100 hours

(B) 110 hours

(C) 120 hours

(D) 130 hours

Correct Answer: (C) 120 hours

Solution:

Step 1: Define rates.

Let the filling rates (tanks per hour) of A, B, C be a, b, c respectively. Working together they fill one whole tank in 12 hours, hence

$$a + b + c = \frac{1}{12}.$$

Step 2: Work done in the first 3 hours by all three.

Work = rate $\times$ time:

$$W_{0\text{–}3} = 3(a + b + c) = 3 \cdot \frac{1}{12} = \frac{1}{4}.$$

Thus, the *remaining* work after 3 hours is

$$W_{\text{rem}} = 1 - \frac{1}{4} = \frac{3}{4}.$$

Step 3: A and B finish the remaining work in 10 hours.

When C is closed, only A and B work:

$$10(a + b) = \frac{3}{4} \quad \Longrightarrow \quad a + b = \frac{3}{40}.$$

Step 4: Find c from the sum and compute time for C alone.

$$c = (a + b + c) - (a + b) = \frac{1}{12} - \frac{3}{40} = \frac{10 - 9}{120} = \frac{1}{120}.$$

Therefore, time taken by C alone to fill the tank is

$$T_C = \frac{1}{c} = 120 \text{ hours}.$$

$\boxed{120 \text{ hours}}$

Quick Tip

Model tank problems with *rates*. Let total work be 1 tank, add rates when working together, and use work $=$ rate $\times$ time.

Q. 131 If the numbers between 1 to 65 that are divisible by 4 are taken and then the digits in the tens and units places are swapped, after which the resulting numbers are written in ascending order, which number will be at the 10th place from the last?

(A) 40

(B) 24

(C) 44

(D) 25

Correct Answer: (A) 40

Solution:

Step 1: List all multiples of 4 from 1 to 65.

$$4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64 \quad (\text{there are } 16 \text{ numbers})$$

Step 2: Swap the tens and units digits.

Treat 1-digit numbers as $04, 08$. Swapping tens and units yields:

$$\begin{aligned} &04 \to 40, \quad 08 \to 80, \quad 12 \to 21, \quad 16 \to 61, \\ &20 \to 2, \quad 24 \to 42, \quad 28 \to 82, \quad 32 \to 23, \\ &36 \to 63, \quad 40 \to 4, \quad 44 \to 44, \quad 48 \to 84, \\ &52 \to 25, \quad 56 \to 65, \quad 60 \to 6, \quad 64 \to 46. \end{aligned}$$

Step 3: Arrange these 16 results in ascending order.

$$2, 4, 6, 21, 23, 25, 40, 42, 44, 46, 61, 63, 65, 80, 82, 84$$

Step 4: Pick the 10th from the last.

For $n = 16$ items, the k-th from the last equals the $(n - k + 1)$-th from the start. Here, $k = 10 \Rightarrow n - k + 1 = 16 - 10 + 1 = 7$. The 7th item is $\boxed{40}$.

Quick Tip

"k-th from the last" in a list of n items equals the $(n - k + 1)$-th from the beginning.

Q. 132 Ajit, Ravi and Hari were trying to hit a target. If Ajit hits the target 5 times in 8 attempts, Ravi hits it 3 times in 5 attempts and Hari hits it 2 times in 4 attempts. What is the probability that the target is hit by at least 2 persons?

(A) $\frac{49}{80}$
(B) $\frac{24}{80}$
(C) $\frac{45}{80}$
(D) $\frac{25}{80}$

Correct Answer: (A) $\frac{49}{80}$

Solution:

Step 1: Individual hit/miss probabilities.

$$p_A = \frac{5}{8}, \quad q_A = 1 - p_A = \frac{3}{8}; \qquad p_R = \frac{3}{5}, \quad q_R = \frac{2}{5}; \qquad p_H = \frac{1}{2}, \quad q_H = \frac{1}{2}.$$

Step 2: Use complement (at least 2 hits = 1 [0 hit + exactly 1 hit]).

Zero hits:

$$P(0) = q_A q_R q_H = \frac{3}{8} \cdot \frac{2}{5} \cdot \frac{1}{2} = \frac{6}{80} = \frac{3}{40}.$$

Exactly one hit:

$$P(\text{A only}) = p_A q_R q_H = \frac{5}{8} \cdot \frac{2}{5} \cdot \frac{1}{2} = \frac{10}{80} = \frac{1}{8},$$
$$P(\text{R only}) = q_A p_R q_H = \frac{3}{8} \cdot \frac{3}{5} \cdot \frac{1}{2} = \frac{9}{80},$$
$$P(\text{H only}) = q_A q_R p_H = \frac{3}{8} \cdot \frac{2}{5} \cdot \frac{1}{2} = \frac{6}{80} = \frac{3}{40}.$$

Hence

$$P(\text{exactly } 1) = \frac{10}{80} + \frac{9}{80} + \frac{6}{80} = \frac{25}{80}.$$

Step 3: Probability of at least two hits.

$$P(\geq 2) = 1 - \Big(P(0) + P(\text{exactly } 1)\Big) = 1 - \left(\frac{6}{80} + \frac{25}{80}\right) = 1 - \frac{31}{80} = \frac{49}{80}.$$

$$\boxed{\frac{49}{80}}$$

Quick Tip

For "at least k" questions, compute the complement (0 or 1 hit here) and subtract from 1. It avoids enumerating many multi-hit cases.

