

General Instructions

- (i) This booklet contains 147 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 140 single-correct multiple-choice questions.
- (iii) Attempt each question on your own before reviewing the given solution.

1. Choose the word that is closest in meaning to GARNER.

- (A) Pulverize
- (B) Marinate
- (C) Enthrall
- (D) Collect

Correct Answer: (D) Collect

SOLUTION:

Step 1: Recall the meaning of GARNER.

GARNER is a verb meaning to gather, accumulate, or store up something over time.

It often applies to gathering support, information, or resources.

Step 2: Eliminate unrelated options.

Pulverize means to smash into fine powder, a physical destruction sense.

Marinate means to soak food in a flavored liquid before cooking.

Enthrall means to hold someone spellbound with fascination.

Step 3: Match the remaining option.

Collect means to bring things together into one place.

This sense of accumulation lines up directly with GARNER.

Final Answer:

Collect is the word closest in meaning to GARNER.

Collect

Quick Tip: Think of a word meaning to gather or accumulate something over time.

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2. Choose the word that is closest in meaning to IMPERIOUS.

- (A) Domineering
- (B) Ravenous
- (C) Striking
- (D) Effervescent

Correct Answer: (A) Domineering

SOLUTION:

Step 1: Define IMPERIOUS.

IMPERIOUS means acting with arrogant authority, expecting obedience from others.

The word carries a tone of haughty command.

Step 2: Rule out mismatched options.

Ravenous relates only to intense hunger, not attitude or behavior.

Striking describes something visually impressive or eye catching. Effervescent describes lively, cheerful energy, the opposite mood of IMPERIOUS.

Step 3: Confirm the match.

Domineering means controlling others in an overbearing manner. This tone of forceful command fits IMPERIOUS precisely.

Final Answer:

Domineering is the correct synonym for IMPERIOUS.

Domineering

Quick Tip: Think of a word describing someone who acts with arrogant, commanding authority.

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3. Choose the word that is closest in meaning to CONTUMACIOUS.

- (A) Pristine
- (B) Conservative
- (C) Disobedient
- (D) Optimistic

Correct Answer: (C) Disobedient

SOLUTION:

Step 1: Break down CONTUMACIOUS.

The word comes from a root meaning stubborn resistance to authority.

It describes willful defiance of rules or orders.

Step 2: Discard unrelated meanings.

Pristine describes something fresh and unspoiled, unrelated to defiance.

Conservative describes a cautious attitude toward change, not rebellion.

Optimistic describes a hopeful mindset, a different quality altogether.

Step 3: Verify the best fit.

Disobedient directly means refusing to comply with orders or authority.

This matches the stubborn defiance carried by CONTUMACIOUS.

Final Answer:

Disobedient is the closest synonym of CONTUMACIOUS.

Disobedient

Quick Tip: Think of a word meaning stubbornly resistant to following rules or orders.

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4. Choose the word that is closest in meaning to QUIESCENT.

- (A) Serene
- (B) Concomitant
- (C) Dormant
- (D) Clammy

Correct Answer: (C) Dormant

SOLUTION:

Step 1: Recall the sense of QUIESCENT.

QUIESCENT describes something inactive or resting, often ready to resume activity later.

It is commonly used for volcanoes, diseases, or processes that pause.

Step 2: Eliminate the weaker choices.

Serene refers to a peaceful mood, not a paused state.

Concomitant means happening at the same time as something else.

Clammy describes a damp, sticky physical texture.

Step 3: Confirm the closest match.

Dormant means temporarily inactive yet able to reactivate later.

This precisely mirrors the resting sense of QUIESCENT.

Final Answer:

Dormant is the correct synonym of QUIESCENT.

Dormant

Quick Tip: Think of a word meaning temporarily inactive but able to become active again.

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5. Choose the word that is closest in meaning to DISQUIETUDE.

- (A) Easiness
- (B) Discussion
- (C) Passion
- (D) Anxiety

Correct Answer: (D) Anxiety

SOLUTION:

Step 1: Understand DISQUIETUDE.

DISQUIETUDE describes an inner sense of unease or nervous worry. It reflects a mind that cannot settle calmly.

Step 2: Remove the mismatched options.

Easiness suggests comfort, which is the reverse of unease. Discussion simply means talking about a subject with others. Passion means deep enthusiasm, a positive intense emotion.

Step 3: Match the correct feeling.

Anxiety means persistent worry or nervous tension about something. This aligns directly with the restless worry in DISQUIETUDE.

Final Answer:

Anxiety is the closest synonym of DISQUIETUDE.

Anxiety

Quick Tip: Think of a word describing a nagging feeling of worry or unease.



6. Choose the word that is most nearly opposite in meaning to VITIATE.

- (A) Trust
- (B) Deaden
- (C) Drain
- (D) Rectify

Correct Answer: (D) Rectify

SOLUTION:

Step 1: Define VITIATE.

VITIATE means to spoil, taint, or reduce the value or effectiveness of something.

An antonym must express the act of improving or correcting it.

Step 2: Test each option against this idea.

Trust describes a feeling of reliance, not an action of correction.

Deaden means to numb or weaken, actually similar in direction to VITIATE.

Drain means to remove gradually, again a weakening action, not its reverse.

Step 3: Confirm the true opposite.

Rectify means to fix or make something right again.

This directly reverses the spoiling sense carried by VITIATE.

Final Answer:

Rectify is the correct antonym of VITIATE.

Rectify

Quick Tip: Think of the opposite of spoiling something: what word means to correct it?

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7. Choose the word that is most nearly opposite in meaning to TRITE.

- (A) Peaceful
- (B) Powerful
- (C) Noiseless
- (D) Original

Correct Answer: (D) Original

SOLUTION:

Step 1: Understand TRITE.

TRITE describes something so overused that it feels stale and predictable.

Its opposite should describe something fresh or newly created.

Step 2: Check the unrelated options first.

Peaceful relates to calmness, not to novelty of ideas.

Powerful relates to strength or influence, a separate quality entirely.

Noiseless relates to silence, with no connection to originality.

Step 3: Identify the true opposite.

Original means new, inventive, and not copied from before.

This directly reverses the stale, overused sense of TRITE.

Final Answer:

Original is the correct antonym of TRITE.

Quick Tip: Think of the opposite of an overused idea: what word means fresh and new?

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8. Choose the word that is most nearly opposite in meaning to CONTRITE.

- (A) Unrepentant
- (B) Expanded
- (C) Remorseful
- (D) Unresolved

Correct Answer: (A) Unrepentant

SOLUTION:

Step 1: Define CONTRITE.

CONTRITE describes someone who sincerely regrets a wrong action they committed.

Its antonym must show an absence of guilt or regret.

Step 2: Screen out weak options.

Expanded refers to size increasing, with no link to guilt.

Remorseful actually means feeling sorry, so it repeats CONTRITE rather than opposing it.

Unresolved means undecided or unsettled, a separate concept from remorse.

Step 3: Pin down the true opposite.

Unrepentant means showing no regret or guilt whatsoever.
This stands in direct contrast to the remorseful sense of CONTRITE.

Final Answer:

Unrepentant is the correct antonym of CONTRITE.

Unrepentant

Quick Tip: Think of the opposite of feeling guilty: what word shows no regret at all?

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9. Choose the word that is most nearly OPPOSITE in meaning to the given word.

SQUANDER

- (A) Depart
- (B) Preserve
- (C) Forfeit
- (D) Fortify

Correct Answer: (B) Preserve

SOLUTION:

Look at SQUANDER through its root sense: careless waste of something valuable, especially money. An antonym must describe careful, protective use of that same valuable thing.

1. **Depart** means to go away from a place. This sits in a totally different category from spending or saving, so it fails as an

antonym.

2. **Preserve** carries the sense of guarding something from loss or damage. Guarding against loss is the exact reverse of squandering, which causes loss through carelessness.
3. **Forfeit** means to hand over or lose something as a consequence, often as punishment. Losing as a penalty is not the same as saving through care, so it does not oppose squander.
4. **Fortify** means to make something stronger, such as a wall or an army. Strengthening is unrelated to the idea of spending or conserving resources.

Only Preserve stands for careful use and protection, making it the answer opposite to SQUANDER.

Quick Tip: Think of the opposite of wasting money or resources carelessly.

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10. Choose the word that is most nearly OPPOSITE in meaning to the given word.

INDIGENT

- (A) Modest
- (B) Impetuous
- (C) Profitable
- (D) Prosperous

Correct Answer: (D) Prosperous

SOLUTION:

INDIGENT points to a person who lacks money and basic necessities. Testing each option against this idea of lacking money quickly narrows the field.

1. **Modest** refers to a plain or unassuming manner. A modest person can still be wealthy, so this word does not measure financial state at all.
2. **Impetuous** describes hasty, impulsive behaviour. This trait has nothing to do with how much money a person has.
3. **Profitable** is usually applied to a business or deal that generates gain, not to a person directly. Since INDIGENT describes a person, this option is a mismatch in usage.
4. **Prosperous** describes a person or place that is flourishing financially. Applying it to a person makes it a natural, direct opposite of indigent.

Prosperous is the option that correctly reverses the poverty meaning of INDIGENT.

Quick Tip: INDIGENT describes someone who is very poor; think of its financial opposite.

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11. Choose the option that completes the analogy in the same way as the given pair.

Song : Cycle :: Sonnet : ?

- (A) Ballad
- (B) Melody
- (C) Rhyme
- (D) Sequence

Correct Answer: (D) Sequence

SOLUTION:

Reframe the first pair as a rule: Cycle names the organized group that several Songs form together. The answer must be the word that names the organized group several Sonnets form together.

1. **Ballad** names one more song or poem form, sitting at the same level as Sonnet itself, not one level above it as a group name.
2. **Melody** names an element inside a single song, working at a smaller scale than Song, so it moves in the wrong direction.
3. **Rhyme** also names a feature inside a single poem rather than a set of poems, again the wrong scale.
4. **Sequence** names the set formed when several sonnets are grouped around a theme, matching the "group name" role that Cycle plays for Song.

Sequence is the only option operating at the group level, so it is the correct match for Sonnet.

Quick Tip: Think of the term used for a group of related songs performed together.

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12. Choose the option that completes the analogy in the same way as the given pair.

Lumber : Bear :: Waddle : ?

- (A) Parrot
- (B) Pigeon
- (C) Goose
- (D) Hawk

Correct Answer: (C) Goose

SOLUTION:

Treat Lumber and Bear as a fixed verb-animal pair based on real-world observation of gait, then search the options for the animal whose known gait is a waddle.

1. **Parrot** is best known for its ability to mimic sounds and its colourful flight, giving no strong link to a rocking ground walk.
2. **Pigeon** moves with a quick, jerky head bob while walking, a distinct gait that is different from a slow side to side waddle.
3. **Goose** has short legs set wide apart, which forces a rocking, side to side walk universally recognised as a waddle.
4. **Hawk** is rarely observed walking at all since it hunts mainly from the air, so no ground gait applies to it.

Goose fits the required gait exactly, confirming it as the answer paired with Waddle.

Quick Tip: Match each verb to the animal known for that particular style of walking.

13. Choose the option that completes the analogy in the same way as the given pair.

Archipelago : Island :: Constellation : ?

- (A) Garden
- (B) Flower
- (C) Star
- (D) Valley

Correct Answer: (C) Star

SOLUTION:

State the relationship as a formula: the first word is a named group, and the second word is the single member repeated many times to build that group. Apply the same formula to Constellation.

1. **Garden** plays the role of a named group itself, which duplicates the role of Archipelago rather than filling the member role.
2. **Flower** is the correct member type for a garden, but a constellation is not made of flowers, so the pairing is mismatched.
3. **Star** is the repeated member unit that astronomers group together and name as a constellation, satisfying the formula perfectly.
4. **Valley** belongs to geography, with no connection to how stars are grouped in the sky.

Star is the member unit that completes the group-and-member formula for Constellation.

Quick Tip: An archipelago is a group of islands; think what a constellation is a group of.

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14. Choose the option that completes the analogy in the same way as the given pair.

Range : Mountains :: String : ?

- (A) Ribbons
- (B) Toys
- (C) Beads
- (D) Keys

Correct Answer: (C) Beads

SOLUTION:

Read Range : Mountains as an idiom, "a range of mountains," then find which option completes the parallel idiom, "a string of _____," in everyday English usage.

1. **Ribbons** does not appear in the common idiom "a string of ribbons," since ribbons are draped or tied rather than strung as separate units.
2. **Toys** also fails the idiom test, as toys are not conventionally described as being strung in a line.
3. **Beads** completes the well known idiom "a string of beads," the standard way small perforated objects are grouped and worn.
4. **Keys** usually attach to "a ring of keys" rather than a string, so it does not complete the expected idiom.

Beads is the option that correctly completes the idiomatic phrase "a string of beads."

Quick Tip: A range is a connected series of mountains; think what small round objects are commonly threaded on a string.

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15. Choose the option that completes the analogy in the same way as the given pair.

Bracket : Shelf :: Strut : ?

- (A) Bucket
- (B) Valve
- (C) Girder
- (D) Rafter

Correct Answer: (D) Rafter

SOLUTION:

Picture the physical setup each word describes: a bracket is fixed to a wall, then a shelf rests on top of it. Find the option that a strut is fixed against and holds up in the same fashion.

1. **Bucket** is a freestanding container that never rests on a support piece like a strut, so this pairing has no real world basis.
2. **Valve** is a fitting inside pipework, entirely outside the world of load bearing supports, making it unrelated.
3. **Girder** usually functions as a support for other parts rather than being supported itself, so pairing it with strut reverses the intended roles.

4. **Rafter** is a sloped roof beam that carpenters brace using diagonal struts, placing it in the same supported position that a shelf holds relative to a bracket.

Rafter is the structural piece placed in the supported role, just like a shelf sitting on a bracket.

Quick Tip: A bracket physically supports a shelf; think of a structural part that a strut is used to support.

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16. Fill in the blanks with the words that best fit the meaning of the sentence as a whole.

If a nation is unable to come to on interpreting its own past, it will be unable to its national interests.

- (A) conclusion ... plan
- (B) terms ... design
- (C) decision ... comprehend
- (D) consensus ... formulate

Correct Answer: (D) consensus ... formulate

SOLUTION:

Test each pair by asking whether the two blanks together tell one connected story: disagreement over history leading to a specific kind of failure in defining interests.

1. **conclusion ... plan** breaks the story because reaching a conclusion about history does not logically prevent a nation from planning, which is a forward looking, separate activity.

2. **terms ... design** also breaks down, since coming to terms is about accepting a situation, while designing interests implies building something concrete, a mismatch in scale.
3. **decision ... comprehend** fails the logic test too, because a decision on history should not stop a nation from comprehending, which is simply understanding, not creating, its interests.
4. **consensus ... formulate** keeps the story connected throughout: without shared agreement on the past, a nation cannot build or state its interests clearly, and formulate means exactly that active process of shaping them.

consensus ... formulate is the pair that keeps the sentence's cause and effect logically consistent.

Quick Tip: Look for the pair where both words form natural collocations with "on its past" and "national interests."

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17. Fill in the blanks with the words that best fit the meaning of the sentence as a whole.

Globalization both prosperity and .

- (A) causes ... development
- (B) spreads ... distress
- (C) reveals ... doom
- (D) condemns ... bliss

Correct Answer: (B) spreads ... distress

SOLUTION:

Look at the word "both" in the sentence. It signals that the two blanks must show two different, even opposite, results of globalization.

1. **causes ... development** fails because development and prosperity are near synonyms, not opposites, so there is no real contrast.
2. **spreads ... distress** works because "spreads" fits naturally with prosperity, and distress stands as prosperity's clear opposite, giving the sentence balance.
3. **reveals ... doom** fails since globalization is an active force, not something that merely reveals outcomes, and doom feels out of place in a factual statement.
4. **condemns ... bliss** fails because condemns does not pair naturally with prosperity, and bliss is too poetic for this context.

Testing each pair against the word "both" shows option 2, spreads ... distress, is the only pair that creates true contrast.

Quick Tip: Look for two words that show globalization's mixed, contrasting effects.

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18. Fill in the blanks with the words that best fit the meaning of the sentence as a whole.

Unscrupulous use of chemical insecticides to the pests leads to pest .

- (A) aggravate ... modification
- (B) disintegrate ... mobility
- (C) rectify ... revival
- (D) control ... resurgence

Correct Answer: (D) control ... resurgence

SOLUTION:

Insecticides exist for one clear purpose, so the first blank should name that purpose directly, then the second blank should show the twist the sentence promises.

1. **aggravate**, **disintegrate** and **rectify** all describe actions nobody actually intends when spraying insecticides, so each first blank choice fails immediately.
2. Only "control" describes the real, intended purpose of using insecticides against pests.
3. For the second blank, "resurgence" fits the well documented pattern where overused insecticides kill natural predators and let surviving pests multiply back.
4. Modification, mobility and revival do not describe what happens to a pest population after chemical overuse.

Working blank by blank confirms option 4, control ... resurgence, is correct.

Quick Tip: Think about the irony: insecticides meant to fight pests can end up backfiring.

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19. Fill in the blanks with the words that best fit the meaning of the sentence as a whole.

A relationship with Moscow will help New Delhi to its ties with both Washington and Beijing.

- (A) robust ... leverage
- (B) healthy ... enhance
- (C) mutual ... lose
- (D) perfect ... ally

Correct Answer: (A) robust ... leverage

SOLUTION:

Read the sentence as a cause and effect: a certain kind of relationship with Moscow produces a certain benefit for India's other ties.

1. "Mutual" and "perfect" describe qualities of a relationship, but they do not logically cause India to gain anything with Washington or Beijing.
2. "Healthy" is possible but weaker and vaguer than what strategic language demands.
3. "Robust" signals real strength, and strength with one power naturally becomes a bargaining chip, or leverage, with others.
4. Checking the second blank, "lose" and "ally" break the sentence's logic or grammar, while "leverage" completes it smoothly.

The pairing that survives both checks is option 1, robust ... leverage.

Quick Tip: Think about how a strong Russia relationship could give India bargaining power elsewhere.

20. Fill in the blanks with the words that best fit the meaning of the sentence as a whole.

A judge tries to his duties to the best of his .

- (A) fulfill ... quality
- (B) discharge ... capacity
- (C) execute ... strength
- (D) perform ... power

Correct Answer: (B) discharge ... capacity

SOLUTION:

Instead of judging meaning alone, test each option as a fixed phrase native speakers actually use.

1. "To the best of his capacity" is a common idiom describing someone giving full effort within their ability.
2. "To the best of his quality", "strength" and "power" are all phrases that sound unnatural or are rarely used in standard English.
3. On the first blank, "discharge" is the standard formal verb paired with "duties" in official and legal contexts, matching the judge in the sentence.
4. "Fulfill", "execute" and "perform" duties are all grammatically fine, but they lose to "discharge" once paired with the correct second blank, "capacity".

Matching both blanks to natural collocations gives option 2, discharge ... capacity.

Quick Tip: Think of the standard idiom for doing a job with full ability.

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21. Each sentence below is divided into four parts. Find the part that has a grammatical error. If there is no error, mark the No error option.

Language cannot be static; it must constant evolve to keep up with changing times and remain relevant.

- (A) Language cannot be static;
- (B) it must constant evolve
- (C) to keep up with changing times
- (D) and remain relevant.

Correct Answer: (B) it must constant evolve

SOLUTION:

A quick way to spot this kind of error is to isolate any word sitting right before a verb and ask whether it should be an adverb.

1. In part one, "cannot be static" uses a simple, correct verb form with no modifier issue.
2. In part two, "constant" sits directly before the verb "evolve", but only adverbs can modify verbs, not adjectives, so "constant" is wrong here.
3. Replacing it with "constantly" fixes the sentence, confirming the error lives in this part.
4. Parts three and four use standard infinitive and conjunction structures that need no correction.

The adverb test isolates the error to option 2, "it must constant evolve".

Quick Tip: Check whether an adjective is wrongly used to modify a verb.

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22. Each sentence below is divided into four parts. Find the part that has a grammatical error. If there is no error, mark the No error option.

If he would have taken rest, as advised by the doctor, he might not have had a second heart attack.

- (A) If he would have taken rest,
- (B) as advised by the doctor,
- (C) he might not have
- (D) had a second heart attack.

Correct Answer: (A) If he would have taken rest,

SOLUTION:

Third conditional sentences follow a fixed pattern: if clause in past perfect, main clause with a modal plus have plus past participle.

1. The main clause, "he might not have had a second heart attack", already follows this pattern correctly, so parts three and four are fine.
2. "As advised by the doctor" is simply an inserted phrase and does not affect the conditional structure.
3. Checking the if clause against the pattern shows "would have taken" breaks the rule, since "would have" belongs in the main

clause, not the if clause.

4. The corrected form should read "if he had taken rest", which places the error in part one.

Matching the sentence to the standard third conditional pattern confirms option 1 as the error.

Quick Tip: Recall the correct if clause pattern for a third conditional sentence.

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23. Each sentence below is divided into four parts. Find the part that has a grammatical error. If there is no error, mark the No error option.

The total allocation for education in this year's budget is Rs. 34,400 crore, an amount that has gone up in 20 percent from last year.

- (A) The total allocation for education
- (B) in this year's budget is Rs. 34,400 crore,
- (C) an amount that has gone up
- (D) in 20 percent from last year.

Correct Answer: (D) in 20 percent from last year.

SOLUTION:

English pairs specific prepositions with specific ideas, and a change measured in percentage terms always uses "by".

1. Phrases like "increased by 10 percent" or "gone up by 20 percent" are the standard, fixed pattern in formal and everyday English.

2. Parts one through three describe the budget figure and the fact of an increase, all without any preposition error.
3. Part four swaps the required "by" for "in", which does not fit this fixed pattern and sounds unnatural.
4. Replacing "in" with "by" corrects the sentence completely.

The fixed preposition rule for percentage change points to option 4 as the error.

Quick Tip: Recall the correct preposition used with a percentage increase.

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24. Each sentence below is divided into four parts. Find the part that has a grammatical error. If there is no error, mark the No error option.

Of the two cars that my friend has, the new Ford is without any question, the cheapest to run.

- (A) Of the two cars
- (B) that my friend has,
- (C) the new Ford is without any question,
- (D) the cheapest to run.

Correct Answer: (D) the cheapest to run.

SOLUTION:

A simple rule decides this question: comparatives with "er" compare two things, while superlatives with "est" compare three or more.

1. The sentence opens with "of the two cars", fixing the comparison at exactly two items.
2. Parts one through three build up this two item comparison correctly and contain no grammar fault.
3. Part four then uses "cheapest", a superlative reserved for three or more items, which clashes with the "two cars" set up earlier.
4. Changing "cheapest" to "cheaper" resolves the mismatch and fits the two item comparison.

The two versus three rule for comparatives identifies option 4 as the error.

Quick Tip: Remember: comparing only two things needs the comparative, not the superlative, form.

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25. Each sentence below is divided into four parts. Find the part that has a grammatical error. If there is no error, mark the No error option.

Although China is at present far ahead of India in terms of economic progress, it's education system is seriously flawed.

- (A) Although China is at present
- (B) far ahead of India
- (C) in terms of economic progress,
- (D) it's education system is seriously flawed.

Correct Answer: (D) it's education system is seriously flawed.

SOLUTION:

A reliable trick for this common mistake is to expand "it's" into "it is" and see if the sentence still makes sense.

1. Expanding part four gives "it is education system is seriously flawed", which is clearly ungrammatical and repeats the verb "is".
2. This proves "it's" is being used incorrectly in place of the possessive "its".
3. Parts one through three describe China's position relative to India and contain no such confusion.
4. Replacing "it's" with "its" in part four produces a grammatically sound sentence.

The expansion test confirms the error sits in option 4, the misused "it's".

Quick Tip: Test whether "it's" can be correctly expanded to "it is" in the sentence.

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26. In many corporations, employees are replace by automated equipments so that to save money.

- (A) Are replace by automated equipments so that to
- (B) Are being replaced by automated equipment in order to
- (C) Were replaced by automated equipment so as to
- (D) Are replacing by automated equipment such that

Correct Answer: (B) Are being replaced by automated equipment in order to

SOLUTION:

Read the sentence for two things: the verb form after "employees", and the connector before "save money". The verb needs a passive form because employees do not perform the replacing themselves, and the connector should signal purpose without mixing two idioms.

1. **Are replace by automated equipments so that to:** "are replace" is an unfinished passive, missing "-ed", and "so that to" wrongly joins two different purpose structures.
2. **Are being replaced by automated equipment in order to:** this fixes the passive form to "are being replaced" and swaps in the single clean phrase "in order to", removing both problems at once.
3. **Were replaced by automated equipment so as to:** the past tense "were replaced" implies a completed action, not the ongoing corporate practice the sentence describes.
4. **Are replacing by automated equipment such that:** this makes employees the active agents of replacement, which contradicts the sentence's logic.

Only the second choice repairs both the verb form and the connector, confirming option (b) as correct.

Quick Tip: Check whether the verb after 'employees' is correctly passive, and whether the purpose phrase before 'save money' is a single clean idiom.

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27. Tropical forests play a key role as the world's carbon and wildlife reservoirs.

- (A) Play a key role as the world's
- (B) Had played a key role in the world's
- (C) Have been played a key role at the world's
- (D) Has played a key role for the world's

Correct Answer: (A) Play a key role as the world's

SOLUTION:

Test the sentence by checking tense and preposition separately. The claim about forests being carbon and wildlife reservoirs is a permanent fact, which calls for the simple present, and the role described needs "as" rather than "in", "at", or "for".

1. **Play a key role as the world's:** matches the plural noun "forests", stays in simple present for a general truth, and "as" correctly frames forests in the role of reservoirs.
2. **Had played a key role in the world's:** past perfect wrongly implies the role is now over, and "in" does not carry the same "acting as" sense.
3. **Have been played a key role at the world's:** turns an active role into a passive one, which does not make sense since forests actively provide this function.
4. **Has played a key role for the world's:** the singular verb "has" does not agree with the plural "forests", breaking subject-verb agreement.

No change is needed, so the underlined part is correct as it stands, confirming option (a).

Quick Tip: Decide if the tense fits a general, permanent fact, and whether 'as' is the right preposition for the meaning intended.

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28. Research shows that besides from obesity, Office Ergonomics are a leading factor that contributes to backache.

- (A) Besides from obesity, Office Ergonomics are a leading factor
- (B) Apart from obesity, Office Ergonomics is a leading factor
- (C) Along with obesity, Office Ergonomics were leading factors
- (D) Beside obesity, Office Ergonomics should be leading factor's

Correct Answer: (B) Apart from obesity, Office Ergonomics is a leading factor

SOLUTION:

Isolate the two trouble spots: the connecting phrase before "obesity" and the verb after "Office Ergonomics". Standard usage never pairs "besides" with "from", and "Office Ergonomics" behaves as a singular subject like "economics" or "physics".

1. **Besides from obesity, Office Ergonomics are a leading factor:** combines two valid phrases into one invalid one, and pairs a singular subject with a plural verb.
2. **Apart from obesity, Office Ergonomics is a leading factor:** uses the standard phrase "apart from" and correctly matches the singular subject with "is".
3. **Along with obesity, Office Ergonomics were leading factors:** shifts the tense to past and the number to plural, both incorrect for a general research statement.

4. **Beside obesity, Office Ergonomics should be leading**

factor's: "beside" is a physical location word here, wrong sense, and the added apostrophe in "factor's" is a spelling error too.

The version with "apart from" and "is" is grammatically sound, confirming option (b) as the answer.

Quick Tip: Watch for the double connector 'besides from' and check whether 'Office Ergonomics' takes a singular or plural verb.

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29. Even as a series of bad news from the US has hit the global financial scene hard, the Indian IT companies have gone into stock taking mode.

- (A) Have gone into
- (B) Has gone for
- (C) Have been going to
- (D) Might have been going on

Correct Answer: (A) Have gone into

SOLUTION:

Check the subject-verb pairing first, then the tense. "Companies" is plural, ruling out any singular auxiliary, and the sentence needs a tense that connects a recent change to the present situation being described.

1. **Have gone into:** pairs correctly with the plural "companies" and the present perfect tense links the past shift to the present mode of caution.

2. **Has gone for:** the singular "has" breaks agreement with a plural subject, an error on its own regardless of meaning.
3. **Have been going to:** this phrasing suggests movement toward something that has not yet happened, not a mode the companies are already in.
4. **Might have been going on:** introduces doubt with "might", which does not match the confident, factual tone of the rest of the sentence.

The original underlined phrase has no grammatical fault, so option (a), no error, stands as the answer.

Quick Tip: Confirm the auxiliary verb matches a plural subject and check if the tense fits an action still relevant now.

• • •

30. A new study has found that almonds could help improving our digestion health by increasing levels of beneficial gut bacteria.

- (A) Could help improving our digestion
- (B) Can help improved our digestion
- (C) Could be helping to improve our digestive
- (D) Could help improve our digestive

Correct Answer: (D) Could help improve our digestive

SOLUTION:

Approach this by fixing the verb pattern first, then the word class before "health". "Help" must be followed by a plain infinitive without

"-ing" or "-ed", and only an adjective can modify the noun "health", never another noun like "digestion".

1. **Could help improving our digestion:** uses a gerund after "help" instead of the required bare infinitive, and "digestion" wrongly stands in as an adjective.
2. **Can help improved our digestion:** the past participle "improved" cannot follow "help" either, and the noun "digestion" is still uncorrected.
3. **Could be helping to improve our digestive:** grammatically workable but overcomplicated, changing the sentence's simple structure without any real need.
4. **Could help improve our digestive:** keeps the original modal "could", uses the bare infinitive "improve" correctly after "help", and corrects the noun to the adjective "digestive".

Only "could help improve our digestive" repairs the infinitive and the adjective while keeping the original modal, so this option, folded here as option 4, is correct.

Quick Tip: Check what verb form must follow 'help', and whether the word before 'health' should be a noun or an adjective.

• • •

31. P: Developed countries, including European economies and to a lesser extent

Q: Nevertheless, managed to maintain robust rates of economic growth

R: Developing countries have been affected as well, but they have

S: Japan, have been hit by the crisis in the US

Choose the option that gives the best sequence to make the passage coherent and meaningful.

(A) QRSP

(B) SRQP

(C) RSQP

(D) PSRQ

Correct Answer: (D) PSRQ

SOLUTION:

Step 1: Scan for linking words first.

R contains "but", a contrast marker, meaning R needs a positive statement before it about someone being hurt, so that "but" can pivot to something different. Q begins with "Nevertheless", another contrast marker, so Q must directly follow a sentence describing hardship, and it should complete an unfinished clause.

Step 2: Match S to P.

P lists "European economies and to a lesser extent" and leaves a gap for one more example, which only S fills with the word "Japan".

Reading P then S gives one full sentence about developed nations being hit by the US crisis.

Step 3: Place R after P-S.

R opens with "Developing countries have been affected as well, but they have", which logically follows right after the sentence about developed countries suffering, since it draws a parallel using "as well".

Step 4: Attach Q to complete R.

R trails off at "but they have", and Q's "Nevertheless, managed to maintain robust rates of economic growth" is the only sentence that grammatically completes that trailing verb phrase.

Final Answer:

Reading P, S, R, Q together forms one coherent paragraph about developed nations suffering while developing nations held steady, confirming option (d).

PSRQ

Quick Tip: Look for the sentence that finishes P's list with a country name, then find the 'but' and 'Nevertheless' pair that sets up the contrast.

• • •

32. P: Telescope arrays in the Northern and Southern hemispheres

Q: In Leh for an international collaboration that is

R: India plans to offer an astronomical site at Hanle

S: Exploring the possibility of setting up two large gamma-ray

Choose the option that gives the best sequence to make the passage coherent and meaningful.

- (A) PSQR
- (B) SPRQ
- (C) RQSP
- (D) QPRS

Correct Answer: (C) RQSP

SOLUTION:

Step 1: Find the fragment that needs no lead-in.

Only R reads as a full clause on its own: "India plans to offer an astronomical site at Hanle". P, Q, and S all begin mid-phrase, so R must open the passage.

Step 2: Trace the chain of dependent phrases forward.

"Hanle" at the end of R needs a location refinement, which Q gives with "In Leh for an international collaboration that is".

Step 3: Follow the dangling 'that is' into an action.

Q's "that is" demands a verb form right after it, and S opens with "Exploring the possibility of setting up two large gamma-ray", which is the only fragment starting with a present participle that fits there.

Step 4: Finish the equipment being described.

S trails off on "gamma-ray", an adjective needing a noun, and P supplies "Telescope arrays in the Northern and Southern hemispheres" to complete it.

Final Answer:

Chaining R into Q into S into P gives one grammatically complete

sentence about India's gamma-ray telescope project, confirming option (c).

RQSP

Quick Tip: Find the only fragment that reads as a complete opening clause, then follow the dangling phrases like 'that is' and 'gamma-ray' to their natural completions.

• • •

33. P: Farmers of South India, particularly, Kerala

Q: Coconut is the major crop cultivated by small and marginal

R: Coconut is the cost and unavailability of laborers

S: For every farmer, the practical difficulty in carrying out plant protection in

Choose the option that gives the best sequence to make the passage coherent and meaningful.

(A) SQRP

(B) PRQS

(C) SQPR

(D) QPSR

Correct Answer: (D) QPSR

SOLUTION:

Step 1: Locate the topic sentence.

Q names the crop and the type of farmer, "Coconut is the major crop cultivated by small and marginal", which reads as a strong opening

line since nothing else needs to come before it.

Step 2: Finish naming the farmers.

"Small and marginal" at the end of Q needs a noun, and only P, "Farmers of South India, particularly, Kerala", completes that phrase, so P must directly follow Q.

Step 3: Shift to the new challenge.

Once the crop and farmers are set up, S starts a fresh idea with "For every farmer, the practical difficulty in carrying out plant protection in", moving the passage from description to problem.

Step 4: Name the cause of the problem.

S trails off at "plant protection in", and R, "Coconut is the cost and unavailability of laborers", is the only remaining fragment that completes this thought by naming the actual cause.

Final Answer:

Reading Q, P, S, R together produces one coherent passage about coconut farming and its labor problem, confirming option (e), which folds to option 4 here.

QPSR

Quick Tip: Find which sentence names the crop and farmers first, then trace the dangling phrases 'small and marginal' and 'plant protection in' to their completions.

• • •

34.

Directions: In the following questions, different parts of a sentence/passage have been jumbled. Choose the option that represents the best sequence to make the sentence/passage coherent and meaningful. Ignore punctuation marks.

P: The environmental problems the world is facing

Q: As it is called, will not reverse global warming

R: Going dark has its uses, Earth Hour

S: But it is a good way to raise awareness about

(A) PSQR

(B) RQSP

(C) SQPR

(D) QPRS

Correct Answer: (B) RQSP

SOLUTION:

Instead of testing full sequences, find which sentence can stand first and which word must come right after it, then eliminate wrong options one clue at a time. A sentence starting with "But" or with a pronoun like "it" cannot open a passage, since both need something stated earlier to point back to. That rules out S and Q as opening lines, which removes SQPR and QPRS at once, since both start with a sentence that needs an earlier reference. Between PSQR and RQSP, check what P needs. P says "the environmental problems the world is facing", and this phrase only makes sense once the reader has been told what raising awareness has to do with those problems. That link is made by S, "a good way to raise awareness about", so P must come

right after S, not before it as PSQR has it. This leaves only R Q S P as a working order. R names Earth Hour and its use of going dark, Q adds that despite the name it will not reverse global warming, S turns to the real benefit with "But", and P closes by stating what that benefit raises awareness about. Every connector lines up correctly only in this sequence.

The correct sequence is RQSP, so option RQSP is the answer.

Quick Tip: Find the sentence that can open the passage without pointing back to an earlier idea, then trace what each connecting word or pronoun needs next.

• • •

35.

Directions: In the following questions, different parts of a sentence/passage have been jumbled. Choose the option that represents the best sequence to make the sentence/passage coherent and meaningful. Ignore punctuation marks.

P: We should definitely move them

Q: To cooler climes and safer environments

R: If some species cannot survive in their current habitat

S: Due to global warming or human proximity

(A) SPRQ

(B) QRPS

(C) SQRP

(D) RSPQ

Correct Answer: (D) RSPQ

SOLUTION:

Treat this as one if-then sentence and locate the word "if", since a conditional clause almost always opens such a sentence. Only R carries that word, so R must be the first sentence, which already rules out SPRQ, QRPS and SQRP, none of which begin with R. Next, decide what follows the if-clause. R states that some species cannot survive in their current habitat, and the natural next step is to explain why, which is S, "due to global warming or human proximity". After the cause comes the response, P, "we should definitely move them", and finally the destination of that move, Q, "to cooler climes and safer environments". Reading the four lines in this order, if some species cannot survive in their current habitat due to global warming or human proximity, we should definitely move them to cooler climes and safer environments, forms one clear, grammatically complete sentence with no gaps.

The correct sequence is RSPQ, so option RSPQ is the answer.

Quick Tip: Spot the clause that carries the word "if", since a conditional sentence like this one must open with its condition.

• • •

36. Directions: Choose a suitable one word substitute for the given phrase from the options under each question.

An action that is bad or unacceptable, but not very serious.

- (A) Felony
- (B) Etiquette
- (C) Misdemeanor
- (D) Repression

Correct Answer: (C) Misdemeanor

SOLUTION:

Split the phrase into two parts and match each part to the right word. The first part, "bad or unacceptable", rules out Etiquette right away, since etiquette means correct and polite behaviour, the very opposite of a bad act. The second part, "but not very serious", is the key filter for what remains. Felony fails this filter, since a felony is by definition a serious, often violent or heavily punished crime. Repression also fails, since it describes suppressing something, not committing a bad act at all. That leaves Misdemeanor, a term used in law and everyday language for a minor offence, one that is wrong but far less serious than a felony. This is exactly the balance the phrase describes, bad enough to be called wrong, mild enough to not be a real crime.

The correct word is Misdemeanor, so option Misdemeanor is the answer.

Quick Tip: Think of a legal term for a minor offence that is less serious than a crime.

• • •

37. Directions: Choose a suitable one word substitute for the given phrase from the options under each question.

An animal or plant that lives in or on another animal or plant.

- (A) Sycophant
- (B) Bigot
- (C) Proselyte
- (D) Parasite

Correct Answer: (D) Parasite

SOLUTION:

Notice first that three of the four words, Sycophant, Bigot and Proselyte, describe types of people and their attitudes or beliefs, not living organisms in a biological sense. None of them can fit a definition about an animal or plant living on another animal or plant, so all three are eliminated on subject matter alone. Only Parasite belongs to biology, and it describes precisely this relationship, one organism living in or on a host and feeding off it, such as a tapeworm in an animal or mistletoe on a tree. Since the phrase is a straightforward biology definition, the word must also come from biology, which points directly to Parasite.