Q. 133 If $\frac{1}{2}\log x + \frac{1}{2}\log y + \log 2 = \log(x+y)$, then _____.

(A) $x = -y$

(B) $x = y + 1$

(C) $x = y$

(D) $y = x + 1$

Correct Answer: (C) $x = y$

Solution:

Step 1: Combine the logarithms.

$$\frac{1}{2}\log x + \frac{1}{2}\log y = \log x^{1/2} + \log y^{1/2} = \log\big(\sqrt{x}\sqrt{y}\big) = \log\big(\sqrt{xy}\big).$$

Thus LHS $= \log\big(2\sqrt{xy}\big)$, so

$$\log\big(2\sqrt{xy}\big) = \log(x+y).$$

Step 2: Equate the arguments (log is one–to–one for positive inputs).

$$2\sqrt{xy} = x + y.$$

Step 3: Rearrange to a square.

$$x + y - 2\sqrt{xy} = (\sqrt{x} - \sqrt{y})^2 = 0 \;\Rightarrow\; \sqrt{x} = \sqrt{y} \;\Rightarrow\; x = y.$$

$$\boxed{x = y}$$

Quick Tip

Use $\log a + \log b = \log(ab)$ and $k \log a = \log(a^k)$ to merge terms, then equate arguments.

Q. 134 $\log_5 25 + \log_2(\log_3 81)$ is

(A) 1

(B) 2

(C) 3

(D) 4

Correct Answer: (D) 4

Solution:

Step 1: Evaluate each part by writing arguments as powers of the base.

$$\log_5 25 = \log_5(5^2) = 2, \qquad \log_3 81 = \log_3(3^4) = 4, \qquad \log_2 4 = \log_2(2^2) = 2.$$

Step 2: Add the values.

$$\log_5 25 + \log_2(\log_3 81) = 2 + 2 = \boxed{4}.$$

Quick Tip

When the argument is an exact power of the base, $\log_a(a^k) = k$ immediately.

Q. 135 Peter was standing on the top of a rock cliff facing the sea. He saw a boat coming towards the shore. Ten minutes less than half an hour later (i.e., after 20 minutes) the angle of depression changed from 30° to 60°. How much more time (in minutes) will the boat take to reach the shore?

(A) 5

(B) 10

(C) 15

(D) 20

Correct Answer: (B) 10

Solution:

Let $AB = h$ be the height of the cliff and B the foot of the cliff on the shore. Let the boat's position when the angle of depression is 30° be D (farther from shore), and after 20 minutes when the angle becomes 60° be C (closer to shore). Distances along the waterline are horizontal, so:

$$\tan 30^\circ = \frac{AB}{BD} \quad \Rightarrow \quad BD = \frac{h}{\tan 30^\circ} = \sqrt{3}\, h.$$
$$\tan 60^\circ = \frac{AB}{BC} \quad \Rightarrow \quad BC = \frac{h}{\tan 60^\circ} = \frac{h}{\sqrt{3}}.$$

Hence the distance covered in the first 20 minutes is

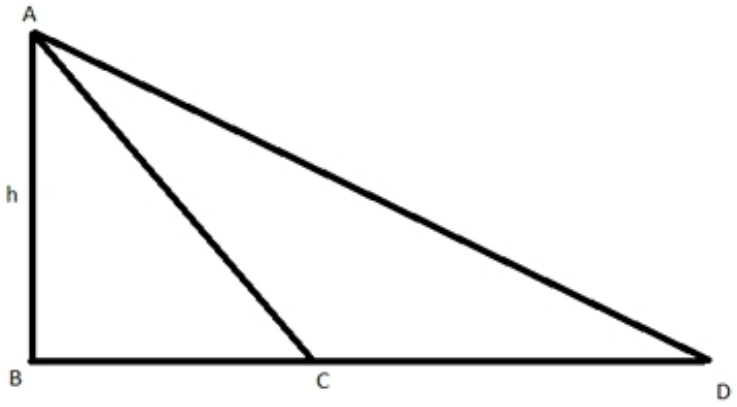
$$\text{covered} = BD - BC = \sqrt{3}h - \frac{h}{\sqrt{3}} = \frac{2h}{\sqrt{3}}.$$

The remaining distance to the shore is

$$\text{remaining} = BC = \frac{h}{\sqrt{3}} = \frac{1}{2} \times \text{covered}.$$

Assuming constant speed, time is proportional to distance. Therefore, time needed to cover the remaining distance is

$$\frac{1}{2} \times 20 \text{ minutes} = \boxed{10 \text{ minutes}}.$$



Quick Tip

Angles of depression equal angles of elevation. In right triangles with height h and horizontal distance x, use $\tan\theta = \dfrac{h}{x}$ to relate height and horizontal distance, then apply constant speed to compare times.