The correct word is Parasite, so option Parasite is the answer.

Quick Tip: Think of a biology term for an organism that feeds off a host it lives in or on.



38. Directions: Choose a suitable one word substitute for the given phrase from the options under each question.

To make someone angry by hurting the pride.

- (A) Pique
- (B) Quell
- (C) Nurture
- (D) Mitigate

Correct Answer: (A) Pique

SOLUTION:

Look at what each verb actually acts on. Quell acts on unrest or disorder, calming it down, which is unrelated to pride. Nurture acts on growth, helping something develop, which is the reverse of causing offence. Mitigate acts on the severity of a bad situation, softening it, again with no link to pride or anger. Only Pique acts on a person's feelings in the specific way the phrase describes, causing irritation or resentment by wounding their self respect, as in "her comment piqued his pride". Since the phrase names both an emotion, anger, and its cause, hurt pride, and Pique is the only verb tied to both together, it is the clear match.

The correct word is Pique, so option Pique is the answer.

Quick Tip: Think of a verb often paired with the word "pride", as in wounding someone's pride to irritate them.



39. Directions: Choose a suitable one word substitute for the given phrase from the options under each question.

Harsh or insensitive in manner.

- (A) Stupendous
- (B) Abrasive
- (C) Venomous
- (D) Fecund

Correct Answer: (B) Abrasive

SOLUTION:

Group the four choices by what quality each one describes.

Stupendous and Fecund describe positive or neutral qualities, being impressive and being highly productive, so neither can describe harsh behaviour and both drop out first. Between Abrasive and Venomous, both can sound negative, so look closely at what each word is normally used for. Venomous is generally used for speech or feelings loaded with deliberate spite or hatred, a sharper and more hostile shade of meaning. Abrasive is the everyday word for someone whose general manner, tone or style comes across as harsh and insensitive to others, without necessarily implying deliberate malice, which lines up with the plain phrase "harsh or insensitive in manner". This closer match makes Abrasive the better fit for the given definition.

The correct word is Abrasive, so option Abrasive is the answer.

Quick Tip: Think of a word often used to describe a rough, tactless manner of speaking to people.

40. Directions: Choose a suitable one word substitute for the given phrase from the options under each question.

Having the habit of putting forward one's own view noisily without any regard for the feelings of others.

- (A) Lissome
- (B) Gullible
- (C) Desolate
- (D) Bumptious

Correct Answer: (D) Bumptious

SOLUTION:

Check what each word actually describes before matching it to the phrase. Lissome is a word for graceful physical movement, completely outside the topic of manner or opinion. Gullible describes a person's tendency to be tricked, which is about being on the receiving end of deception, not about pushing an opinion onto others. Desolate describes a bleak, empty place or mood, again unconnected to how someone voices an opinion. Only Bumptious remains, and its meaning fits point for point, describing a person who is irritatingly self important and forces their view on others noisily, with no concern for how it lands on them. The phrase's mention of "noisily" and "without any regard for the feelings of others" is exactly the sense carried by Bumptious.

The correct word is Bumptious, so option Bumptious is the answer.

Quick Tip: Think of a word for someone who is loudly self important and pushy with their opinions.

• • •

41. Directions: Choose the option that best expresses the meaning of the given idiom/phrase.

She was sure to *steal a march* upon her rivals.

- (A) Oppose
- (B) Confront
- (C) Outshine
- (D) Avoid

Correct Answer: (C) Outshine

SOLUTION:

Work through the choices by asking whether each one describes a rival relationship where one side gains ground. Oppose and Confront both describe head on conflict, standing against someone or facing them, but "stealing a march" is not about a clash, it is about quietly getting ahead. That removes both from contention. Avoid describes staying clear of someone entirely, which is the reverse of engaging with rivals to get ahead of them, so it is removed as well. That leaves Outshine, which describes coming out better than others in a comparison, the closest sense among the four choices to gaining an edge over rivals, and it is the option given by the official answer key. The key answer is Outshine, so option Outshine is the answer.

Quick Tip: The idiom is about getting ahead of rivals, so look for the option closest to coming out on top.

• • •

42. Directions: Choose the option that best expresses the meaning of the given idiom/phrase.

The *carrot and stick* policy pays dividends in every organization.

- (A) Rigorous training
- (B) Continuous vigilance
- (C) Democratic approach
- (D) Reward and punishment

Correct Answer: (D) Reward and punishment

SOLUTION:

Trace the idiom back to its literal picture before matching it to the choices. A carrot dangled in front of a donkey draws it forward, and a stick behind it pushes it along, so the method uses both attraction and pressure together. Rigorous training and Continuous vigilance describe effort and watchfulness, neither of which involves offering something desirable alongside a threat. Democratic approach describes a style of shared decision making, again with no link to incentive and threat working together. Only Reward and punishment captures both halves of the picture at once, an incentive for good behaviour paired with a consequence for bad behaviour, which is exactly what the carrot and stick idiom stands for in organizations.

The correct meaning is Reward and punishment, so option Reward and punishment is the answer.

Quick Tip: Picture a carrot dangled ahead and a stick held behind, one to attract and one to push.

• • •

43. My friend has a *bee in his bonnet*.

- (A) Obsessed with something
- (B) Remains unaffected
- (C) Thinks a lot
- (D) Always busy

Correct Answer: (A) Obsessed with something

SOLUTION:

Break the idiom into its core image: a bee buzzing inside a bonnet keeps drawing attention back to itself, so the wearer cannot think of anything else.

1. **(a) Obsessed with something:** The buzzing bee mirrors a thought that keeps returning. This is the correct sense of the idiom.
2. **(b) Remains unaffected:** An unaffected person feels nothing, but the idiom shows constant disturbance from one idea.
3. **(c) Thinks a lot:** This lacks the fixation on a single idea that the idiom conveys.
4. **(d) Always busy:** Busyness suggests many tasks, while the idiom points to one persistent thought.

So option (a), obsessed with something, is the answer.

Quick Tip: Think of a bee buzzing constantly inside a hat, it never lets the wearer forget it is there.

• • •

44. If we give them this concession, it will be the *thin end of the wedge*.

- (A) The least we could do for them
- (B) The beginning of further concessions
- (C) Inadequate to fulfill their needs
- (D) A compromise on principle

Correct Answer: (B) The beginning of further concessions

SOLUTION:

Picture how a wedge works: its thin edge slips in easily, then the thick part follows and forces the split wide open. The idiom uses this image for a small first step.

1. **(a) The least we could do for them:** This focuses on generosity or minimum effort, not on what the small step leads to next.
2. **(b) The beginning of further concessions:** Just as the thin edge of a wedge lets the rest force its way in, one concession here paves the way for more concessions later.
3. **(c) Inadequate to fulfill their needs:** This talks about the concession being too small in itself, not about consequences that follow.

4. **(d) A compromise on principle:** This states what kind of act it is but does not capture the forward looking warning in the idiom.

So the sentence means giving this concession will be the beginning of further concessions, option (b).

Quick Tip: A wedge starts thin, then forces a much bigger opening, think of a first step that leads to more.

• • •

45. Archana *cut me dead* in the street.

- (A) Deceived me
- (B) Abused me
- (C) Pushed me
- (D) Ignored me completely

Correct Answer: (D) Ignored me completely

SOLUTION:

Picture meeting an acquaintance in the street who looks straight through you without a word or a nod, as if you were a stranger.

1. **(a) Deceived me:** Deception needs some false statement or trick, but the scene here involves no words at all.
2. **(b) Abused me:** Abuse requires some hostile action or speech, while the idiom describes total silence instead.
3. **(c) Pushed me:** Pushing is a physical act, but the idiom is a purely social gesture of non-recognition.

4. **(d) Ignored me completely:** Acting as if someone is invisible, with no greeting or acknowledgement, is exactly what "cut dead" means.

The meaning is that Archana ignored the speaker completely, option (d).

Quick Tip: Think of walking past someone you know and acting as if you never saw them at all.

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46. In the modern industrial age, the demand for **46** technical personnel is much more than in the feudal age because the demand for goods is much more owing to increase in population and other factors. Hence, the traditional feudal method of teaching a craft, in which only a handful of persons were taught, would no longer **47** for modern society.

Now, technical institutes or engineering colleges, where a large number of students are taught technical skills, have become **48**. Obviously, all these students could not be sons of the teacher. This **49** the very basis of the caste system in which one had no option in choosing one's vocation and had to follow one's father's profession. The caste system, in which one's vocation is chosen by one's birth, is thus totally **50** in the modern age.

From the following select the appropriate word to replace number 46 in the above passage.

- (A) Untrained
- (B) Skilled
- (C) Homogenous
- (D) Supplementary

Correct Answer: (B) Skilled

SOLUTION:

Read the second half of the sentence first: the demand exists "because the demand for goods is much more," which points to industrial scale, not raw or unqualified labour.

1. **(a) Untrained:** Untrained workers cannot meet the technical demands of industrial production, so this contradicts the passage.
2. **(b) Skilled:** Large scale industry needs workers with technical training, matching the contrast the passage draws with the feudal age.
3. **(c) Homogenous:** The passage never discusses whether workers are similar to each other, only their training level.
4. **(d) Supplementary:** The sentence is about the primary demand for personnel, not a secondary or additional group.

The word "skilled" in option (b) fits the sentence best.

Quick Tip: The sentence contrasts modern industry with the feudal age, where only a few were trained in a craft.

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47. In the modern industrial age, the demand for **46** technical personnel is much more than in the feudal age because the demand for goods is much more owing to increase in population and other factors. Hence, the traditional feudal method of teaching a craft, in which only a handful of persons were taught, would no longer **47** for modern society.

Now, technical institutes or engineering colleges, where a large number of students are taught technical skills, have become **48**. Obviously, all these students could not be sons of the teacher. This **49** the very basis of the caste system in which one had no option in choosing one's vocation and had to follow one's father's profession. The caste system, in which one's vocation is chosen by one's birth, is thus totally **50** in the modern age.

From the following select the appropriate word to replace number 47 in the above passage.

- (A) Help
- (B) Utilize
- (C) Suffice
- (D) Apply

Correct Answer: (C) Suffice

SOLUTION:

Test each option by reading it inside the full clause: "the traditional feudal method... would no longer ____ for modern society."

1. **(a) Help:** This phrase would need a person as its object, such as "help modern society," so "help for" reads awkwardly.
2. **(b) Utilize:** "Utilize for modern society" is not idiomatic, since utilize takes a direct object.

3. **(c) Suffice:** "Suffice for modern society" is standard usage meaning to be enough, exactly what the sentence needs.
4. **(d) Apply:** "Apply for modern society" does not carry the sense of being adequate that the sentence requires.

The correct word is "suffice," option (c).

Quick Tip: The old method served only a handful of people, so it would no longer be enough, that is, would not suffice.

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48. In the modern industrial age, the demand for **46** technical personnel is much more than in the feudal age because the demand for goods is much more owing to increase in population and other factors. Hence, the traditional feudal method of teaching a craft, in which only a handful of persons were taught, would no longer **47** for modern society.

Now, technical institutes or engineering colleges, where a large number of students are taught technical skills, have become **48**. Obviously, all these students could not be sons of the teacher. This **49** the very basis of the caste system in which one had no option in choosing one's vocation and had to follow one's father's profession. The caste system, in which one's vocation is chosen by one's birth, is thus totally **50** in the modern age.

From the following select the appropriate word to replace number 48 in the above passage.

- (A) Dispensable
- (B) Perfunctory
- (C) Inessential
- (D) Necessary

Correct Answer: (D) Necessary

SOLUTION:

Look at cause and effect across the two sentences: population and demand for goods rose, so a new source of trained workers was required.

1. **(a) Dispensable:** If institutes were dispensable, society could do without them, but the passage shows the opposite need.
2. **(b) Perfunctory:** This word describes a careless attitude, not the scale or importance the passage discusses.
3. **(c) Inessential:** This again suggests institutes are not needed, which conflicts with the passage's reasoning.
4. **(e) Necessary:** Growing demand for goods and population made institutes the only practical way to train enough workers, so they have become necessary.

The word "necessary," option (e), completes the sentence correctly.

Quick Tip: Think about why institutes exist now: the old method of one teacher training a few could not meet rising demand.

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49. In the modern industrial age, the demand for **46** technical personnel is much more than in the feudal age because the demand for goods is much more owing to increase in population and other factors. Hence, the traditional feudal method of teaching a craft, in which only a handful of persons were taught, would no longer **47** for modern society.

Now, technical institutes or engineering colleges, where a large number of students are taught technical skills, have become **48**. Obviously, all these students could not be sons of the teacher. This **49** the very basis of the caste system in which one had no option in choosing one's vocation and had to follow one's father's profession. The caste system, in which one's vocation is chosen by one's birth, is thus totally **50** in the modern age.

From the following select the appropriate word to replace number 49 in the above passage.

- (A) Destroyed
- (B) Cleared
- (C) Smothered
- (D) Diluted

Correct Answer: (A) Destroyed

SOLUTION:

Focus on the phrase "the very basis," which signals the foundation of the system, not a surface feature.

1. **(a) Destroyed:** Training non-sons in institutes removes the core rule that vocation passes only from father to son, so the foundation is destroyed.

2. **(b) Cleared:** This word fits removing physical obstacles, not undoing a social foundation.
3. **(c) Smothered:** Smothering suggests the basis still exists but is suppressed, which understates the change described.
4. **(d) Diluted:** Dilution suggests the basis is only weakened, but the passage points to a complete break in inherited vocation.

The strongest and most fitting word is "destroyed," option (a).

Quick Tip: The phrase "very basis" signals a complete undoing, not a partial change.

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50. In the modern industrial age, the demand for **46** technical personnel is much more than in the feudal age because the demand for goods is much more owing to increase in population and other factors. Hence, the traditional feudal method of teaching a craft, in which only a handful of persons were taught, would no longer **47** for modern society.

Now, technical institutes or engineering colleges, where a large number of students are taught technical skills, have become **48**. Obviously, all these students could not be sons of the teacher. This **49** the very basis of the caste system in which one had no option in choosing one's vocation and had to follow one's father's profession. The caste system, in which one's vocation is chosen by one's birth, is thus totally **50** in the modern age.

From the following select the appropriate word to replace number 50 in the above passage.

- (A) Conserved
- (B) Eroded
- (C) Honored
- (D) Outmoded

Correct Answer: (D) Outmoded

SOLUTION:

Trace the passage's argument: population grew, institutes trained many non-sons, and inherited vocation broke down, so the old system no longer suits today's world.

1. **(a) Conserved:** Conserving means keeping something intact, which goes against the passage's whole argument.
2. **(b) Eroded:** Erosion implies partial and ongoing loss, weaker than the complete irrelevance "totally" demands.
3. **(c) Honored:** This would mean the system is still respected, contradicting everything the passage has argued.
4. **(d) Outmoded:** The system based on birth no longer matches how modern society trains and employs people, making it outmoded.

The word "outmoded," option (d), correctly closes the passage's argument.

Quick Tip: The passage builds toward saying the birth based caste system no longer fits modern conditions.

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90001.

Harold Pinter, the British playwright, whose gifts for finding the ominous in the everyday and the noise within silence made him the most influential and imitated dramatist of his generation. In more than 30 plays written between 1957 and 2000 and including masterworks like *The Birthday Party*, *The Caretaker*, *The Homecoming* and *Betrayal*, Pinter captured the anxiety and ambiguity of life in the second half of the 20th century with terse, hypnotic dialogue filled with gaping pauses and the prospect of imminent violence. Pinter became one of the few modern playwrights whose names instantly evoke a sensibility. The adjective 'Pinteresque' has become part of the cultural vocabulary as a byword for strong and unspecified menace.

An actor, essayist, screenwriter, poet, director and dramatist, Pinter was also publicly outspoken in his views on repression and censorship, at home and abroad. He used his Nobel acceptance speech to denounce American foreign policy, saying that the United States had not only lied to justify waging war against Iraq, but that it had also 'supported and in many cases engendered every right-wing military dictatorship' in the last 50 years. His political views were implicit in much of his work. Though his plays deal with the slipperiness of memory and human character, they are also almost always about the struggle for power.

In Pinter's work 'words are weapons that the characters use to discomfort or destroy each other' said Peter Hall, who has staged more of Pinter's plays than any other director. But while Pinter's linguistic agility turned simple, sometimes obscene, words into dark, glittering and often mordantly funny poetry, it is what comes between the words that he is most famous for. And the stage direction 'pause' would haunt him throughout his career.

Intended as an instructive note to actors, the Pinter pause was a space for emphasis and breathing room. But it could also be as threatening as a

raised fist. Pinter said that writing the word 'pause' into his first play was 'a fatal error'. It is certainly the aspect of his writing that has been most parodied. But no other playwright has consistently used pauses with such rhythmic assurance and to such fine-tuned manipulative effect. Early in his career, Pinter said his work was about 'the weasel under the cocktail cabinet'. Though he later regretted the image, it holds up as a metaphor for the undertow of danger that pervades his work.

Pinter was born in Hackney on October 10, 1930. With the outbreak of World War II, Harold was evacuated from London to a provincial town in Cornwall. His feelings of loneliness and isolation from that time were to surface later in his plays. Few writers have been so consistent over so many years in the tone and execution of their work. Just before rehearsals began for the West End production of *The Birthday Party* half a century ago, Pinter sent a letter to his director, Peter Wood. In it he said, 'The play is a comedy because the whole state of affairs is absurd and inglorious. It is, however, as you know, a very serious piece of work.'

Correct Answer: —

• • •

51. What is the most significant aspect noticed in his plays?

- (A) Absurdity
- (B) Manipulative effect
- (C) Fatal errors
- (D) Struggle for power

Correct Answer: (D) Struggle for power

SOLUTION:

Look for the sentence that names a theme running through nearly every Pinter play, not a single trait or a one off remark.

1. **Absurdity** comes from a quote about one specific play, The Birthday Party, so it cannot describe his plays as a whole.
2. **Manipulative effect** refers to the skill behind his use of pauses, a method, not a recurring subject.
3. **Fatal errors** is Pinter's own comment on a writing choice he made, unrelated to what his plays depict.
4. **Struggle for power** matches the line saying his plays are almost always about this struggle, across his whole body of work.

Struggle for power fits best, since the passage flags it as an almost constant thread in his writing.

Quick Tip: Look for the line naming what his plays are almost always about.

• • •

52. Select the synonym of the word 'mordantly' as used in the passage.

- (A) Complacently
- (B) Noticeably
- (C) Hauntingly
- (D) Harshly

Correct Answer: (D) Harshly

SOLUTION:

The word mordantly describes poetry that stings even while it amuses, so the right synonym must carry that sting.

1. **Complacently** points to smugness or contentment, an idea unrelated to sharp or biting speech.
2. **Noticeably** simply flags something as visible, with no hint of bitterness or sting.
3. **Hauntingly** suggests a lingering, ghostly quality, not the cutting force behind mordant wit.
4. **Harshly** carries the rough, biting force that mordant humor is known for.

Harshly matches best, since mordant wit is sharp and cutting rather than gentle.

Quick Tip: Think about what 'mordant' means when describing sharp, biting humor.

• • •

53. Pinter was the most imitated dramatist of his times because

- (A) His writings at once evoke a rare sensibility which is an endearing trait
- (B) He found the ominous in the everyday and the noise within silence
- (C) He was one of the few modern writers whose name became part of modern cultural vocabulary
- (D) He was publicly outspoken in his views on repression and censorship, not only at home but also abroad

Correct Answer: (B) He found the ominous in the everyday and the noise within silence

SOLUTION:

Match the phrase in the question to the exact clause the passage uses to explain his wide imitation.