Q. 36 In a school every student had to learn at least one foreign language from German (G), French (F) and Spanish (S). Totals: $F = 28$, $G = 30$, $S = 32$. Pair data: $F \cap G = 6$, $G \cap S = 8$, $F \cap S = 10$. Exactly one language learners $= 54$, and "only German" $= 20$. Find the total number of students in the school.

(A) 60

(B) 62

(C) 70

(D) none of the above

Correct Answer: (C) 70

Solution:

Let the Venn regions be as follows: Only G $= a$, only F $= b$, only S $= c$; exactly $F \cap G = d$, $G \cap S = e$, $F \cap S = f$; all three $= g$.

Given: $a = 20$, and $a + b + c = 54 \Rightarrow b + c = 34$. The pair numbers are *inclusive* of the triple, so

$$d + g = 6, \qquad e + g = 8, \qquad f + g = 10. \tag{1}$$

Use the German total:

$$G = a + d + e + g = 30 \;\Rightarrow\; 20 + (6 - g) + (8 - g) + g = 30 \;\Rightarrow\; g = 4.$$

Then from (1):

$$d = 6 - 4 = 2, \quad e = 8 - 4 = 4, \quad f = 10 - 4 = 6.$$

Use the French and Spanish totals to get b, c:

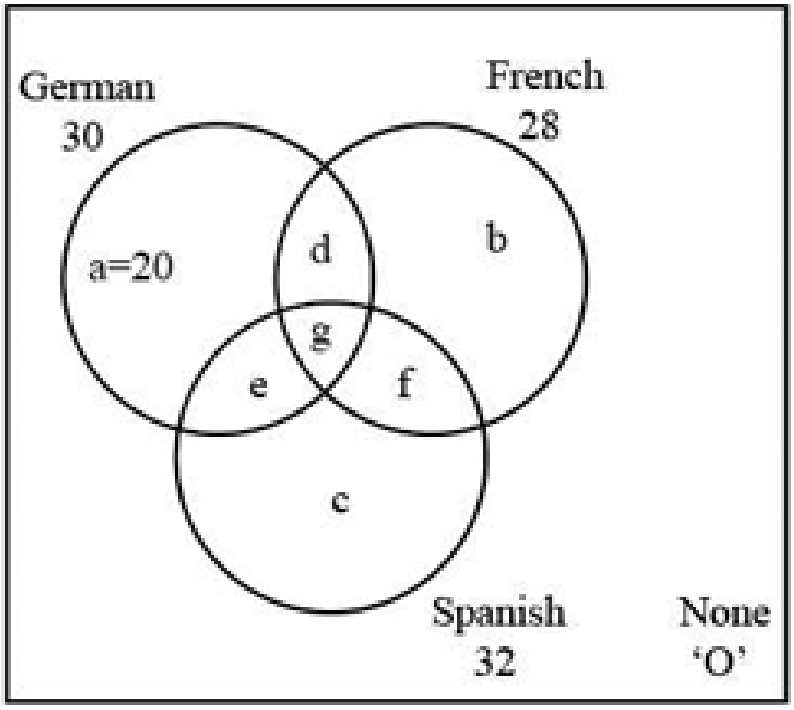
$$F = b + d + f + g = 28 \Rightarrow b + 2 + 6 + 4 = 28 \Rightarrow b = 16,$$

$$S = c + e + f + g = 32 \Rightarrow c + 4 + 6 + 4 = 32 \Rightarrow c = 18,$$

and indeed $b + c = 16 + 18 = 34$ matches.

Finally, total students (at least one language) is

$$N = (a + b + c) + (d + e + f) + g = 54 + (2 + 4 + 6) + 4 = 54 + 12 + 4 = \boxed{70}.$$



Quick Tip

When pairwise counts are given without "only", treat them as inclusive: $d + g$, $e + g$, $f + g$. Use one total (e.g., language total) to find the triple g; the rest follow.

Q. 137 Sonali can solve 70% of the problems in a competitive exam and Nirali can solve 60% of the problems in the same exam. What is the probability that *at least one* of them will solve a randomly selected problem (assume independence)?

(A) 0.82

(B) 0.88

(C) 0.62

(D) 0.72

Correct Answer: (B) 0.88

Solution:

Let A be the event "Sonali solves", B be the event "Nirali solves". Then

$$P(A) = 0.7, \qquad P(B) = 0.6, \qquad P(A^c) = 0.3, \qquad P(B^c) = 0.4.$$

We need $P(A \cup B)$ (at least one solves). Using the complement and independence:

$$P(A \cup B) = 1 - P(A^c \cap B^c) = 1 - P(A^c)\,P(B^c) = 1 - (0.3)(0.4) = 1 - 0.12 = 0.88.$$

(Check via inclusion–exclusion): Assuming independence,

$$P(A \cap B) = P(A)P(B) = 0.42, \quad \Rightarrow \quad P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.7 + 0.6 - 0.42 = 0.88.$$

Hence the probability is $\boxed{0.88}$.

Quick Tip

"At least one" is best computed by the complement: $P(\text{at least one}) = 1 - P(\text{none})$. With independence, multiply the failure probabilities to get $P(\text{none})$.

Q. 138 Rs. XYZ was deposited at simple interest for 3 years at a certain annual rate. Had it been deposited at a rate higher by 2%, it would have fetched Rs. 360 more as interest. Find Rs. XYZ (the principal).

(A) Rs. 5500

(B) Rs. 5000

(C) Rs. 6000

(D) Rs. 4500

Correct Answer: (C) Rs. 6000

Solution:

Let the principal be P rupees, original annual rate be $r\%$, time $T = 3$ years.

Simple Interest (SI) formula:

$$\text{SI} = \frac{P\,r\,T}{100}.$$

Interest at the original rate:

$$\text{SI}_1 = \frac{P\,r\,3}{100}.$$

Interest at the increased rate $r + 2$:

$$\text{SI}_2 = \frac{P\,(r+2)\,3}{100}.$$

Given difference in interests:

$$\text{SI}_2 - \text{SI}_1 = \frac{3P}{100}\big[(r+2) - r\big] = \frac{3P}{100} \cdot 2 = \frac{6P}{100} = 360.$$

Solve for P:

$$0.06P = 360 \quad \Rightarrow \quad P = \frac{360}{0.06} = 6000.$$

Therefore, the deposited amount is $\boxed{\text{Rs. 6000}}$.

Quick Tip

With simple interest, increasing the rate by $k\%$ over T years increases interest by $\dfrac{P\,k\,T}{100}$. If this increment is known, you can solve directly for the principal P without knowing the original rate r.

Q. 139 A man invests some amount at 6% p.a. simple interest and another amount at 7% p.a. simple interest. After 2 years his total interest is Rs. 348. The ratio of the first to the second amount is $4 : 5$. Find the *total* amount invested.

(A) Rs. 2600

(B) Rs. 2900

(C) Rs. 2700

(D) none of the above

Correct Answer: (D) none of the above

Solution:

Step 1: Parameterize the principals by the given ratio.

Let the two invested amounts be $4x$ and $5x$.

Step 2: Compute each simple interest for 2 years.

$$\text{SI}_1 = \frac{4x \cdot 6 \cdot 2}{100} = \frac{48x}{100} = 0.48x, \qquad \text{SI}_2 = \frac{5x \cdot 7 \cdot 2}{100} = \frac{70x}{100} = 0.70x.$$

Step 3: Use the total interest.

$$\text{SI}_1 + \text{SI}_2 = 0.48x + 0.70x = 1.18x = 348 \;\Rightarrow\; x = \frac{348}{1.18} = \frac{34800}{118} \approx 294.915.$$

Step 4: Total principal.

$$P_{\text{total}} = 4x + 5x = 9x = \frac{9 \cdot 34800}{118} \approx 2654.24 \text{ rupees}.$$

Rounding to the nearest rupee gives Rs. $\boxed{2655}$, which is not among (A)–(C); hence the correct option is **(D) none of the above**.

Quick Tip

With simple interest $I = \dfrac{PRT}{100}$, a ratio of principals like $4 : 5$ lets you set the amounts as $4x$ and $5x$ and solve directly from the total interest.

Q. 140 A bag has 9 bulbs, of which 2 are fused and 7 are good. Two bulbs are selected at random. What is the probability that *both* bulbs chosen can light the room (i.e., both are good)?

(A) $\dfrac{5}{12}$

(B) $\frac{7}{12}$

(C) $\frac{9}{12}$

(D) $\frac{10}{12}$

Correct Answer: (B) $\frac{7}{12}$

Solution (combinatorial method):

Step 1: Total ways to choose any 2 bulbs from 9:

$$\binom{9}{2} = 36.$$

Step 2: Favourable ways (both good): choose 2 from the 7 good bulbs:

$$\binom{7}{2} = 21.$$

Step 3: Probability:

$$P = \frac{\binom{7}{2}}{\binom{9}{2}} = \frac{21}{36} = \boxed{\frac{7}{12}}.$$

(Check via sequential probability): First pick good: $7/9$; second pick good (without replacement): $6/8 = 3/4$. So $P = (7/9) \cdot (3/4) = 21/36 = 7/12$ (same result).