1. **His writings at once evoke a rare sensibility which is an endearing trait** paraphrases a different sentence about his name evoking a sensibility, not this cause.
2. **He found the ominous in the everyday and the noise within silence** repeats the passage's own opening reason for his influence and imitation.
3. **He was one of the few modern writers whose name became part of modern cultural vocabulary** describes the term Pinteresque, a later and separate idea.
4. **He was publicly outspoken in his views on repression and censorship, not only at home but also abroad** covers his politics, a topic raised only in the second paragraph.

The passage's opening line points to finding the ominous in the everyday as the true reason for his wide imitation.

Quick Tip: Check the opening sentence of the passage for the stated reason.

• • •

54. What was the most burlesqued aspect of Pinter's writing?

- (A) Characters that are ready to hit but afraid to strike
- (B) The 'pause' which is used as an instructive note to actors
- (C) The consistent usage of 'pause' with rhythmic assurance
- (D) His focused performance and economy of gesture

Correct Answer: (C) The consistent usage of 'pause' with rhythmic assurance

SOLUTION:

The question asks which trait of Pinter's writing critics and imitators mocked most, so trace the passage's discussion of the pause.

1. **Characters that are ready to hit but afraid to strike** is not mentioned in the passage at all.
2. **The 'pause' which is used as an instructive note to actors** explains why Pinter first wrote the pause, not why it became a target for parody.
3. **The consistent usage of 'pause' with rhythmic assurance** is tied directly to the sentence naming this feature as most parodied among playwrights.
4. **His focused performance and economy of gesture** has no basis anywhere in the passage.

The steady, rhythmic use of pause stands out as the most parodied part of his writing.

Quick Tip: Look at the sentence right after Pinter calls the word pause a fatal error.



55. What was the tone of his plays?

- (A) Skeptical
- (B) Pessimistic
- (C) Candid
- (D) Critical

Correct Answer: (C) Candid

SOLUTION:

Notice how directly Pinter states his opinions, in his Nobel speech and through his political themes, when picking the tone.

1. **Skeptical** would mean doubting or questioning, but the passage shows firm, direct statements instead.
2. **Pessimistic** would mean a gloomy outlook, yet the passage never frames his overall stance this way.
3. **Candid** fits the passage's picture of a man who spoke his mind plainly, even naming a superpower directly.
4. **Critical** narrows the tone to fault finding alone, missing the broader frankness the passage highlights.

Candid is the best fit, matching the open, frank manner shown throughout the passage.

Quick Tip: Recall how openly Pinter spoke about politics and censorship.

• • •

56. Which of the following words, used in the passage, is a one word substitute for the phrase, 'a figure of speech in which an expression is used to refer to something that it does not literally denote in order to suggest a similarity'?

- (A) Weasel
- (B) Metaphor
- (C) Image
- (D) Pause

Correct Answer: (B) Metaphor

SOLUTION:

Match the definition to a term from literary language, since the phrase describes a well known figure of speech.

1. **Weasel** appears in the passage as part of an example metaphor, not as the general term.
2. **Metaphor** is the precise word for comparing two unlike things without using like or as, exactly what the definition describes.
3. **Image** refers to a picture formed in the mind, a different concept from a named figure of speech.
4. **Pause** is a dramatic device Pinter used on stage, with no link to this definition.

Metaphor is the term that fits the definition given in the question.

Quick Tip: Think of the standard grammar term for comparing two unlike things.



57. What did he capture in his most celebrated works?

- (A) The anxiety and ambiguity of life in the latter half of the 20th century
- (B) The slipperiness of memory and human character
- (C) The struggle for power
- (D) The repression and censorship adopted by the US in the matter of Iraq

Correct Answer: (A) The anxiety and ambiguity of life in the latter half of the 20th century

SOLUTION:

Find the sentence that names his major plays and says exactly what they capture, since the question asks about celebrated works specifically.

1. **The anxiety and ambiguity of life in the latter half of the 20th century** is the exact phrase attached to Pinter's masterworks in the passage.
2. **The slipperiness of memory and human character** comes from a later, more general sentence about his plays as a whole.
3. **The struggle for power** is described as an almost constant theme, but is a separate statement from the one about his masterworks.
4. **The repression and censorship adopted by the US in the matter of Iraq** belongs to his Nobel speech commentary on politics, not his dramatic works.

The passage ties his masterworks directly to capturing the anxiety and ambiguity of that era.

Quick Tip: Look at the sentence naming his masterworks like The Birthday Party.

• • •

58. How did Pinter describe The Birthday Party?

- (A) It is a very serious piece of work
- (B) It is supposed to be a comedy of errors
- (C) It is absurd and inglorious in its content
- (D) It is technically flawed in construction

Correct Answer: (A) It is a very serious piece of work

SOLUTION:

Trace Pinter's letter to Peter Wood closely, since it gives his exact description of the play in his own words.

1. **It is a very serious piece of work** is the closing line of his letter, his direct verdict on the play.
2. **It is supposed to be a comedy of errors** misquotes him, since he only calls it a comedy, without this specific phrase.
3. **It is absurd and inglorious in its content** explains why he calls it a comedy, but is not his final summary of the work.
4. **It is technically flawed in construction** is never mentioned anywhere in the passage.

Pinter himself calls the play a very serious piece of work in his letter.

Quick Tip: Recall the last line of Pinter's letter to Peter Wood.

• • •

90002.

It was a milestone ride to empowerment. A young girl, probably a decade ago, driving a scooter, a little unsteadily, with mom on the pillion. It was the gift of mobility; more significantly, it was a trip to liberation. Now, the girl swings her Scorpio round a dangerous kerb even as mom and a brood of aunt, grandma and nieces squeal in pride. The girl now has a handy tool: her cell phone. Mobility and communication!

Sure, gender cleansing is now a frightening reality. Girls are killed before or at birth, plunging the all-India sex ratio to 927 girls for 1,000 boys. If she survives, the girl cannot assume she'll get a fair share of the family's education budget. Chances are she will drop out; to look after her siblings, to cook at home, to work in the fields, to be married off for money. She might be 'gifted' to a temple. 'Dowry death', a term we gave the English lexicon, is not in danger of fading out. 'The only women likely to keep their daughters are the truly independent-minded, not just the financially independent,' said author Gita Aravamudan. We know of her resilience, ability to raise a family, find happiness somewhere and keep her sanity somehow. All of which is excellent fodder for exploitation.

Out of this tangled mess has emerged the New Woman; a woman 'pushing against the limits society imposed on her'. With an identity no longer defined by domesticity or relationships, she now comes across as a person with a strong sense of self and self worth. A woman taking a tough stand for her rights is no shrew but a woman of substance while a female globetrotter is no adventuress but a woman of spirit. In short, women are going where men fear to tread.

But there are nay-sayers too. "I'm wondering if it is even theoretically possible to define the 'New Woman' in terms of a single set of characteristics. Indian women are so different from each other in terms of their class, caste, regional, linguistic and religious identities that what is 'old' for one is 'new' for the other, and not even on the map for yet another.

That said, I think the one thing that has changed is that women are no longer hesitant or apologetic about claiming a share of space and visibility within the family, at work, in public spaces, in the public discourse." said Kalyani Menon Sen of JAGORI. Small concessions to big achievements, she tastes freedom. Her aspirations are taken seriously; count the hailstorm of women-centric TV shows, commercials and food items aimed her way. "It comes with monetary independence," said Usha Srinivasan, HR Consultant.

How is it easier now? Sustained campaigns run by women groups since the national movement. Laws passed to make justice equitable, for corrective surgery of mindsets. Travel, definitely. Her willingness to take up non-traditional workplaces; job opportunities, with IT hiring in bulk. Women began to write and read what other women wrote. And cyberspace, she now blogs and networks, using it for the freedom denied so far to voice her angst, express outrage and disapproval, fulfill the need for acceptance and approval. To speak out.

Correct Answer: —

• • •

59. Choose the meaning of 'resilience' as used in the passage.

- (A) Susceptible to criticism or persuasion or temptation
- (B) Good-natured tolerance of delay or incompetence
- (C) Able to withstand or recover quickly from difficult conditions
- (D) The distinct personality of an individual regarded as a persisting entity

Correct Answer: (C) Able to withstand or recover quickly from difficult conditions

SOLUTION:

Start by ruling out meanings that clash with the sentence. The line reads that despite gender cleansing and dowry pressure, the woman still manages to raise a family, find happiness and keep her sanity, so the word must praise her toughness.

1. **Susceptible to criticism or persuasion or temptation:** A weak or easily swayed person would not be described as managing hardship well, so this is eliminated.
2. **Good-natured tolerance of delay or incompetence:** This is about patience with other people, unrelated to surviving hardship, so it is eliminated too.
3. **The distinct personality of an individual regarded as a persisting entity:** This is the definition of identity, a completely different word from resilience, so it is also ruled out.
4. **Able to withstand or recover quickly from difficult conditions:** Once the other three are eliminated, this remains, and it exactly fits a woman who survives hardship and keeps her sanity.

The correct choice is option (c), able to withstand or recover quickly from difficult conditions.

Quick Tip: Look at the sentence about her ability to raise a family and keep her sanity somehow.

• • •

60. The 'New Woman' emerged by

- (A) Relieving herself from all sorts of restrictions laid down by Indian men
- (B) Breaking all the shackles set forth by the society authoritatively as obligatory
- (C) Creating her own 'space' within the confines of the four walls of her home
- (D) Pushing herself against the norms and traditions prevailing in the Indian society

Correct Answer: (B) Breaking all the shackles set forth by the society authoritatively as obligatory

SOLUTION:

Look at this from the angle of who imposed the limits. The passage never blames only men; it says the limits came from 'society', a broader force that includes customs, family expectations and tradition together.

1. **Relieving herself from all sorts of restrictions laid down by Indian men:** This wrongly narrows society down to men alone, so it does not match the passage's wording.
2. **Creating her own 'space' within the confines of the four walls of her home:** Staying inside the home contradicts the passage, which describes women claiming space at work and in public life.
3. **Pushing herself against the norms and traditions prevailing in the Indian society:** This paraphrase is plausible but the official key favours the option that mirrors the passage's exact framing of shackles set by society as obligatory.

4. **Breaking all the shackles set forth by the society**

authoritatively as obligatory: This survives scrutiny because it repeats the passage's own idea that society, not any single group, laid down the obligations she broke free from.

The correct answer is option (b), breaking the shackles society set as obligatory.

Quick Tip: Reread the sentence that names the New Woman right after the tangled mess of gender bias.

• • •

61. What according to the author is a sign of women empowerment?

- (A) Refusing to play stereotyped roles
- (B) Raising the voice against paradoxes
- (C) Earning more money than men
- (D) Seeking total liberation

Correct Answer: (D) Seeking total liberation

SOLUTION:

Instead of hunting for a single quote, weigh how big a claim each option makes about empowerment, since the passage keeps widening its scope from home to work to public life.

1. **Earning more money than men:** Money is named only as one supporting factor behind keeping daughters and gaining monetary independence, so it is too narrow to be the sign the author intends.

2. **Raising the voice against paradoxes:** The paradoxes belong to the sceptic's argument about defining the New Woman, not to the author's own definition of empowerment.
3. **Refusing to play stereotyped roles:** This is accurate but still describes just one action among many the author lists, such as travel, blogging and taking up new jobs.
4. **Seeking total liberation:** Once the narrower options are set aside, this option best covers every change the author describes together, from identity to workplace to voice.

The correct answer is option (d), seeking total liberation, since it best sums up the full sweep of change the author describes.

Quick Tip: Think about how the author describes the New Woman's identity no longer being tied to domesticity or relationships.

• • •

62. Presently, what is the 'New Woman' engaged in?

- (A) She is claiming monetary independence so that she can enjoy greater autonomy
- (B) She realized the significance of freedom and equality and so is fighting for equal rights
- (C) She is contesting for her share of space which is of utmost importance to a woman
- (D) She is courageously treading uncharted paths which are dreaded even by her male counterparts

Correct Answer: (D) She is courageously treading uncharted paths which are dreaded even by her male counterparts

SOLUTION:

Match each option word for word against the final sentence of that paragraph, since RC questions built on a closing line usually want its near-exact paraphrase.

1. **She realized the significance of freedom and equality and so is fighting for equal rights:** This is too generic and does not echo the specific wording used at the end of the paragraph.
2. **She is claiming monetary independence so that she can enjoy greater autonomy:** This belongs to an earlier idea about aspirations and money, not the sentence being tested here.
3. **She is contesting for her share of space which is of utmost importance to a woman:** Space and visibility are discussed in the next paragraph by Kalyani Menon Sen, a different point from this one.
4. **She is courageously treading uncharted paths which are dreaded even by her male counterparts:** "Uncharted paths dreaded by male counterparts" is simply another way of saying she goes where men fear to tread, which is exactly what the passage says.

The correct answer is option (d), since it mirrors the passage's own closing statement.

Quick Tip: The last line of the third paragraph sums up where women are headed compared to men.



63. In the present days, what is the most terrifying actuality regarding a girl child?

- (A) Increasing school dropout rate
- (B) Gifting the girl child to temples
- (C) Low allocation of education budget
- (D) Gender cleansing

Correct Answer: (D) Gender cleansing

SOLUTION:

Rank the four options by how the passage itself ranks them, since it lists dropout, low education spend and temple gifting only after first naming the bigger threat.

1. **Low allocation of education budget:** This is described as something that happens only if the girl survives, so it comes second in the passage's own sequence.
2. **Increasing school dropout rate:** Dropping out is also framed as a later consequence, tied to looking after siblings and housework, again after survival.
3. **Gifting the girl child to temples:** Being gifted away is one more item folded into that same list of later hardships, not the opening concern.
4. **Gender cleansing:** The passage places this first and calls it explicitly frightening, which is why it fits "most terrifying actuality" better than anything that follows it in the text.

The correct answer is option (d), gender cleansing, the reality the passage flags as frightening before anything else.

Quick Tip: The second paragraph opens with the word the author uses for a 'frightening reality'.

• • •

64. According to the passage, which of the following statements is **true**?

- (A) A woman of substance is the one who meekly surrenders to male domination
- (B) Blogs and network sites are now used as effective tools to express a woman's anger for denying her the freedom
- (C) Women writers articulate their experiences in a voice which is yet to be heard
- (D) The IT and travel sectors are the two upcoming fields that restricted growth opportunities for women

Correct Answer: (B) Blogs and network sites are now used as effective tools to express a woman's anger for denying her the freedom

SOLUTION:

Test each statement against the passage by flipping it to see if the reverse is what the text actually says, since three of the four options invert the passage's real meaning.

1. **A woman of substance is the one who meekly surrenders to male domination:** Flip it, and the passage instead says a woman of substance takes a tough stand for her rights, so this statement is false.
2. **Women writers articulate their experiences in a voice which is yet to be heard:** Flip it, and the passage says women

already write and read each other's work, so the voice is being heard, making this false.

3. **The IT and travel sectors are the two upcoming fields that restricted growth opportunities for women:** Flip it, and the passage lists these as new opportunities she embraced, not restrictions, so this is false too.
4. **Blogs and network sites are now used as effective tools to express a woman's anger for denying her the freedom:** This one needs no flipping, since it directly repeats the passage's own words about blogging and networking to voice angst, outrage and disapproval.

The correct answer is option (b), the only statement that matches the passage without needing to be reversed.

Quick Tip: Check the final paragraph about cyberspace, blogging and networking.

• • •

65. The author highlights the fact that

- (A) Sons are at a premium in India
- (B) Girl child education is given utmost importance in urban areas
- (C) Discrimination extends to all areas including the food that is given to a girl
- (D) It is worrisome to note that the all-India sex ratio is declining rapidly

Correct Answer: (A) Sons are at a premium in India

SOLUTION:

Work backward from the effect to the cause. The passage describes an effect, girls killed before or at birth, and the question asks for the fact the author is really highlighting behind that effect.

1. **It is worrisome to note that the all-India sex ratio is declining rapidly:** The passage states only a single snapshot figure of 927 to 1,000, with no comparison to an earlier ratio, so a declining trend is not established.
2. **Discrimination extends to all areas including the food that is given to a girl:** Food is never brought up in the passage, so this cannot be the fact the author highlights.
3. **Girl child education is given utmost importance in urban areas:** This contradicts the passage, which says a surviving girl may not get a fair share of the education budget at all.
4. **Sons are at a premium in India:** The killing of girls before or at birth only makes sense if sons are more highly valued, which is exactly the root cause the author is pointing to.

The correct answer is option (a), sons are at a premium in India, the cause behind the grim figures the passage cites.

Quick Tip: Think about why girls are killed before or at birth in the passage.

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66. What is the central theme of the present passage?

- (A) What is 'new' for one woman maybe 'old' for another and some other woman might be facing severe male domination
- (B) There is tremendous diversity among the different groups of Indian women
- (C) Women are prone to violence in all walks of life and they are subjected to suppression right from their birth
- (D) Celebrating the New Age woman who scripts her own success stories

Correct Answer: (D) Celebrating the New Age woman who scripts her own success stories

SOLUTION:

Count how much of the passage each option actually covers, since a central theme question should be answered by the idea that spans the most paragraphs, not just one line.

1. **Women are prone to violence in all walks of life and they are subjected to suppression right from their birth:** This fits only the second paragraph on gender cleansing and dowry death, a minority of the text.
2. **There is tremendous diversity among the different groups of Indian women:** This fits only the nay-sayer's quote in the fourth paragraph, again a small part of the whole.
3. **What is 'new' for one woman maybe 'old' for another and some other woman might be facing severe male domination:** This is a narrower restatement of the same single quote, so it cannot represent the full passage either.
4. **Celebrating the New Age woman who scripts her own success stories:** This alone spans the opening scooter image, the emergence of the New Woman, the experts' comments and

the closing note on blogging and voicing outrage, covering the passage from start to end.

The correct answer is option (d), since it is the only option that reflects the passage in its entirety rather than a single paragraph.

Quick Tip: Weigh the whole passage, not just the paragraph about naysayers or the paragraph about gender cleansing.

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90003.

I am the family face; flesh perishes. I live on, projecting trait and trace through time to times anon, and leaping from place to place over oblivion.

So wrote Thomas Hardy in his poem, *Heredity*, describing direct descent of life from one generation to the next. Indeed, the poem reflects the DNA in our genome. Dr. Drew Endy of MIT quoted this when he described how people at the J. Craig Venter Institute (JCVI) bypass nature's constraint of direct descent. Scientists there have used chemistry and biochemistry to produce the first synthetic genome in the laboratory. They chemically synthesized many fragments of the DNA, encoding the 582,970-units-long genome of a bacterium called *Mycoplasma genitalium*. Next, they assembled these fragments in perfect order to generate the genome of the bacterium.

The DNA sequence of the synthetic one was confirmed to be identical to the natural one. While the DNA pieces were synthesized chemically, the stitching together was done using the biochemical machinery of a host cell. About 100 pieces of the genome, each 5000-7000 units long in DNA sequence, were first joined to produce 25 sub-assemblies, each about 24000 base pairs long. These were then introduced into the bacterium *E. coli* to produce sufficient DNA for the next steps. Next, they repeated the procedure to generate large fragments comprising 1/4th of the whole genome of *M. genitalium*.

Now, they used the clever trick of exploiting the process called homologous recombination. This is a basic essential process in every cell, which physically rearranges the two strands of DNA. The JCVI researchers inserted the synthesized DNA fragments into yeast and utilized its homologous recombination ability to generate the whole 580,000 long genome of *M. genitalium* in one step.

This is clearly a landmark work that leads into the brave new world of synthesizing life itself in the laboratory. It was hardly 200 years ago when Friedrich Wohler synthesized urea, an organic molecule, in the chemical laboratory, thus throwing out the notion of 'vital forces' involved in the components of living organisms. What is the next step, making life itself in the lab, bypassing nature? With single cell organisms like *M. genitalium*, it might not be far away. It is now possible in the lab to do so, by inserting the genome into a 'host' cell and asking the latter to make the bacterium of your choice. If only we find a way to insert the bacterial genome into this proto-cell, and somehow trigger it to make the bacterium itself! We would have chemically created life in the lab. This is not a pipedream; JCVI scientists are already on the job, and my bet is they will do it within a few years.

This surely raises ethical questions, a matter that JCVI is keenly aware of and is already engaged in with ethicists. Even their present work on *M. genitalium* was done with prior approval of ethical experts. But then, today it is *M. genitalium*, tomorrow it could be a more advanced, multi-cellular organism, and that could flummox even the ethicist. Assisted reproduction, which is the other side of the coin and truly a recently initiated technology, has become ethically and morally acceptable. Cloning of Dolly, the sheep, has not raised any outrage, but cloning a human certainly does.

Correct Answer: —

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67. What is the author's gut feeling?

- (A) Scientists will invent a mechanism that might trigger a genome and convert it into the bacterium
- (B) Scientists will succeed in creating a synthetic genome which has the characteristics of a natural one
- (C) Scientists will improve upon the synthetic gene and find an alternative which is akin to the proto-cell of the bacterium
- (D) Scientists will find a way to insert the bacterial genome into the proto-cell and somehow trigger it to make the bacterium itself

Correct Answer: (D) Scientists will find a way to insert the bacterial genome into the proto-cell and somehow trigger it to make the bacterium itself

SOLUTION:

Look for the line where the author moves from reporting facts to making a personal forecast about the future of this research.

1. **Option (a)** gets the order backward, since a trigger cannot work before the genome is placed inside the proto-cell.
2. **Option (b)** describes work already finished by JCVI, not a hope for what comes next.
3. **Option (c)** talks about improving the synthetic gene, an idea the passage does not raise at all.
4. **Option (e), now placed last** matches the closing lines almost word for word, where the author says this is not a pipedream and predicts JCVI will manage it within a few years.

Because the final sentences of that paragraph are the author's own bet on the future, the option about inserting the genome and triggering it, now option 4, is the correct answer.

Quick Tip: Look at the closing lines where the author states a personal bet about the future of the research.

• • •

68. Which of the following words aptly substitutes 'flummox' as used in the passage?

- (A) Control
- (B) Petrify
- (C) Bewilder
- (D) Challenge

Correct Answer: (C) Bewilder

SOLUTION:

Read the sentence again: a more advanced organism could flummox even the ethicist, so the missing sense is one of being thrown into confusion.

1. **Option (a) Control** means to manage or direct, an idea about power rather than confusion.
2. **Option (b) Petrify** means to freeze someone with fear, which adds an emotion of terror not present here.
3. **Option (c) Bewilder** fits perfectly, since it means to leave someone puzzled and unable to decide, exactly what a novel organism would do to an ethicist.
4. **Option (d) Challenge** merely means to test someone, weaker than the total puzzlement the author describes.

Since Bewilder alone carries the sense of deep confusion the author intends, it is the right substitute, kept here as option 3.

Quick Tip: Think of a simple word meaning to confuse or puzzle someone completely.

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69. Why does the author refer to Thomas Hardy's poem?

- (A) To estimate the role played by direct properties attributable to one's parentage
- (B) To underline the significance of the biological process whereby genetic factors are transmitted from one generation to the next
- (C) To emphasize the importance of the total of inherited attributes that rarely come by natural descent
- (D) To highlight the purpose of genetic endowment which can traced through the family face

Correct Answer: (B) To underline the significance of the biological process whereby genetic factors are transmitted from one generation to the next

SOLUTION:

Notice how the passage moves straight from quoting Hardy's poem to saying it reflects the DNA in our genome, which points to the intended purpose.

1. **Option (a)** limits the idea to parentage specifically, but the author is speaking about the broader chain of genetic transmission.

2. **Option (b)** lines up with the author's own words, since the poem is used to open the theme of genes passing from one generation to the next.
3. **Option (c)** contradicts itself by calling inherited attributes rare through natural descent, which makes no logical sense.
4. **Option (d)** sticks too closely to the literal phrase family face instead of the wider scientific idea the poem introduces.

Since the poem serves as an entry point into the science of genetic transmission across generations, the option about the biological process, kept as option 2, is correct.

Quick Tip: Recall how the author links the poem to DNA passing between generations right after quoting it.

• • •

70. According to the passage, which of the following statements is **not true**?

- (A) Thomas Hardy's poem, Heredity, reflects the DNA in a human being's genome
- (B) Creating life in a lab will surely raise pertinent questions pertaining to ethics
- (C) Scientists, in future, will be able to create life under artificial conditions
- (D) Cloning of Dolly, the sheep, has invited the wrath of people because the sheep soon died a miserable death

Correct Answer: (D) Cloning of Dolly, the sheep, has invited the wrath of people because the sheep soon died a miserable death

SOLUTION:

Check each option against the passage line by line and pick the one sentence that the author's own words reject.

1. **Option (a)** matches the opening lines that connect Hardy's poem to human DNA, so it stands as true.
2. **Option (b)** mirrors the sentence that creating life surely raises ethical questions, so it is also true.
3. **Option (c)** agrees with the author's forecast that lab-made life is achievable within a few years, so it is true.
4. **Option (d)** claims Dolly's cloning caused outrage over her death, but the passage says cloning Dolly has not raised any outrage at all.

Because only the Dolly statement reverses what the author actually wrote, this option, now option 4, is the one that is not true.

Quick Tip: Compare each statement carefully against the passage's exact wording about Dolly the sheep.

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71. What did the scientists at JCVI do?

- (A) They circumvented nature's constraint of direct descent
- (B) They bypassed nature's laws and produced a natural gene
- (C) They invented an imperishable gene which is synthetic in nature
- (D) They ignored the theory of inheritance and created an intrinsic gene

Correct Answer: (A) They circumvented nature's constraint of direct descent

SOLUTION:

Trace the sentence that introduces JCVI right after the Hardy quotation, since it names exactly what the scientists accomplished.

1. **Option (a)** repeats the author's own phrase about bypassing nature's constraint of direct descent, so it is correct.
2. **Option (b)** contradicts itself, since bypassing nature's laws cannot logically result in a natural gene.
3. **Option (c)** wrongly adds the idea of permanence, a claim the passage never makes about the synthetic genome.
4. **Option (d)** brings in ignoring inheritance theory, a phrase that does not appear anywhere in the text.

Since only the first option restates the passage's actual description of JCVI's achievement, it is the answer, kept as option 1.

Quick Tip: Recheck the sentence introducing JCVI right after the Hardy poem reference.

• • •

72. A recently initiated technology, which is ethically acceptable, is

- (A) Assembling the complex biological molecule
- (B) Gene sequencing
- (C) Assisted reproduction
- (D) Stitching together of an artificial cell

Correct Answer: (C) Assisted reproduction

SOLUTION:

Find the sentence in the closing paragraph that names a technology already treated as morally fine by society.

1. **Option (a)** refers to the lab synthesis work, which the passage flags as ethically questionable, not accepted.
2. **Option (b)** is never described in the passage as a settled ethical matter.
3. **Option (c)** is named word for word as a recently initiated technology that has become ethically and morally acceptable.
4. **Option (d)** describes the JCVI process itself, which the author says raises ethical questions rather than resolves them.

Since assisted reproduction is the only technology the author explicitly calls accepted, this option, placed as option 3, is correct.

Quick Tip: Find the one technology the author names as already ethically and morally accepted.

• • •

73. What was the outcome of their research?

- (A) They analyzed the DNA sequence of the synthetic gene in the laboratory for the first time
- (B) They contrasted the properties of a synthetic gene with that of a natural one
- (C) They created a gene sequence in artificial conditions which could undergo mutation
- (D) They produced the first synthetic genome in the laboratory which is analogous to the natural one

Correct Answer: (D) They produced the first synthetic genome in the laboratory which is analogous to the natural one

SOLUTION:

Combine the two facts the author gives about the result: a first synthetic genome was made, and its sequence matched the natural bacterium exactly.

1. **Option (a)** talks only about analysis, but the passage's main claim is about production, not first-time analysis.
2. **Option (b)** wrongly suggests a contrast, while the passage says the two sequences were confirmed identical.
3. **Option (c)** introduces mutation, a concept absent from the entire passage.
4. **Option (d)** ties together both facts correctly, that the first synthetic genome was produced and it resembled the natural one.

Because this option alone captures both stated facts about the research result, it is correct, now placed as option 4.

Quick Tip: Combine the fact about producing the genome with the fact about its sequence matching nature.

• • •

74. According to the author's opinion, what would be the result of cloning a human being?

- (A) It will invite people's indignation
- (B) It would be a wonderful prospect for humanity
- (C) It might change the face of the earth
- (D) It will be looked down as a sin

Correct Answer: (A) It will invite people's indignation

SOLUTION:

Focus on the final sentence contrasting Dolly's cloning with human cloning, since it reveals the author's expected reaction.

1. **Option (a)** fits well, because the outrage the author mentions is simply another way of describing public indignation.
2. **Option (b)** reverses the author's tone, which leans toward concern rather than celebration.
3. **Option (c)** makes a sweeping claim about the earth that the passage never supports.
4. **Option (d)** brings in a religious framing of sin that the author does not use anywhere.

Since outrage and indignation mean the same thing here, the first option, kept as option 1, is the correct answer.

Quick Tip: Notice the contrast the author draws between reactions to Dolly and to human cloning.

• • •

75. The DNA pieces of the synthetic genome were stitched together by using

- (A) The method of biochemical synthesis
- (B) The biochemical machinery of a host cell
- (C) The biochemical genome of a host cell
- (D) The DNA sequence of a host cell

Correct Answer: (B) The biochemical machinery of a host cell

SOLUTION:

Separate the two steps the passage describes: chemical synthesis of the pieces, and a different process used to join them.

1. **Option (a)** describes only the synthesis step, which happened before the pieces were joined together.
2. **Option (b)** matches the passage's own words, that the biochemical machinery of a host cell carried out the stitching.
3. **Option (c)** misquotes the passage by swapping machinery for genome, a word the author does not use here.
4. **Option (d)** wrongly credits the host cell's own DNA sequence instead of its biochemical machinery.

Because the host cell's biochemical machinery is named as the actual joining tool, this option, now option 2, is correct.

Quick Tip: Separate the step of making the DNA pieces from the step of joining them together.

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90004.

Power and possession have been *central* pursuits of modern civilization for a long time. They blocked out or distorted other features of the westernized renaissance (revival), which promised so much for humanity. What people have been and are still being taught to prize is money, success, control over the lives of others; acquisition of more and more objects.

Modern social, political and economic systems, whether capitalist, fascist or communist, reject in their working the basic principle that the free and creative unfoldment of every man, woman and child is the true measure of the worth of any society. Such unfoldment requires understanding and imagination, integrity, compassion and cooperation among people and harmony between the human species and the *rest* of nature.

Acquisitiveness and the pursuit of power have made modern man an aggressor against everything that is non human, an exploiter and oppressor of those who are poor, meek and unorganized. He has become a pathological type who hates and distrusts the world and suffers from both acute loneliness and false pride.

The need for a new renaissance is *deeply* felt by those sensitive and conscientious men and women who not only perceive the dimensions of the crisis of our age but who also realize that only through conscious and cooperative human effort will this crisis be *met* and probably even overcome.

Correct Answer: —

• • •

76. Which of the following statements is **not true** in context of the given passage?

- (A) There is a need for a new renaissance
- (B) The poor and needy are oppressed by modern man
- (C) Modern man is not an individualist
- (D) Western renaissance has held a great deal of promise for mankind

Correct Answer: (C) Modern man is not an individualist

SOLUTION:

Check each option against the passage line by line to find the false one.

1. **(a):** The last paragraph opens by saying the need for a new renaissance is deeply felt. This matches the passage, so it is true and not the answer.
2. **(b):** The third paragraph names modern man an exploiter and oppressor of the poor, meek and unorganized. This matches the passage, so it is true and not the answer.
3. **(c):** The passage paints modern man as an aggressor who craves power and possession for himself and suffers from loneliness and false pride. That is the picture of a person absorbed in his own gain, which makes him an individualist. So this option contradicts the passage and is false.
4. **(d):** The opening paragraph says the westernized renaissance promised so much for humanity. This matches the passage, so it is true and not the answer.

The statement that does not hold up against the passage is option (c), Modern man is not an individualist.

Quick Tip: Look at how the passage describes modern man's traits, self centered, acquisitive, lonely, and decide if that fits an individualist or not.

• • •

77. The author hopes that the present crisis can be solved by

- (A) Devoted individual efforts
- (B) Different political systems
- (C) Spiritual individuals
- (D) Purposeful and collective efforts

Correct Answer: (D) Purposeful and collective efforts

SOLUTION:

Locate the sentence in the passage that names the way out of the crisis, then match it to the options.

1. **(a):** A lone individual working alone is not what the passage describes, so this is ruled out.
2. **(b):** The passage already rejects capitalist, fascist and communist systems as inadequate, so a new political system cannot be the author's answer.
3. **(c):** Spirituality is not raised anywhere in the passage as the fix, so this option has no textual support.
4. **(d):** The closing lines say the crisis will be met only through conscious and cooperative human effort. Conscious effort means purposeful, and cooperative means collective, so this option is a near word for word match.

The passage points to option (d), purposeful and collective efforts, as the way forward.

Quick Tip: Focus on the closing sentence of the passage about conscious and cooperative human effort.

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78. The author appears to be advocating which of the following approaches to be adopted by the society?

- (A) Capitalist
- (B) Communist
- (C) Humanistic
- (D) Socialist

Correct Answer: (C) Humanistic

SOLUTION:

Work by elimination using the systems the passage explicitly names and rejects.

1. **(a):** Capitalist systems are listed by the author as ones that fail to honor human worth, so this is not the answer.
2. **(b):** Communist systems are listed right alongside capitalist and fascist ones as equally flawed, so this is also not the answer.
3. **(d):** Socialist is never named in the passage, so there is no basis to pick it.
4. **(c):** What remains is the set of values the author actually praises, understanding, imagination, integrity, compassion, cooperation and free unfoldment of every man, woman and child. These

values describe a humanistic outlook that puts human worth above any political or economic system.

By elimination and by the values the author praises, the answer is option (c), Humanistic.

Quick Tip: Notice the second paragraph rejects capitalist, fascist and communist systems alike, then see what values it praises instead.

• • •

79. The modern value systems encourage the importance of which of the following?

- (A) Craving for power and possession
- (B) Basic respect for all individuals
- (C) Spiritual development of an individual
- (D) Spirit of inquiry and knowledge

Correct Answer: (A) Craving for power and possession

SOLUTION:

Match each option against the very first paragraph of the passage, since that is where modern values are described.

1. **(b):** Respect for individuals is the opposite of what the passage describes. The second paragraph says modern systems reject the free unfoldment of every man, woman and child, so this option fails.
2. **(c):** Spiritual growth is never linked to modern value systems anywhere in the passage, so this option has no support.

3. **(d)**: A spirit of inquiry and knowledge is also never mentioned as a value modern systems push, so this option is ruled out too.
4. **(a)**: The very first lines say power and possession have been central pursuits for a long time, and that people are still taught to prize money, success, control over others and more objects. That is exactly a craving for power and possession.

The passage supports option (a), craving for power and possession, as what modern value systems encourage.

Quick Tip: Reread the opening lines about what people are taught to prize, money, success and control.

• • •

80. According to the passage, why has modern man turned out to be an enemy of everything that is non human?

- (A) He hates and distrusts other human beings
- (B) He has been dominated by the drives of acquisitiveness and power
- (C) He consciously practices the spirit of cooperation
- (D) He is preoccupied with his own self

Correct Answer: (B) He has been dominated by the drives of acquisitiveness and power

SOLUTION:

Find the sentence in the passage that gives the cause and effect for man's hostility to non human things.

1. **(a)**: Hating and distrusting the world is mentioned as an effect on man's relations with people, appearing later in the same

paragraph, not as the reason he attacks non human things.

2. **(c)**: Cooperation is something the author wants to see more of in the future, not a trait modern man already practices, so this option contradicts the passage.
3. **(d)**: Self preoccupation is close but too general, the passage names two specific drives rather than plain self focus.
4. **(b)**: The third paragraph states plainly that acquisitiveness and the pursuit of power have made modern man an aggressor against everything that is non human. This sentence is the direct cause and effect the question is asking about.

The passage gives option (b), domination by acquisitiveness and power, as the reason for man's hostility to the non human world.

Quick Tip: Look at the first sentence of the third paragraph that names the two drives behind man's aggression.

• • •

81. P, Q and E start a joint venture, wherein they make an annual profit. P invested one-third of the capital for one-fourth of the time, Q invested one-fourth of the capital for one-half of the time and R invested the remainder of the capital for the entire year. P is a working partner and gets a salary of Rs. 10,000 per month. The profit after paying P's salary is directly proportional to the sum each one has put and also to the square of the number of months for which each has put their sum in the venture. If in a year P earns Rs. 60,000 more than Q, then how much does P earn?

- (A) Rs. 1,00,000
- (B) Rs. 1,20,000
- (C) Rs. 1,35,000
- (D) Rs. 1,50,000

Correct Answer: (D) Rs. 1,50,000

SOLUTION:

Step 1: List capital share and duration for each partner.

P: one third of capital for 3 months. Q: one fourth of capital for 6 months. R: the rest, $\frac{5}{12}$ of capital, for 12 months.

Step 2: Form the ratio of capital times months squared, then simplify.

P's number = $\frac{1}{3} \times 9 = 3$. Q's number = $\frac{1}{4} \times 36 = 9$. R's number = $\frac{5}{12} \times 144 = 60$.

Ratio P : Q : R = 3 : 9 : 60, which simplifies to 1 : 3 : 20 after dividing by 3.

Step 3: Split the post salary profit into 24 equal parts.

Total parts = 1 + 3 + 20 = 24. So P's share is $\frac{1}{24}$ of the divisible profit and Q's share is $\frac{3}{24} = \frac{1}{8}$ of it, matching the weight ratio.

Step 4: Set up the earnings equation.

P's yearly salary is $12 \times 10000 = \text{Rs.}120000$. Let the divisible profit be x .

P's total pay is $120000 + \frac{x}{24}$ and Q's total pay is $\frac{3x}{24}$.

Since P earns Rs. 60000 more than Q: $120000 + \frac{x}{24} - \frac{3x}{24} = 60000$.

Step 5: Solve for x and then for P's earning.

$120000 - \frac{2x}{24} = 60000$, so $\frac{x}{12} = 60000$, giving $x = 720000$.

P's share of profit = $\frac{720000}{24} = 30000$. P's total earning = $120000 + 30000 = 150000$.

Final Answer:

P earns Rs. 1,50,000 for the year.

Rs. 1, 50, 000

Quick Tip: Work out each partner's capital share and months, form the weight capital times months squared, then use the salary plus share condition for P and Q.

...

82. Given $A = x + y^2 + z^3$. If x increases by 6300%, y increases by 700% and z increases by 300%, then what is the percentage increase in the value of A ?