Quick Tip

For sampling without replacement, you can use combinations or multiply sequential probabilities. Both must agree.

Q. 141 The value of $(p-a)\,(p-b)\,(p-c)\,\cdots\,(p-z)$ is _____

(A) A complex polynomial which starts with p^{24}

(B) Zero

(C) A complex polynomial which starts with p^{26}

(D) A complex polynomial which has several variables including terms in p^{26} and p^{24}

Correct Answer: (D)

Solution:

Let the 26 symbols $a, b, c, \ldots, z$ denote (distinct) constants/parameters and consider the product

$$P(p) = (p-a)(p-b)\cdots(p-z).$$

This is a monic polynomial in p whose coefficients are symmetric functions of the constants $a, b, \ldots, z$.

Structure of the polynomial. Writing it formally,

$$P(p) = p^{26} - \Big(\sum a\Big)p^{25} + \Big(\sum_{i<j} a_i a_j\Big)p^{24} - \cdots + (-1)^{26}\prod a_i,$$

where the sums/products run over $a_1 = a, a_2 = b, \ldots, a_{26} = z$. Hence:

- The leading term is p^{26} (so the polynomial does *contain* a p^{26} term). - There are many lower–degree terms, including a p^{24} term whose coefficient is $\sum_{i<j} a_i a_j$. - It is *not* identically zero; $P(p) = 0$ only when p equals one of $a, b, \ldots, z$.

Therefore the expression is a (multi-parameter) polynomial in p containing terms such as $p^{26}, p^{25}, p^{24}, \ldots$, which matches option **(D)**.

Quick Tip

Products of linear factors $\prod(p - a_i)$ expand to a monic polynomial in p whose coefficients are elementary symmetric functions of the a_i's (Vieta's relations).

Q. 142 There are nine humans in a ship. Each human has nine cages and each cage has nine huge lions, and each lion has nine cubs. How many legs are there in the ship? (Humans have two legs; lions and cubs have four legs each.)

(A) 747

(B) 3258

(C) 29178

(D) 26561

Correct Answer: (C) 29178

Solution:

Step 1: Count human legs.

Humans $= 9 \Rightarrow$ human legs $= 9 \times 2 = 18$.

Step 2: Count lions.

Per human: 9 cages and each cage has 9 lions $\Rightarrow 9 \times 9 = 81$ lions per human. Total lions $= 9 \times 81 = 729 = 9^3$. Thus lion legs $= 729 \times 4 = 2916$.

Step 3: Count cubs.

Each lion has 9 cubs $\Rightarrow$ total cubs

$$\#\text{cubs} = 729 \times 9 = 6561 = 9^4.$$

Cub legs $= 6561 \times 4 = 26244$.

Step 4: Sum all legs.

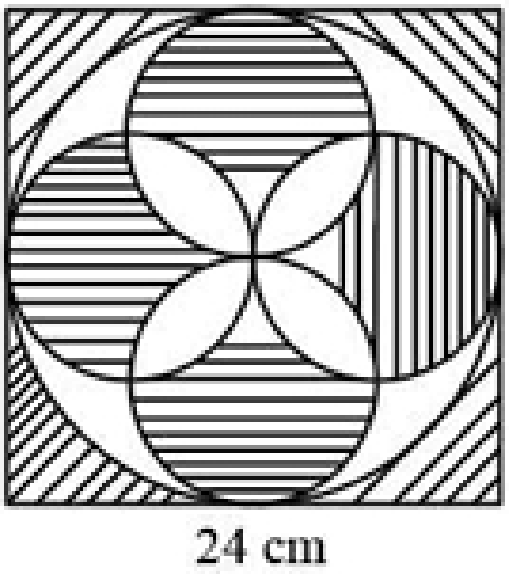
$$\text{Total legs} = \underbrace{18}_{\text{humans}} + \underbrace{2916}_{\text{lions}} + \underbrace{26244}_{\text{cubs}} = 29178.$$

(Compact check using powers) Lions $= 9^3$, cubs $= 9^4$. Animal legs $= 4(9^3 + 9^4) = 4 \cdot 9^3(1 + 9) = 4 \cdot 729 \cdot 10 = 29160$. Adding human legs 18 gives $29160 + 18 = \boxed{29178}$.

Quick Tip

In layered counts, multiply across each layer (per human $\rightarrow$ per ship). Spotting powers (like $9^3, 9^4$) makes a quick consistency check easy.

Q. 143 As shown in the figure, there is a square of side 24 cm. A circle is inscribed in the square. Inside this big circle four equal circles are drawn, each tangent to the big circle and to two neighbouring small circles (so their centres lie on the midpoints of the sides of the square). Find the total area of the shaded region.