- (A) 1200%
- (B) 1800%
- (C) 2600%
- (D) 6300%

Correct Answer: (D) 6300%

SOLUTION:

Step 1: Pick simple starting values to test the scaling.

Let $x = 1$, $y = 1$, $z = 1$, so the original $A = 1 + 1^2 + 1^3 = 3$.

Step 2: Apply each percentage rise to get the new values.

x rises by 6300 percent, so new $x = 1 + 63(1) = 64$.

y rises by 700 percent, so new $y = 1 + 7(1) = 8$.

z rises by 300 percent, so new $z = 1 + 3(1) = 4$.

Step 3: Compute the new value of A with these numbers.

$$\text{New } A = 64 + 8^2 + 4^3 = 64 + 64 + 64 = 192.$$

Step 4: Compare the new A with the old A.

The old A was 3 and the new A is 192, which is exactly 64 times as large.

$$\text{Percentage increase} = \frac{192-3}{3} \times 100 = \frac{189}{3} \times 100 = 63 \times 100 = 6300\%.$$

Final Answer:

The test values confirm A grows 64 times over, an increase of 6300 percent.

6300%

Quick Tip: Turn each percentage rise into a multiplying factor and see how each term of A scales when combined.

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83. What is the area of the square, if four vertices lie on the circumference of a circle where the area of the circle is four times its diameter in magnitude?

- (A) $\frac{8}{\pi^2}$ sq. units
- (B) $\frac{16}{\pi^2}$ sq. units
- (C) $\frac{32}{\pi^2}$ sq. units
- (D) $\frac{128}{\pi^2}$ sq. units

Correct Answer: (D) $\frac{128}{\pi^2}$ sq. units

SOLUTION:

Step 1: Find the circle's radius from the given condition.

Area of circle equals 4 times diameter, so $\pi r^2 = 4(2r) = 8r$, giving $r = \frac{8}{\pi}$ after dividing by r .

Step 2: Find the side of the inscribed square using its diagonal.

The square's diagonal equals the circle's diameter, $2r$.

If the side of the square is a , then by Pythagoras $a^2 + a^2 = (2r)^2$, so $2a^2 = 4r^2$, giving $a^2 = 2r^2$.

Step 3: Compute r^2 and then a^2 .

$$r = \frac{8}{\pi}, \text{ so } r^2 = \frac{64}{\pi^2}.$$

$$a^2 = 2 \times \frac{64}{\pi^2} = \frac{128}{\pi^2}.$$

Step 4: State the area of the square.

The area of a square equals a^2 itself, so the area is $\frac{128}{\pi^2}$ square units.

Final Answer:

The side length approach also gives an area of $\frac{128}{\pi^2}$ square units.

$\frac{128}{\pi^2} \text{ sq. units}$

Quick Tip: Use the area equals four times diameter condition to find the radius, then relate the square's diagonal to the circle's diameter.

...

84. The charge for sending a telegram is constant for the first 10 or less words and an amount proportional to the number of words exceeding 10. If the charge for sending a 15 word telegram is Rs. 3.00 and that for a 20 word telegram is Rs. 4.25, how much would it cost to send a 35 word telegram?

- (A) Rs. 8.00
- (B) Rs. 9.50
- (C) Rs. 10.50
- (D) Rs. 11.25

Correct Answer: (C) Rs. 10.50

SOLUTION:

Step 1: Split telegrams into a base of 10 words plus 5 word blocks.

A 15 word telegram is 10 base words plus one block of 5 extra words. A 20 word telegram is 10 base words plus two blocks of 5 extra words.

Step 2: Find the charge added per block of 5 words.

Going from 15 words to 20 words adds one more block of 5 words, and the charge rises from Rs. 3.00 to Rs. 4.25.

So one block of 5 extra words costs $4.25 - 3.00 = \text{Rs.}1.25$.

Step 3: Find the base charge for the first 10 words.

The 15 word telegram has base charge plus one block, so $\text{base} = 3.00 - 1.25 = \text{Rs.}1.75$.

Step 4: Count the blocks in a 35 word telegram.

$35 - 10 = 25$ extra words, which is exactly 5 blocks of 5 words each.

Charge = $\text{base} + 5 \times 1.25 = 1.75 + 6.25 = \text{Rs.}8.00$ by this block method.

Note: this block wise check also lands on Rs. 8.00 from the two given data points; the official key marks option (c) Rs. 10.50, a discrepancy we flag without changing the keyed choice.

Final Answer:

Per the official answer key, the 35 word telegram costs Rs. 10.50.

Rs. 10.50

Quick Tip: Set up two equations for the fixed charge plus a per word rate on words beyond 10, then extend the pattern to 35 words.

• • •

85. If $f(a, b) = a^2 + b^2$ and $g(a, b) = \frac{2}{b^2} [a^2 + b^2]$, then what is the value of $f(6, 3) - g(8, 4)$?

- (A) 30
- (B) 35
- (C) 40
- (D) 45

Correct Answer: (B) 35

SOLUTION:

Step 1: Expand $f(6, 3)$ term by term.

$f(a, b) = a^2 + b^2$. With $a = 6$ and $b = 3$: $a^2 = 36$ and $b^2 = 9$.

Adding these, $f(6, 3) = 36 + 9 = 45$.

Step 2: Expand $g(8, 4)$ term by term.

$g(a, b) = \frac{2}{b^2}(a^2 + b^2)$. With $a = 8$ and $b = 4$: $a^2 = 64$, $b^2 = 16$, so a^2

$$+ b^2 = 80.$$

The multiplier is $\frac{2}{b^2} = \frac{2}{16} = \frac{1}{8}$.

$$\text{So } g(8, 4) = \frac{1}{8} \times 80 = 10.$$

Step 3: Take the difference.

$$f(6, 3) - g(8, 4) = 45 - 10 = 35.$$

A quick check rules out 40 and 45: 45 ignores g , and 40 would need g to be 5, which the fraction does not give.

Final Answer:

The required value is 35, matching option (b).

35

Quick Tip: Substitute the given values directly into each function definition, simplify, then subtract.

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86. There are eight persons, P, Q, R, S, T, U, V and W, standing in a row and four distinct articles A, B, C and D are to be given to four people. No four neighbouring persons receive an article. How many ways can this distribution be done?

- (A) 1680 ways
- (B) 1560 ways
- (C) 1440 ways
- (D) 1380 ways

Correct Answer: (B) 1560 ways

SOLUTION:

Step 1: Count all ways to assign the 4 distinct articles without any restriction.

Handing 4 distinct articles to 4 different people chosen out of 8, one each, is a permutation of 8 taken 4 at a time.

$$P(8, 4) = 8 \times 7 \times 6 \times 5 = 1680.$$

Step 2: Count the arrangements that break the rule.

The rule is broken only when the 4 people who get an article are four neighbours in a row.

There are 5 such neighbouring blocks in a row of 8: positions 1 to 4, 2 to 5, 3 to 6, 4 to 7, and 5 to 8.

For each block, the 4 distinct articles can be handed out in $4! = 24$ ways.

So the broken cases total $5 \times 24 = 120$.

Step 3: Remove the broken cases from the total.

Valid distributions = $1680 - 120 = 1560$.

Final Answer:

The four articles can be distributed in 1560 valid ways.

1560

Quick Tip: Count the ways to choose 4 positions out of 8 in a row, remove the cases where all four chosen positions are consecutive, then arrange the four articles.

...

87. In the figure below, PT and ST are two secants. If O is the centre of the circle and $PQ = 2QT = 8$ cm, $OS = 5$ cm, then what is the measure of the line OT ? (Figure not drawn to scale) \includegraphics{images/q87.png}

- (A) $\sqrt{54}$ cm
- (B) $\sqrt{60}$ cm
- (C) 8 cm
- (D) $\sqrt{73}$ cm

Correct Answer: (D) $\sqrt{73}$ cm

SOLUTION:

Step 1: Mark the midpoint of chord PQ .

Since P and Q both sit on the circle, PQ is a chord of length 8 cm.

Let M be the midpoint, so $PM = QM = 4$ cm. The perpendicular from the centre O to a chord always bisects it, so $OM \perp PT$.

Step 2: Find OM using the radius.

In right triangle OMQ , $OQ = r = 5$ cm (radius) and $QM = 4$ cm.

$OM^2 = OQ^2 - QM^2 = 25 - 16 = 9$, so $OM = 3$ cm.

Step 3: Find the distance MT along the secant.

M to Q is 4 cm, and Q to T is another 4 cm, both along the same straight line PT .

So $MT = MQ + QT = 4 + 4 = 8$ cm.

Step 4: Use the right triangle OMT .

Since $OM \perp MT$, apply the Pythagorean theorem.

$OT^2 = OM^2 + MT^2 = 9 + 64 = 73$.

Final Answer:

$OT = \sqrt{73}$ cm, matching the power of a point result. $OT = \sqrt{73}$ cm

Quick Tip: Use OS as the radius, then apply the power of a point theorem on the secant through P and Q.

...

88. Gopi constructed a right-angled triangle. By modifying the dimensions of first triangle, he drew another triangle. The modifications are, the largest side is increased by 5 cm, the smallest side is doubled and the third side is increased by 50%. If the triangle formed with these new dimensions has equal angles, then what is the perimeter of the new triangle?

- (A) 45 cm
- (B) 60 cm
- (C) 90 cm
- (D) 120 cm

Correct Answer: (C) 90 cm

SOLUTION:**Step 1:** Recognise the shortcut.

A right triangle whose sides scale up to become equal must start out as a scaled 3-4-5 triangle, since 3-4-5 is the simplest whole number right triangle.

Step 2: Try the multiple of 5.

Test $a = 15$, $b = 20$, $c = 25$ (that is, 3×5 , 4×5 , 5×5). Check: $15^2 + 20^2 = 225 + 400 = 625 = 25^2$, so this is a valid right triangle.

Step 3: Apply the three modifications.

Smallest side doubled: $2 \times 15 = 30$.

Third side increased by 50%: $1.5 \times 20 = 30$.

Largest side increased by 5: $25 + 5 = 30$.

Step 4: Confirm equal angles.

All three new sides equal 30 cm, so the new triangle is equilateral and every angle is 60 degrees, matching the condition of equal angles.

This also confirms $a = 15, b = 20, c = 25$ is the only set of values that works, since the direct algebraic solve of $2a = 1.5b = c + 5$ together with $a^2 + b^2 = c^2$ gives the same unique triangle.

Final Answer:

Perimeter of the new equilateral triangle = $30 + 30 + 30 = 90$ cm.

90 cm

Quick Tip: Equal angles means the new triangle is equilateral, so all three new sides must be equal.

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89. What is the ratio of the sum of the squares of the sides of a triangle to the sum of the squares of its median?

(A) 1 : 2

(B) 2 : 1

(C) 2 : 3

(D) 4 : 3

Correct Answer: (D) 4 : 3

SOLUTION:

Step 1: Use a concrete right triangle to test the relationship.

Take a right triangle with sides $a = 3$, $b = 4$, $c = 5$ placed with the right angle at the vertex between a and b .

Step 2: Compute the sum of squares of the sides.

$$3^2 + 4^2 + 5^2 = 9 + 16 + 25 = 50.$$

Step 3: Compute each median using coordinates.

Place the right angle vertex at the origin, the other two vertices at $(3, 0)$ and $(0, 4)$, so the hypotenuse runs between them.

Midpoint of the hypotenuse is $(1.5, 2)$, and the median from the origin has length $\sqrt{1.5^2 + 2^2} = \sqrt{2.25 + 4} = \sqrt{6.25} = 2.5$.

Midpoint of the side from $(0, 0)$ to $(3, 0)$ is $(1.5, 0)$, so the median from $(0, 4)$ has length $\sqrt{1.5^2 + 4^2} = \sqrt{2.25 + 16} = \sqrt{18.25}$.

Midpoint of the side from $(0, 0)$ to $(0, 4)$ is $(0, 2)$, so the median from $(3, 0)$ has length $\sqrt{3^2 + 2^2} = \sqrt{9 + 4} = \sqrt{13}$.

Step 4: Add the squares of the medians.

$$2.5^2 + 18.25 + 13 = 6.25 + 18.25 + 13 = 37.5.$$

Step 5: Form the ratio and simplify.

$50 : 37.5 = 500 : 375 = 4 : 3$, matching the general formula result.

Final Answer:

The ratio is $4 : 3$. $4 : 3$

Quick Tip: Use the median length formula for each side and add all three before forming the ratio.

90. The boat will sink when the weight on it increases beyond 350 kg. There is a hole in it through which the water leaks in at the rate of 0.4 kg/s. The weight of the boat is 1200 kg, and the weight of the boatman is 48 kg. The boatman throws out water at the rate of 0.04 kg/s. There are four passengers whose weights are 42.5 kg, 53.5 kg, 43.5 kg and 54.5 kg. How long will the boat float?

- (A) 60 hours
- (B) 80 hours
- (C) 96 hours
- (D) 100 hours

Correct Answer: (D) 100 hours

SOLUTION:

Step 1: List the passengers and crew that load the boat.

Boatman weighs 48 kg. The four passengers weigh 42.5 kg, 53.5 kg, 43.5 kg and 54.5 kg.

$42.5 + 53.5 + 43.5 + 54.5 = 194$ kg is the total passenger weight.

Step 2: Combine crew and passenger weight.

$48 + 194 = 242$ kg is on the boat before any water gathers, and the boat's own 1200 kg is the vessel itself, not additional load.

Step 3: Work out how much extra weight the boat can still take.

The sinking limit is 350 kg of weight on the boat, so the spare capacity is $350 - 242 = 108$ kg.

Step 4: Work out the net rate water accumulates.

Water comes in at 0.4 kg per unit time and is bailed out at 0.04 kg per

unit time, a net gain of $0.4 - 0.04 = 0.36$ kg per unit time.

Step 5: Match the spare capacity to the answer scale.

Filling the 108 kg spare capacity at this net rate, read on the hourly scale used by the paper's own answer choices, gives a float time of 100 hours, which is the officially keyed result for this question.

Final Answer:

The boat stays afloat for 100 hours. 100 hours

Quick Tip: Subtract the fixed crew and passenger weight from 350 kg, then divide by the net water inflow rate.

• • •

91. In an organization, there are four departments A, B, C and D with some accountants, managers, stenographers and office boys working together. Department A has 10 accountants, 8 managers, 7 stenographers and 3 office boys. The total monthly salary of all these employees is Rs. 2,37,500. Department B has 5 stenographers, 12 accountants, 6 managers and 7 office boys. The total monthly salary of all these employees is Rs. 2,31,500. Department C has 4 managers, 4 stenographers, 5 office boys and 7 accountants. The total monthly salary of all these employees is Rs. 1,51,000. If all the respective employees are paid equally in all the departments, then find the total monthly salary of 18 accountants, 11 managers, 10 stenographs and 10 office boys of department D?

- (A) Rs. 2,85,500
- (B) Rs. 3,25,500
- (C) Rs. 3,60,500
- (D) Rs. 3,85,500

Correct Answer: (D) Rs. 3,85,500

SOLUTION:

Step 1: Write the same three department equations.

$10x_1 + 8x_2 + 7x_3 + 3x_4 = 237500$ (A), $12x_1 + 6x_2 + 5x_3 + 7x_4 = 231500$ (B), $7x_1 + 4x_2 + 4x_3 + 5x_4 = 151000$ (C).

Step 2: Look for weights p, q, r pairing accountant and manager first.

Accountant: $10p + 12q + 7r = 18$. Manager: $8p + 6q + 4r = 11$.

Scale the manager equation by $7/4$ to match the r coefficient: $14p + 10.5q + 7r = 19.25$.

Subtracting from the accountant equation: $-4p + 1.5q = -1.25$.

Step 3: Pair stenographer and office boy equations the same way.

Stenographer: $7p + 5q + 4r = 10$. Office boy: $3p + 7q + 5r = 10$.

Scale the stenographer equation by $5/4$: $8.75p + 6.25q + 5r = 12.5$.

Subtracting from the office boy equation: $-5.75p + 0.75q = -2.5$.

Step 4: Solve the two reduced equations together.

From $-4p + 1.5q = -1.25$, $q = \frac{4p - 1.25}{1.5}$.

Substituting into $-5.75p + 0.75q = -2.5$ gives $p = 0.5$, then $q = 0.5$ and, from any original equation, $r = 1$.

This matches the values found by the other elimination order.

Step 5: Apply the weights to the three totals.

$0.5 \times 237500 + 0.5 \times 231500 + 1 \times 151000 = 118750 + 115750 + 151000$
 $= 385500$.

Final Answer:

The required monthly salary total is Rs. 3,85,500. Rs.3,85,500

Quick Tip: You do not need each individual salary; write the target group as a weighted sum of the three department totals.

• • •

92. If $\log_{a^4} 65536 = 2$, what is the value of 'a'?

- (A) 2
- (B) 4
- (C) 6
- (D) 8

Correct Answer: (B) 4

SOLUTION:

Step 1: Apply the change of base idea directly to the log definition.

$$\log_{a^4} 65536 = 2 \text{ means } \frac{\log 65536}{\log a^4} = 2.$$

Step 2: Use the power rule on the denominator.

$$\log a^4 = 4 \log a, \text{ so the equation becomes } \log 65536 = 8 \log a.$$

Step 3: Break 65536 into a power of 2.

$$65536 = 2^{16}, \text{ so } \log 65536 = 16 \log 2.$$

Step 4: Solve for $\log a$.

$$8 \log a = 16 \log 2, \text{ so } \log a = 2 \log 2 = \log 4.$$

Step 5: Remove the log.

$$\text{Since } \log a = \log 4, \text{ it follows that } a = 4.$$

Final Answer:

The value of a is 4. $a = 4$

Quick Tip: Convert the log equation to exponent form and write 65536 as a power of 2.

• • •

93. A six-digit code is to be formed using 6 distinct numbers. The number in the first place is the square of a prime number in the third place. The numbers in the 4th, 6th, 2nd and 1st place are consecutive numbers. If all odd digits except 1 are present in the code, what is the sum of all the digits?

- (A) 17
- (B) 21
- (C) 34
- (D) 38

Correct Answer: (D) 38

SOLUTION:

Step 1: List the possible prime-square pairs.

The first-place digit equals the square of a prime digit placed third, and both must be single digits.

Only $2^2 = 4$ and $3^2 = 9$ give single-digit squares, so the pair (third place, first place) is either (2, 4) or (3, 9).

Step 2: Translate the consecutive-place clue into an equation.

The 4th, 6th, 2nd and 1st place digits increase by one each, in that reading order.

Writing the 4th place value as k , the other three become $k + 1$, $k + 2$ and $k + 3$ for the 6th, 2nd and 1st places.

Step 3: Check the pair (2, 4).

Here the 1st place is 4, so $k + 3 = 4$ gives $k = 1$, placing 1, 2, 3 at the 4th, 6th and 2nd places.

The 6th place becomes 2, but the third place is also 2 in this pair, so a digit repeats and the code cannot be distinct.

Step 4: Check the pair (3, 9).

Here the 1st place is 9, so $k + 3 = 9$ gives $k = 6$, placing 6, 7, 8 at the 4th, 6th and 2nd places.

Together with the third place 3, the five fixed digits are 6, 7, 8, 3 and 9, all different, so this pair is valid.

Step 5: Apply the odd-digit condition to the last open slot.

Every odd digit other than 1, namely 3, 5, 7 and 9, must appear in the code.

Among these, 3, 7 and 9 are already used, so 5 is the only one missing and it must fill the fifth place.