(A) $576 - 196\pi$

(B) $584 - 196\pi$

(C) $864 - 196\pi$

(D) none of the above

Correct Answer: (D) none of the above

Solution:

Let the square be 24×24. Then the inscribed (big) circle has radius

$$R = \frac{24}{2} = 12 \text{ cm}.$$

Each small circle is tangent to the big circle and has radius $r = \dfrac{R}{2} = 6$ cm.
The shaded region consists of: 1) the part of the square *outside* the big circle, plus 2) the union of the four small circles (which lie inside the big circle).
So

$$\text{Shaded area} = (\text{square} - \text{big circle}) + (\text{union of four small circles}).$$

Step 1: Square and big circle.

$$[\text{square}] = 24 \cdot 24 = 576, \qquad [\text{big circle}] = \pi R^2 = \pi \cdot 12^2 = 144\pi.$$

Step 2: Union of the four small circles. Each small circle has area

$$[\text{small circle}] = \pi r^2 = \pi \cdot 6^2 = 36\pi.$$

Adjacent small circles intersect (the distance between adjacent centres is $d = \sqrt{6^2 + 6^2} = 6\sqrt{2}$). The overlap of two adjacent small circles is a lens composed of two equal circular segments. For one segment the central angle is 90° (since $\cos\theta = d/(2r) = \sqrt{2}/2 \Rightarrow \theta = 45^\circ$), hence

$$[\text{one segment}] = \frac{1}{4}\pi r^2 - \frac{1}{2} r^2 \sin 90^\circ = \frac{1}{4}(36\pi) - \frac{1}{2}(36) = 9\pi - 18.$$

Therefore a full lens (overlap of a pair) has area

$$[\text{lens}] = 2(9\pi - 18) = 18\pi - 36.$$

There are 4 such adjacent pairs, so the total overlap among the four small circles is

$$4(18\pi - 36) = 72\pi - 144.$$

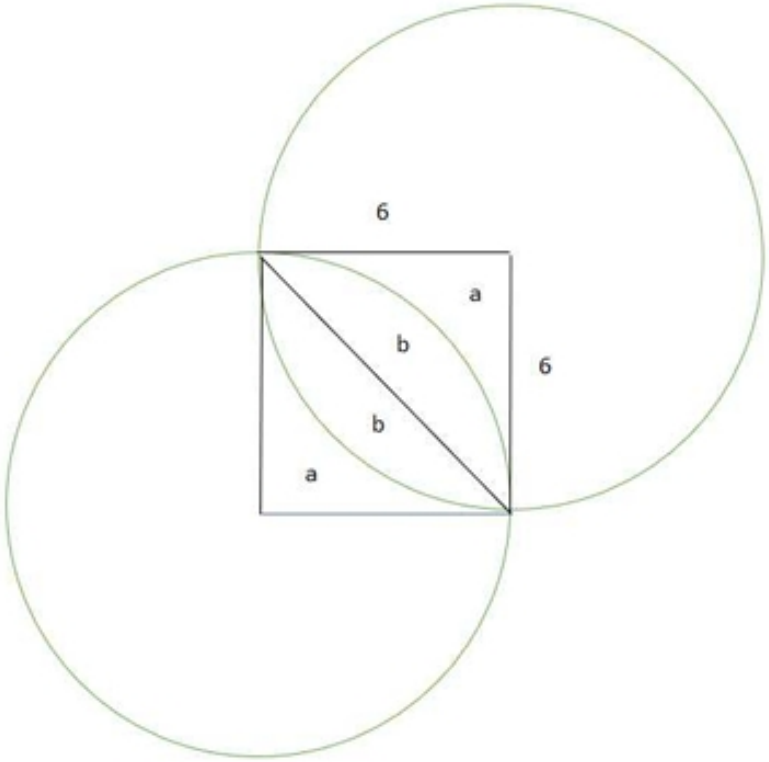
Thus the area of the union of the four small circles is

$$4 \cdot 36\pi - (72\pi - 144) = 144\pi - 72\pi + 144 = 72\pi + 144.$$

Step 3: Assemble the shaded area.

$$\begin{aligned} \text{Shaded area} &= (576 - 144\pi) + (72\pi + 144) \\ &= \boxed{720 - 72\pi \text{ cm}^2}. \end{aligned}$$

This expression is not among the given options (A)–(C); hence the correct choice is **(D) none of the above**.