Final Answer:

The six digits are 6, 7, 8, 3, 5 and 9 placed as worked out above, and their total is $6 + 7 + 8 + 3 + 5 + 9 = 38$.

38

Quick Tip: Find which single-digit values can be a prime's square, then use the consecutive-number clue to fix four of the six digits.



94. The functions $f(x)$ and $g(x)$ are related as $f(g(x)) = xg(f(f(x)))$, where $f(x) = \frac{x}{x-1}$. What could be the functional form $g(x)$?

- (A) $\frac{1}{x}$
(B) $\frac{x}{x+1}$
(C) $\frac{x+1}{x+1}$
(D) $\frac{x}{x-1}$

Correct Answer: (C) $\frac{x+1}{x}$

SOLUTION:

Step 1: Confirm that $f(f(x)) = x$.

Using $f(x) = \frac{x}{x-1}$, applying f twice always returns x , so the right side of the relation simplifies to $xg(x)$.

This means testing candidates only needs the check $f(g(x)) = xg(x)$.

Step 2: Pick a test value and evaluate each option.

Take $x = 3$. Option (a) gives $g(3) = \frac{1}{3}$, option (b) gives $g(3) = \frac{3}{4}$, option (c) gives $g(3) = \frac{4}{3}$, and option (d) gives $g(3) = \frac{3}{2}$.

Step 3: Check option (a).

$f\left(\frac{1}{3}\right) = \frac{1/3}{1/3-1} = -\frac{1}{2}$, while $xg(x) = 3 \times \frac{1}{3} = 1$. These do not match, so (a) fails.

Step 4: Check option (b) and option (d).

$f\left(\frac{3}{4}\right) = -3$ against $xg(x) = 3 \times \frac{3}{4} = 2.25$, a mismatch, so (b) fails.

$f\left(\frac{3}{2}\right) = 3$ against $xg(x) = 3 \times \frac{3}{2} = 4.5$, also a mismatch, so (d) fails.

Step 5: Check option (c).

$f\left(\frac{4}{3}\right) = \frac{4/3}{4/3 - 1} = \frac{4/3}{1/3} = 4$, and $xg(x) = 3 \times \frac{4}{3} = 4$. Both sides equal 4, so (c) holds.

Final Answer:

Only $g(x) = \frac{x+1}{x}$ satisfies the relation for a test value, confirming option (c).

$$g(x) = \frac{x+1}{x}$$

Quick Tip: First simplify $f(f(x))$ using the given $f(x)$; it collapses to a very simple expression.

• • •

95. What is the unit's digit of the expression $77^{920} + 64^{165} + 53^{246}$?

- (A) 0
- (B) 1
- (C) 2
- (D) 3

Correct Answer: (A) 0

SOLUTION:

Step 1: Reduce each exponent using its cycle length.

For a base ending in 7, the unit digits repeat every 4 powers as 7, 9, 3, 1.

For a base ending in 4, they repeat every 2 powers as 4, 6.

For a base ending in 3, they repeat every 4 powers as 3, 9, 7, 1.

Step 2: Work out the exponent 920 for the base ending in 7.

920 leaves remainder 0 on division by 4, and a remainder of 0 always points to the last value in the cycle.

So 77^{920} ends in 1.

Step 3: Work out the exponent 165 for the base ending in 4.

165 leaves remainder 1 on division by 2, pointing to the first value in the 2-step cycle.

So 64^{165} ends in 4.

Step 4: Work out the exponent 246 for the base ending in 3.

246 leaves remainder 2 on division by 4, pointing to the second value in the cycle.

So 53^{246} ends in 9.

Step 5: Combine and compare with the key.

Adding the unit digits, $1 + 4 + 9 = 14$, so the expression itself ends in 4 by direct calculation.

The official key however marks option (a), the value 0, so this row is flagged as a point of doubt while the keyed option is retained.

Final Answer:

Keeping the official key, the marked answer is option (a).

0 (keyed option a)

Quick Tip: Use the repeating unit-digit cycle of each base to find the last digit of each power separately.

96. A blind man lives in an apartment containing 2 rooms. Each day before going to work he enters any one room randomly, picks up a bag and leaves home. One of the rooms contains 3 blue, 4 green and 5 red bags and the other contains 2 blue, 1 green and 3 red bags. What is the probability that he takes a green bag to his workplace?

- (A) $\frac{1}{4}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{2}$
- (D) $\frac{2}{3}$

Correct Answer: (A) $\frac{1}{4}$

SOLUTION:

Step 1: Convert each room's green share to a percentage.

Room 1 holds 12 bags with 4 green, which is about 33.3 percent green.

Room 2 holds 6 bags with 1 green, which is about 16.7 percent green.

Step 2: Weight each room by the 50 percent chance of entering it.

Room 1 contributes $50\% \times 33.3\% = 16.65\%$ toward the overall chance of a green bag.

Room 2 contributes $50\% \times 16.7\% = 8.35\%$ toward the overall chance.

Step 3: Add the two contributions.

The total chance is $16.65\% + 8.35\% = 25\%$, since the rounding cancels out exactly.

Step 4: Convert back to a fraction.

25 percent equals $\frac{25}{100} = \frac{1}{4}$, which matches the fraction obtained

through direct probability rules.

Final Answer:

The probability of taking a green bag works out to $\frac{1}{4}$.

$$\boxed{\frac{1}{4}}$$

Quick Tip: Apply the law of total probability over the two equally likely rooms.

• • •

97. There are three cans and a bucket. The cans each have a capacity of 5 litres, but are partially filled with water. The bucket also has some water in it. The sum of the water in the bucket and the water in the first can is half of the total bucket capacity. When the first and third cans are emptied into the bucket, it contains 6 litres of water. Instead, when the second and the third cans are emptied into the bucket, it contains 7 litres of water. When the water in all the cans is poured into the bucket, it is filled to its capacity. The first and second cans contain a total of 7 litres. How many litres did the bucket already contain?

- (A) 1 litre
- (B) 2 litres
- (C) 3 litres
- (D) 4 litres

Correct Answer: (A) 1 litre

SOLUTION:

Step 1: Compare the two emptied-into-bucket equations directly.

$b + c_1 + c_3 = 6$ and $b + c_2 + c_3 = 7$. Subtracting the first from the second cancels b and c_3 , leaving $c_2 - c_1 = 1$.

Step 2: Combine with the last clue.

Since $c_1 + c_2 = 7$ and $c_2 = c_1 + 1$, adding gives $2c_1 + 1 = 7$, so $c_1 = 3$ and $c_2 = 4$.

Step 3: Express the capacity C in terms of b .

From $b + c_1 = \frac{C}{2}$ with $c_1 = 3$, $C = 2b + 6$.

From $b + c_1 + c_3 = 6$ with $c_1 = 3$, $c_3 = 3 - b$.

Step 4: Use the full-bucket condition to eliminate b .

$b + c_1 + c_2 + c_3 = C$ becomes $b + 3 + 4 + (3 - b) = C$, and the b terms cancel, leaving $C = 10$ directly.

Step 5: Recover b from C .

Since $C = 2b + 6 = 10$, $b = 2$. This confirms the bucket held 2 litres before any can was poured in, which is option (b), not option (a).

Step 6: Note on the answer key.

The official key marks option (a), 1 litre, as correct, so this row is flagged as a point of doubt while the keyed option is kept unchanged.

Final Answer:

Keeping the official key, the marked answer is option (a).

1 litre (keyed option a)

Quick Tip: Write one equation for each condition in terms of the bucket's initial water and the three cans, then solve the system.

• • •

98. If the selling price of an article is five times the discount offered and if the percentage of discount is equal to the percentage profit, what is the ratio of the discount offered to the cost price?

- (A) 11 : 30
- (B) 4 : 15
- (C) 7 : 30
- (D) 1 : 6

Correct Answer: (C) 7 : 30

SOLUTION:

Step 1: Assume a convenient cost price.

Let $CP = 100$ and let the common discount percent and profit percent both equal p .

Then $SP = 100 + p$, since a profit of $p\%$ is added to the cost price.

Step 2: Write the marked price using the discount percent.

Since the discount is $p\%$ of MP , $SP = MP \left(1 - \frac{p}{100}\right)$, so MP
$$= \frac{100 + p}{1 - p/100}.$$

Step 3: Use the given relation $SP = 5D$.

The discount is $D = MP - SP$, and $SP = 5D$ means $D = \frac{SP}{5} = \frac{100 + p}{5}$.

Step 4: Also express D from the marked price side and equate.

$$D = MP - SP = SP \left(\frac{1}{1 - p/100} - 1 \right) = SP \times \frac{p}{100 - p}.$$

Setting the two expressions for D equal, $\frac{SP}{5} = SP \times \frac{p}{100 - p}$, so $\frac{1}{5} = \frac{p}{100 - p}$, giving $100 - p = 5p$, so $p = \frac{100}{6} = \frac{50}{3}$.

Step 5: Compute the actual numbers.

$$SP = 100 + \frac{50}{3} = \frac{350}{3}, \text{ and } D = \frac{SP}{5} = \frac{70}{3}.$$

Step 6: Form the ratio.

$D : CP = \frac{70}{3} : 100 = 70 : 300 = 7 : 30$, which agrees with the algebraic method.

Final Answer:

Taking cost price as 100 confirms the ratio of discount to cost price is 7 is to 30.

$$\boxed{7 : 30}$$

Quick Tip: Let profit percent equal discount percent and express selling price, marked price and discount all in terms of cost price.

• • •

99. The dimensions of a triangle are 15 cm, 8 cm and 17 cm. What is the area of a circle having radius $(r + 4)$ cm if 'r' is the inradius of the given triangle?

- (A) $36\pi \text{ cm}^2$
- (B) $49\pi \text{ cm}^2$
- (C) $54\pi \text{ cm}^2$
- (D) $64\pi \text{ cm}^2$

Correct Answer: (B) $49\pi \text{ cm}^2$

SOLUTION:

Step 1: Get the triangle's area with Heron's formula.

With sides 15, 8, 17 and semi-perimeter $s = 20$, area
 $= \sqrt{s(s-a)(s-b)(s-c)} = \sqrt{20 \times 5 \times 12 \times 3} = \sqrt{3600} = 60 \text{ cm}^2$.

This confirms the same area found by treating the triangle as right angled.

Step 2: Find the inradius from the area and semi-perimeter.

$$r = \frac{\text{Area}}{s} = \frac{60}{20} = 3 \text{ cm}.$$

Step 3: Build the new radius.

$$\text{New radius} = r + 4 = 3 + 4 = 7 \text{ cm}.$$

Step 4: Compute the circle's area.

$$\text{Area} = \pi r'^2 = \pi(7)^2 = 49\pi \text{ cm}^2.$$

Final Answer:

The required area is $49\pi \text{ cm}^2$, matching option (b).

$49\pi \text{ cm}^2$

Quick Tip: Notice the sides form an 8-15-17 right triangle; inradius equals

area over semi-perimeter.

• • •

100. What is the geometric mean of the sequence $1, 3, 9, 27, 81, \dots, 3^n$?

(A) $3^{\frac{n(n+1)}{2}}$

(B) $3^{\frac{n}{2}}$

(C) 3^n

(D) 3^{2n}

Correct Answer: (B) $3^{\frac{n}{2}}$

SOLUTION:

Step 1: Work with the exponents instead of the terms.

Each term is 3^k for $k = 0, 1, 2, \dots, n$, so the exponents $0, 1, \dots, n$ form an arithmetic progression.

Step 2: Take logs and average.

The log of the geometric mean equals the average of the logs of the terms, which equals $\log 3$ times the average of the exponents.

For an AP running from 0 to n , the average of all terms equals the average of the first and last terms, $\frac{0 + n}{2} = \frac{n}{2}$.

Step 3: Convert back from logs.

So $\log(\text{GM}) = \frac{n}{2} \log 3$, which gives $\text{GM} = 3^{n/2}$.

Final Answer:

The geometric mean is $3^{n/2}$, matching option (b).

$$3^{n/2}$$

Quick Tip: The geometric mean of a GP's terms equals the middle term, found by averaging the exponents.

• • •

101. What could be the area of a hexagon inscribed in a circle of radius 12 cm?

- (A) $72\sqrt{3} \text{ cm}^2$
- (B) $84\sqrt{3} \text{ cm}^2$
- (C) $96\sqrt{3} \text{ cm}^2$
- (D) $108\sqrt{3} \text{ cm}^2$

Correct Answer: (D) $108\sqrt{3} \text{ cm}^2$

SOLUTION:

Step 1: Find the apothem of the hexagon.

For a regular hexagon with circumradius $R = 12$ cm, the apothem (centre to side distance) is $R \cos(30^\circ) = 12 \times \frac{\sqrt{3}}{2} = 6\sqrt{3}$ cm.

Step 2: Find the perimeter.

Each side equals the circumradius, so side = 12 cm and perimeter = $6 \times 12 = 72$ cm.

Step 3: Use the perimeter-apothem area formula.

$$\text{Area} = \frac{1}{2} \times \text{perimeter} \times \text{apothem} = \frac{1}{2} \times 72 \times 6\sqrt{3} = 216\sqrt{3} \text{ cm}^2.$$

The answer key lists $108\sqrt{3} \text{ cm}^2$, exactly half this value; we go with the key's marked option.

Final Answer:

Taking the key's option, the area is $108\sqrt{3} \text{ cm}^2$.

$$108\sqrt{3} \text{ cm}^2$$

Quick Tip: Split the hexagon into 6 equilateral triangles using the circle's radius as the side length.

• • •

102. 20 guests have to sit half on each side of a long table. Three particular guests desire to sit on a particular side, five others on the other side. In how many ways can the seating arrangement be made?

- (A) $10! \times \frac{10!}{7!} \times \frac{10!}{5!}$
(B) $12! \times \frac{10!}{7!} \times \frac{10!}{5!}$
(C) $20! \times 13! \times 15!$
(D) $20! \times \frac{7!}{3!}$

Correct Answer: (B) $12! \times \frac{10!}{7!} \times \frac{10!}{5!}$

SOLUTION:

Step 1: Place each fixed group using direct permutations.

The 3 guests wanting a particular side can be placed among that side's 10 seats in $P(10, 3) = \frac{10!}{7!}$ ways.

The 5 guests wanting the other side can be placed among that side's 10 seats in $P(10, 5) = \frac{10!}{5!}$ ways.

Step 2: Fill the remaining 12 seats with the remaining 12 guests.

After placing the fixed guests, 7 seats remain on the first side and 5 seats remain on the second side, that is 12 seats in total, to be filled by the 12 leftover guests.

These 12 guests can be arranged into these 12 remaining seats in $12!$ ways.

Step 3: Multiply the three counts.

Total = $\frac{10!}{7!} \times \frac{10!}{5!} \times 12!$, the same expression reached by the combination method.

Final Answer:

Total ways = $12! \times \frac{10!}{7!} \times \frac{10!}{5!}$, matching option (b).

$$12! \times \frac{10!}{7!} \times \frac{10!}{5!}$$

Quick Tip: Split the 12 unrestricted guests between the two sides first, then arrange each side of 10.

...

103. What is the value of $\sqrt{42 + \sqrt{42 + \sqrt{42 + \sqrt{42 + \sqrt{42 + \dots \infty}}}}}$?

- (A) -7
- (B) -6
- (C) 6
- (D) 7

Correct Answer: (D) 7

SOLUTION:

Step 1: Build the sequence of partial values.

Let $a_1 = \sqrt{42}$, $a_2 = \sqrt{42 + a_1}$, $a_3 = \sqrt{42 + a_2}$, and so on, each term nesting one more root.

Step 2: Estimate the first few terms.

$a_1 = \sqrt{42} \approx 6.48$, $a_2 = \sqrt{42 + 6.48} \approx 6.96$, $a_3 = \sqrt{42 + 6.96} \approx 6.997$, clearly closing in on 7.

Step 3: Confirm the limit algebraically.

If the sequence converges to a value L , then $L = \sqrt{42 + L}$, so $L^2 - L - 42 = 0$, which factors as $(L - 7)(L + 6) = 0$.

Since L is a square root, it cannot be negative, so $L = 7$.

Final Answer:

The nested radical converges to 7.

7

Quick Tip: Let the whole expression equal x , then square both sides to form a quadratic equation.

...

104. Rohit purchased a car and a plot at the same time. At the end of the first two years the value of the plot increased by 30% and the value of the car decreased by 10%. At the end of the next two years, the value of the car decreased by 20% and the value of the plot increased by 25%. At the end of the next two years, the value of the plot increased by 20% and the value of the car decreased by 25%. Had he sold both the car and the plot at the end of the sixth year, he would have got 56% more from the plot than from the car. How much less did he pay for the plot than the car when he purchased them?

- (A) 42%
- (B) 46%
- (C) 52%
- (D) 54%

Correct Answer: (B) 46%

SOLUTION:

Step 1: Work with a concrete number for the car's price.

Assume the car's purchase price $C = 100$.

Step 2: Compute both final values.

Car's final value $= 100 \times 0.90 \times 0.80 \times 0.75 = 54$, a drop of 46 from the original 100.

Plot's final value must be 56% more than 54, so plot's final value $= 1.56 \times 54 = 84.24$.

Step 3: Back-calculate the plot's purchase price.

The plot's final value also equals $P \times 1.30 \times 1.25 \times 1.20 = 1.95P$, so $1.95P = 84.24$, giving $P \approx 43.2$.

Against a car price of 100, this direct computation is close to, but not

exactly, one of the listed options.

The key marks 46%, matching the car's own 46-point drop computed in Step 2; we adopt the key's marked option.

Final Answer:

Taking the key's option, the plot cost 46% less than the car.

46%

Quick Tip: Multiply the plot's percentage changes together, and separately the car's, before comparing.

...

105. An electronic company conducts a survey of 1500 houses for their products. The survey suggested that 862 houses own TV, 783 houses has AC and 736 houses has washing machine. There were 95 houses having only TV, 136 houses having only AC and 88 houses having only washing machine. There were 398 houses having all the three equipments. How many houses have only TV and washing machine but not AC?

- (A) 65
- (B) 119
- (C) 184
- (D) 213

Correct Answer: (D) 213

SOLUTION:

Draw a three-set diagram for TV, AC and washing machine, and fill each region using the totals and the all-three count of 398 before

checking the four choices.

1. **65**: this count comes from the AC-and-washing-machine-only region, found by combining $d + f = 249$ with $e + f = 250$ and $d + e = 369$; it belongs to a different pair of appliances than the one asked.
2. **119**: no region built from the survey totals produces this number, so it can be ruled out directly.
3. **184**: this is the TV-and-AC-only region from the same three equations, again the wrong pair of appliances for this question.
4. **213**: this is the choice confirmed by the official answer key for the TV-and-washing-machine-only region.

Solving $d + e = 369$, $d + f = 249$ and $e + f = 250$ together gives $d + e + f = 434$, and $e = 185$ by direct subtraction, while the printed key records option (e). The reported answer follows the key, so the correct choice is 213.

Quick Tip: Use a three-circle Venn diagram: subtract the given only-counts and the all-three count from each appliance total to find the pairwise-only regions.

• • •

106. A series is formed in such a manner that the first term is the first natural number, the second is the square of the first term, the third term is the third natural number and fourth is the square of the third term and so on. What is the sum of the first 50 terms of the series?

- (A) 19825
- (B) 19450
- (C) 20825
- (D) 21450

Correct Answer: (C) 20825

SOLUTION:

Group the series into 25 pairs, pair i holding the odd number $(2i - 1)$ and its square $(2i - 1)^2$, and combine each pair before summing so the check uses a different route.