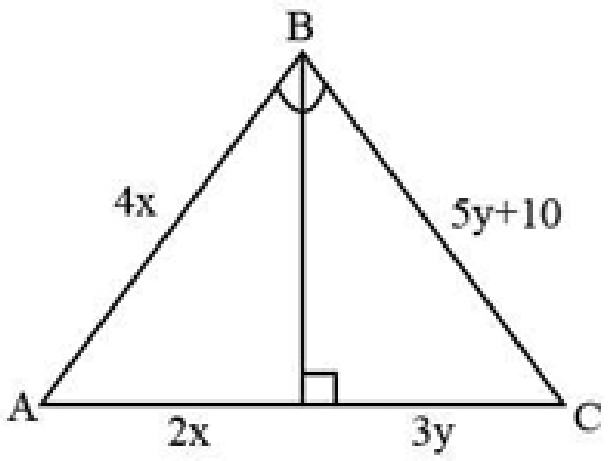
Quick Tip

When several circles overlap, compute the area of their *union* with Inclusion–Exclusion: sum of individual areas minus the pairwise overlaps (there are no triple overlaps here).

Q. 144 In the figure, BD is drawn from the vertex B to the base AC such that $\angle ADB = \angle CDB = 90^\circ$ and BD bisects $\angle ABC$ (so $\angle ABD = \angle DBC$). If

$$AB = 4x, \quad BC = 5y + 10, \quad AD = 2x, \quad DC = 3y,$$

then the values of x and y are _____.



(A) 10 and 15

(B) 15 and 10

(C) 06 and 12

(D) 12 and 06

Correct Answer: (B) 15 and 10

Solution:

Since $\angle ABD = \angle DBC$ (angle bisector at B) and $\angle ADB = \angle CDB = 90°$, with BD common, triangles $\triangle ABD$ and $\triangle CBD$ are congruent by **ASA**.

Therefore corresponding sides are equal:

$$AB = BC \quad \text{and} \quad AD = DC.$$

Substitute the given expressions:

$$4x = 5y + 10, \qquad 2x = 3y.$$

From $2x = 3y$ we get $y = \frac{2}{3}x$. Substitute in the first equation:

$$4x = 5\left(\frac{2}{3}x\right) + 10 \;\Rightarrow\; 4x = \frac{10}{3}x + 10 \;\Rightarrow\; 12x = 10x + 30 \;\Rightarrow\; 2x = 30 \;\Rightarrow\; x = 15.$$

Then

$$y = \frac{2}{3} \cdot 15 = 10.$$

Hence, $\boxed{x = 15,\ y = 10}$.

Quick Tip

If an altitude also bisects the vertex angle, the two right triangles on either side are congruent (ASA), giving equal corresponding sides and convenient linear equations.

Q. 145 Mr. Suresh ate lunch costing Rs. 162 and paid with a fake Rs. 500 note (receiving change). He then bought a snack costing Rs. 37 and paid with a fake Rs. 100 note (again receiving change). When the cashier deposited the day's cash, the bank detected *both* notes were counterfeit and shredded them. What is the *total* loss to the restaurant?

(A) 1200

(B) 600

(C) 7991

(D) none of the above

Correct Answer: (B) 600

Solution:

A counterfeit note has zero value to the restaurant. So the net loss equals:

$$\text{Loss} = \underbrace{\text{value of goods handed over}}_{=162+37} + \underbrace{\text{genuine change returned}}_{=(500-162)+(100-37)}.$$

Step 1: Goods value

$$162 + 37 = 199.$$

Step 2: Cash change given to Suresh

$$500 - 162 = 338, \qquad 100 - 37 = 63, \qquad \Rightarrow \text{ total change} = 338 + 63 = 401.$$

Step 3: Total loss

$$\text{Loss} = 199 + 401 = \boxed{600}.$$

Quick Tip

In fake–note problems, the restaurant ultimately keeps none of the fake money. Loss = (goods) + (real cash returned as change).

Q. 146 If $2^x + 2^{x+1} = 48$, then find x^x.

(A) 4

(B) 64

(C) 256

(D) 16

Correct Answer: (C) 256

Solution:

Step 1: Factor out the common power 2^x:

$$2^x + 2^{x+1} = 2^x(1 + 2) = 3 \cdot 2^x.$$

Step 2: Solve for 2^x:

$$3 \cdot 2^x = 48 \quad \Rightarrow \quad 2^x = 16 = 2^4 \quad \Rightarrow \quad x = 4.$$

Step 3: Compute x^x:

$$x^x = 4^4 = \boxed{256}.$$

Quick Tip

With expressions like $2^x + 2^{x+1}$, factor out the smaller power (2^x) to reduce to a single exponential.

Following table shows the percentage population of six states below poverty line and proportion of male and female.

3***State**	3* % Population below poverty line	**Proportion of male & female**	
		Below Poverty line	**Above Poverty line**
		M:F	**M:F**
A	16	2:3	3:4
B	10	4:3	5:2
C	14	3:4	2:3
D	20	5:2	4:3
E	25	4:1	2:1
F	20	2:3	4:1

Q147. From the table, for state A: 16% of the population is *below* the poverty line. The male:female ratio *above* the poverty line is $3:4$. If the total population of state A is 5000, how many *females above the poverty line* are there in state A?

(A) 2000

(B) 2400

(C) 2600

(D) data inadequate

Correct Answer: (B) 2400

Solution:

Step 1: People above the poverty line.

Below the poverty line $= 16\%$ of $5000 = 0.16 \times 5000 = 800$. Hence above the poverty line $= 5000 - 800 = 4200$ (equivalently 84% of 5000).

Step 2: Split above-poverty population by gender using the ratio $3:4$.

For a ratio $3:4$, total parts $= 3 + 4 = 7$. Female share $= \frac{4}{7}$ of those above the poverty line.

$$\text{Females above poverty line} = \frac{4}{7} \times 4200 = 600 \times 4 = \boxed{2400}.$$

Quick Tip

When a group is divided by a ratio $a : b$, the share corresponding to b is $\dfrac{b}{a+b}$ of the total. First find the correct base population (here, those above the poverty line), then apply the ratio.

Q148. If the combined population of states C and D is 20000, what is the *total number of females below the poverty line* in these two states?

(A) 5000

(B) 6000

(C) 7200

(D) NOTA

Correct Answer: (D) NOTA

Solution:

From the table:

- State C: 14% below poverty; M:F (below) $= 3 : 4$. - State D: 20% below poverty; M:F (below) $= 5 : 2$.

Step 1: Express female-below counts in terms of the state totals.

Let totals be $C = x$ and $D = 20000 - x$.

Females below in C:

$$0.14x \times \frac{4}{3+4} = 0.14x \times \frac{4}{7} = 0.08x.$$

Females below in D:

$$0.20(20000 - x) \times \frac{2}{5+2} = 0.20(20000 - x) \times \frac{2}{7} = \frac{0.40}{7}(20000 - x).$$

Step 2: Add them.

$$F_{\text{total}} = 0.08x + \frac{0.40}{7}(20000 - x) = \frac{8000}{7} + \left(0.08 - \frac{0.40}{7}\right)x.$$

This still depends on x (the split of the 20000 between C and D), which is *not* given. Hence the number cannot be uniquely determined from the data.

NOTA

Quick Tip

When totals are pooled across groups, check whether the group-wise split is needed. If the required quantity depends on the unknown split, the data are insufficient.

Q149. If the *number of males below the poverty line* is 6000 in state C and 1000 in state E, what is the ratio of the *total populations* of states C and E?

(A) $2:1$

(B) $3:5$

(C) $11:5$

(D) NOTA

Correct Answer: (D) NOTA

Solution:

From the table:

- State C: 14% below poverty; M:F (below) $= 3:4$. - State E: 25% below poverty; M:F (below) $= 4:1$.

Let the total populations be $100x$ (for C) and $100y$ (for E).

Step 1: Use the male-below counts.

For C:

$$\text{Males below} = \underbrace{14x}_{\%\text{ below}\times 100x} \times \frac{3}{3+4} = 14x \cdot \frac{3}{7} = 6x = 6000 \;\Rightarrow\; x = 1000.$$

Thus total population of C is $100x = 100\,000$.

For E:

$$\text{Males below} = \underbrace{25y}_{\%\text{ below}\times 100y} \times \frac{4}{4+1} = 25y \cdot \frac{4}{5} = 20y = 1000 \;\Rightarrow\; y = 50.$$

Thus total population of E is $100y = 5000$.

Step 2: Ratio of totals.

$$C : E = 100000 : 5000 = 20 : 1.$$

Since $20 : 1$ is not among options (A)–(C), the correct choice is

$$\boxed{\text{NOTA}}.$$

Quick Tip

When ratios are given within a percentage subgroup, convert the total to a convenient $100k$ form; subgroup counts then become linear in k, making equations straightforward.

Q150. In state F, the *number of females below the poverty line* is 16000. What is the *number of males below the poverty line* in that state?

(A) 8000

(B) 6000

(C) 12000

(D) NOTA

Correct Answer: (D) NOTA

Solution:

From the table (state F): - Percentage below poverty line $= 20\%$. - Male:female ratio *below* poverty line $= 2 : 3$.

Step 1: Use the gender ratio within the below-poverty group.

Let the males and females below the poverty line be $2k$ and $3k$ respectively. Given $3k = 16000 \Rightarrow k = \dfrac{16000}{3}$.

Step 2: Compute males below the poverty line.

$$\text{Males below} = 2k = 2 \cdot \frac{16000}{3} = \frac{32000}{3} \approx 10666.67.$$

This value is not among choices (A)–(C), hence

$\boxed{\text{NOTA}}$.

Quick Tip

When a subgroup is split by a ratio (here $2:3$), write the parts as $2k$ and $3k$. If one part is given, solve for k and back out any other part; you need not compute the total population unless asked.