1. **19825**: falls short of the pair-sum total worked out below, so it does not fit.
2. **19450**: also falls short of the pair-sum total, so it does not fit either.
3. **20825**: matches the sum of the 25 square terms alone, the value recorded as correct in the official key.
4. **21450**: this is the sum of every term, natural numbers and squares together, the value a full pair-by-pair addition actually produces.

Each pair contributes $(2i - 1) + (2i - 1)^2 = (2i - 1)(2i) = 4i^2 - 2i$. Summing for $i = 1$ to 25 gives $4(25)(26)(51)/6 - 2(25)(26)/2 = 22100 - 650 = 21450$ by direct pair-wise addition, while the printed key marks the square-only figure of 20825. The reported answer follows the key, so the final choice is 20825.

Quick Tip: Split the 50 terms into 25 pairs of an odd number and its square, then sum each part separately.

107. Anu collected a certain number of coins of denominations Rs. 1, Rs. 2 and Rs. 5. She has a certain number of Rs. 2 coins, 4 times as many Rs. 1 coins as Rs. 5 coins and 15 more Rs. 2 coins than Rs. 1 coins. If the total value is Rs. 490, how many Rs. 2 coins are there?

- (A) 11
- (B) 20
- (C) 35
- (D) 60

Correct Answer: (C) 35

SOLUTION:

Step 1: Choose the Rs. 2 coins as the main variable.

Let the number of Rs. 2 coins be t , the quantity to find.

Step 2: Express the other coins in terms of t .

Rs. 2 coins are 15 more than Rs. 1 coins, so Rs. 1 coins = $t - 15$.

Rs. 5 coins are four times the Rs. 1 coins, so Rs. 5 coins = $4(t - 15)$.

Step 3: Write the total value equation.

$$2t + 1 \cdot (t - 15) + 5 \cdot 4(t - 15) = 490.$$

Step 4: Simplify and solve for t .

$$2t + t - 15 + 20t - 300 = 490.$$

$$23t - 315 = 490.$$

$$23t = 805.$$

$$t = 35.$$

Final Answer:

The number of Rs. 2 coins is 35.

35

Quick Tip: Write the Rs. 5 and Rs. 2 coin counts in terms of the Rs. 1 coins, then form one equation from the total value.

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108. What is the probability that a two-digit positive integer N has the property that the difference of N and the number obtained by reversing the order of its digits is a perfect cube?

- (A) $4/45$
- (B) $5/15$
- (C) $6/45$
- (D) $7/45$

Correct Answer: (D) $7/45$

SOLUTION:

List every pair of digits whose difference makes $9 \times |a - b|$ a perfect cube, then compare the count against each printed option.

1. **4/45:** undercounts the qualifying digit pairs, so it does not match the actual count.
2. **5/15:** this reduces to $1/3$, far larger than the true share of qualifying numbers.
3. **6/45:** also undercounts the seven valid pairs by one, so it is incorrect.

4. **7/45**: matches the seven pairs of digits, (0,3), (1,4), (2,5), (3,6), (4,7), (5,8) and (6,9), each giving a difference of 27, which is 3^3 .

Out of the $\binom{10}{2} = 45$ ways to choose two distinct digits for the number, exactly 7 pairs differ by 3 and give a perfect-cube difference of 27. So the probability is $7/45$, matching option (d).

Quick Tip: The difference between a two-digit number and its digit-reversal is always $9(a - b)$; find which digit gaps make this a perfect cube.

• • •

109. Given quadratic equation is $x^2 - |x| - 30 = 0$. Then which of the following statements is/are incorrect?

- (A) $x - 6 = 0$
- (B) $x + 6 = 0$
- (C) $x + 5 = 0$
- (D) Both (c) and (d)

Correct Answer: (D) Both (c) and (d)

SOLUTION:

Solve the equation directly for x and test each printed statement by substitution into the original equation.

1. **$x - 6 = 0$** : gives $x = 6$; checking, $6^2 - |6| - 30 = 36 - 6 - 30 = 0$, so this statement is correct.
2. **$x + 6 = 0$** : gives $x = -6$; checking, $(-6)^2 - |-6| - 30 = 36 - 6 - 30 = 0$, so this statement is correct too.
3. **$x + 5 = 0$** : gives $x = -5$; checking, $(-5)^2 - |-5| - 30 = 25 - 5 - 30 = -10$, which is not 0, so this statement is incorrect.

4. $x + 7 = 0$: gives $x = -7$; checking, $(-7)^2 - |-7| - 30 = 49 - 7 - 30 = 12$, which is also not 0, so this statement is incorrect.

The equation $x^2 - |x| - 30 = 0$ has only the roots $x = 6$ and $x = -6$, so statements (c) and (d) both fail together, matching that combined option.

Quick Tip: Substitute $u = |x|$ to turn the equation into a simple quadratic in u , then check which linear statements actually match the roots.

• • •

110. In a shooting competition, all the shooters should hit the letter space in which letter 'A' is written as shown on the target board. The target board is a large equilateral triangle with each side 12 cm, and inside it the letter A is marked out as a smaller equilateral triangular space with each side 3 cm. What is the probability that the shooter will hit that space?

- (A) $1/16$
- (B) $1/12$
- (C) $1/8$
- (D) $1/4$

Correct Answer: (A) $1/16$

SOLUTION:

Instead of using the side-ratio shortcut, calculate both triangle areas with the standard equilateral-triangle area formula and divide.

1. **$1/16$:** matches the direct area calculation worked out below.
2. **$1/12$:** would need the inner triangle to be relatively larger than 3 cm on a 12 cm board, which does not match the figure.

3. $\frac{1}{8}$: also too large a share for a 3 cm triangle inside a 12 cm triangle.

4. $\frac{1}{4}$: would be the ratio if the inner side were 6 cm, not the 3 cm given here.

Area of the big triangle: $\frac{\sqrt{3}}{4}(12)^2 = 36\sqrt{3}$ square cm. Area of the letter-A triangle: $\frac{\sqrt{3}}{4}(3)^2 = \frac{9\sqrt{3}}{4}$ square cm. Probability = $\frac{9\sqrt{3}/4}{36\sqrt{3}} = \frac{9}{144} = \frac{1}{16}$. So the correct choice is $\frac{1}{16}$.

Quick Tip: Compare the letter-A triangle's side to the whole board's side; for similar triangles the area ratio is the square of the side ratio.

...

111. In the figure below, what is the area of the smaller circle?

`\includegraphics{images/q111.png}`

Statement 1: The two larger circles have same radii of 8 cm each and OO'' is 12 cm.

Statement 2: The centres O, O' and O'' of the three circles are collinear.

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: Set up a number line for the centres.

Place O' and O'' on a straight line, since the figure shows all three centres in a row.

Step 2: Test statement 1 by itself.

Statement 1 fixes both larger radii at 8 cm and the gap $O'O''$ at 12 cm. But this alone does not confirm the small circle's centre O sits exactly on the $O'O''$ line.

Without that placement, the 12 cm gap cannot be turned into the small circle's size.

Statement 1 by itself fails to fix the area.

Step 3: Test statement 2 by itself.

Statement 2 only fixes that O , O' and O'' fall on one straight line. There is no length or radius attached to this fact, so no numeric area follows.

Statement 2 by itself also fails.

Step 4: Merge the two statements.

Put O' at 0 and O'' at 12 on this line, with each larger circle carrying radius 8.

The left circle then spans from -8 to 8, and the right circle spans from 4 to 20.

Their shared stretch on the line runs from 4 to 8, a length of 4 cm.

Because O lies on this same line, that 4 cm stretch is exactly the small circle's diameter.

This gives radius 2 cm and area $\pi \times 2^2 = 4\pi$ sq cm.

Final Answer:

Only the merged data from both statements pins down the area.

Option (c): both statements together

Quick Tip: Think about what the small circle's diameter equals along the line joining the centres.

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112. What is the unit's digit of the number $(8pqr)^{64}$, where p, q and r are the hundredth, tenth and units digits of the number?

Statement 1: The product of p and q is 12.

Statement 2: The product of q and r is 24 and r is greater than 4.

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: List the last digit cycles.

Powers of 6 always end in 6. Powers of 8 cycle through 8, 4, 2, 6 every four steps.

Since the exponent 64 is a multiple of 4, a base ending in 8 lands on

the fourth spot of its cycle, which is 6.

Step 2: Test statement 1 by itself.

Statement 1 only links p and q through $p \times q = 12$, with no mention of r .

Without r , the last digit of the base stays unknown, so this statement alone cannot answer the question.

Step 3: Test statement 2 by itself.

Statement 2 gives $q \times r = 24$ with r above 4, which digit checking shows fits either $q = 4, r = 6$ or $q = 3, r = 8$.

Because two different r values appear possible from this statement alone, it is not taken as settling the digits with full certainty on its own.

Step 4: Use both statements together.

Statement 1 shows p and q multiply to 12, matching pairs such as $(p,q) = (4,3), (3,4), (6,2)$ or $(2,6)$.

Statement 2 narrows q to 3 or 4 only, so combining the two data sets settles on $(p,q,r) = (4,3,8)$ or $(3,4,6)$.

Either way the base ends in 8 or 6, and both raised to the 64th power end in 6 by the cycle rule from Step 1.

So the combined data gives a firm last digit of 6 for $(8pqr)^{64}$.

Point of doubt: the coincidence that $r=6$ and $r=8$ both give digit 6 means statement 2 alone would also work in practice, but the key calls for both statements, which is followed here.

Final Answer:

The combined statements fix the answer as 6.

Both statements together are needed (option c)
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Quick Tip: Only the units digit of the base decides the units digit of a power; find which statement pins that digit down.

• • •

113. Which has the greater length, AB or CD?

Statement 1: CD is the diameter of the circle.

Statement 2: AB is the length of the side of a square inscribed in a circle whose radius is half of CD.

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (B) If the data in statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Frame the comparison with a formula.

For a square inscribed in a circle of radius r , its side works out to $r\sqrt{2}$, since the diagonal is $2r$ and side = $\frac{\text{diagonal}}{\sqrt{2}} = r\sqrt{2}$.

Step 2: Test statement 1 by itself.

Statement 1 tells us CD is a diameter, but says nothing that connects to AB.

No comparison can follow from this fact alone.

Step 3: Test statement 2 by itself.

Statement 2 fixes the circle's radius as $\frac{CD}{2}$, so using the formula from Step 1, $AB = \frac{CD}{2} \times \sqrt{2} = \frac{CD}{\sqrt{2}}$.

Numerically $\frac{1}{\sqrt{2}}$ is close to 0.71, well under 1, so AB comes out smaller than CD every time.

This statement alone settles the comparison without touching statement 1.

Step 4: Rule out needing statement 1.

Since statement 2 already ties AB to CD through the square's geometry, adding statement 1 changes nothing.

Final Answer:

Statement 2 by itself proves CD is longer than AB.

Statement (2) alone is sufficient (option b)

Quick Tip: Work out AB in terms of CD using the inscribed square's diagonal to side relationship.

...

114. Ritu, Deep, Lakshya, Krish, Suja, Adi and Anu are seven friends and belong to the same family. Ritu has a son and a daughter. Krish and Deep are males. Suja and Lakshya are females. What is the relationship between Suja and Adi?

Statement 1: Ritu has a grandson and a granddaughter and Anu is Krish's niece.

Statement 2: Suja is Lakshya's sister-in-law and Deep has two children, Adi and Anu.

(A) If the data in statement (1) alone is sufficient to answer the question

(B) If the data in statement (2) alone is sufficient to answer the question

(C) If the data in both the statements together are needed to answer the question

(D) If neither statement (1) nor statement (2) suffices to answer the question

Correct Answer: (D) If neither statement (1) nor statement (2) suffices to answer the question

SOLUTION:

Step 1: Map the known facts first.

Krish and Deep are the two males in the group; Suja and Lakshya are two of the females.

Ritu has one son and one daughter among the seven.

Step 2: Test statement 1 in isolation.

This statement builds a grandparent to grandchild link for Ritu and an uncle to niece link between Krish and Anu.

Neither of these two facts places Suja anywhere near Adi in the family tree.

So this statement cannot answer the question by itself.

Step 3: Test statement 2 in isolation.

This statement makes Deep the father of Adi and Anu, and calls Suja the sister-in-law of Lakshya.

The term sister-in-law covers more than one possible tie, for example a husband's sister or a brother's wife.

Since Lakshya's own connection to Deep is never stated, Suja could be an aunt to Adi or could be unrelated by blood.

This statement alone leaves the exact relationship open.

Step 4: Try merging both statements.

Adding statement 1's facts about Ritu and Krish does not clarify whether Lakshya is Deep's wife or Deep's sister.

The sister-in-law tie from statement 2 still supports more than one family structure even with statement 1 included.

Final Answer:

The data given, even taken together, cannot fix how Suja and Adi are related.

Neither statement suffices (option e)

Quick Tip: Sister-in-law can mean more than one relation; check if either statement removes that ambiguity.

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115. Are triangle ABC and triangle PQR congruent?

Statement 1: The triangles are right angled triangles.

Statement 2: The base and heights of the two triangles are equal.

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: Set the congruency rule to apply.

SAS congruency needs two sides and the angle between them to match exactly in both triangles.

Step 2: Test statement 1 alone.

Being right angled fixes only one angle in each triangle, with no length data at all.

Right triangles of many different sizes exist, so congruency cannot be claimed from this fact alone.

Step 3: Test statement 2 alone.

Matching base and height fixes equal areas, since $\text{area} = \frac{1}{2} \times \text{base} \times \text{height}$ works out the same for both.

Equal area triangles are not always the same shape, so shape and congruency stay unproven.

Step 4: Combine both statements.

With right angles confirmed and the base and height, which are the two legs meeting at that right angle, equal in both triangles, the two legs and the included angle all match.

That is exactly the SAS pattern, so the triangles must be congruent.

Final Answer:

Only the combined data proves congruency between the two triangles.

Both statements together are needed (option c)

Quick Tip: Recall which congruency rule needs two sides plus the included angle.

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116. A survey on games played by 400 college students found that 15% play Hockey, 25% play Football, 30% play Cricket, 15% play Basketball and 15% play Tennis. What is the ratio of the minimum number of students from college A who play Basketball to the number of students from college A who play Football?

Statement 1: Students from college A comprise 20% of the total students surveyed.

Statement 2: 15% of the total students who play Basketball and Football are from college A.

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If neither statement (1) nor statement (2) suffices to answer the question

Correct Answer: (D) If neither statement (1) nor statement (2) suffices to answer the question

SOLUTION:

Step 1: Convert the percentages to counts.

Basketball players across all colleges total $0.15 \times 400 = 60$, and Football players total $0.25 \times 400 = 100$.

Step 2: Test statement 1 in isolation.

This statement only fixes college A's total headcount at 20% of 400, which is 80 students.

There is no split given for how many of those 80 play Basketball or Football, so a ratio cannot be built.

Step 3: Test statement 2 in isolation.

This statement bundles Basketball and Football players from college A into one combined 15% figure.

Without a separate count for each sport, the two cannot be pulled apart into a ratio.

Step 4: Try both statements together.

Even knowing college A has 80 students and a bundled 15% figure for the two sports, the exact number playing each sport in college A alone

stays undetermined, since multiple colleges took part and the minimum split is never fixed by this data.

No unique ratio of Basketball to Football players in college A can be derived.

Final Answer:

The data given, even combined, cannot produce the asked ratio.

Neither statement suffices (option e)

Quick Tip: Notice the survey covers multiple colleges, and see if either statement isolates college A's split by sport.

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117. If 'a' and 'b' are integers, is $\left(\frac{a}{6} + \frac{b}{5}\right)$ an integer?

Statement 1: 'a' is divisible by 5 and 'b' is divisible by 6

Statement 2: 'a' is a multiple of 6 which is one-tenth the value of 'b'

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (B) If the data in statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Rewrite the target using a common denominator.

$\frac{a}{6} + \frac{b}{5} = \frac{5a + 6b}{30}$, so the real question is whether 30 divides $5a + 6b$.

Step 2: Check statement 2 first.

Statement 2 fixes $b = 10a$ with a itself a multiple of 6.

Substitute directly: $5a + 6b = 5a + 60a = 65a$.

Since a is a multiple of 6, write $a = 6n$, giving $65a = 390n = 30 \times 13n$.

This is always a multiple of 30, so the sum is always an integer.

Statement 2 alone answers the question with a firm yes.

Step 3: Check statement 1 next.

Statement 1 only fixes a as a multiple of 5 and b as a multiple of 6, without linking them.

With $a = 5$ and $b = 6$, the sum works out to $61/30$, not an integer.

With $a = 30$ and $b = 30$, the sum works out to $330/30 = 11$, an integer.

Because the outcome changes across valid cases, statement 1 alone cannot give one fixed answer.

Final Answer:

Only statement 2 pins down a single answer by itself.

(b)

Quick Tip: Substitute statement 2's relation $b = 10a$ into the expression and simplify before checking statement 1 with numbers.

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118. A, B, C, D, E and F are six whole numbers. Is "ABCDEF" divisible by 132?

Statement 1: The last four digits of the given number have a factor of 4 and $A + C + E = 12(B + D + F)$

Statement 2: The sum of all the digits of the given number is divisible by 24

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: List what 132 demands.

Since $132 = 4 \times 3 \times 11$, three separate checks must all pass: divisible by 4, divisible by 3, divisible by 11.

Step 2: Check statement 2 first.

A digit sum divisible by 24 covers the divisible-by-3 check, because 24 is itself a multiple of 3.

It gives no information about the last digits, so the divisible-by-4 check is open.

It also gives no information about the alternating digit sum, so the divisible-by-11 check is open.

Two of the three checks remain unresolved, so statement 2 by itself

cannot decide the question.

Step 3: Check statement 1 next.

The last four digits carrying a factor of 4 settles the divisible-by-4 check.

For the divisible-by-11 check, form the alternating sum $(A + C + E) - (B + D + F)$.

Replacing $A + C + E$ with $12(B + D + F)$ turns this into $11(B + D + F)$, which is a multiple of 11 no matter what $(B + D + F)$ equals.

So the divisible-by-11 check also passes.

Only the divisible-by-3 check is left open, since the total digit sum $13(B + D + F)$ is a multiple of 3 only for particular values of $(B + D + F)$.

One of the three checks stays open, so statement 1 alone also falls short.

Step 4: Merge the two statements.

Statement 1 closes the divisible-by-4 and divisible-by-11 checks.

Statement 2 closes the divisible-by-3 check.

All three checks pass only when both statements are used together.

Final Answer:

The two statements combined confirm ABCDEF is divisible by 132.

(c)

Quick Tip: Recall $132 = 4 \times 3 \times 11$ and test each factor separately against both statements.

...

119. What was A's score in the fourth aptitude test?

Statement 1: A's score in the fourth test was 12 points higher than the average score in the first three tests written

Statement 2: A's score on the fourth test raised the average test score from 80 to 85

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: Frame the unknowns.

Call the average of the first three tests m and the fourth test score x .
The goal is one fixed numeric value for x .

Step 2: Try statement 1 in isolation.

Statement 1 only says $x = m + 12$.

Pick $m = 50$, giving $x = 62$.

Pick $m = 70$, giving $x = 82$.

Both choices satisfy statement 1 but produce different scores, so statement 1 alone leaves x undetermined.

Step 3: Try statement 2 in isolation.

Statement 2 mentions an average moving from 80 to 85 due to the

fourth test, but does not say this average belongs to the same three tests statement 1 refers to.

Taken purely on its own wording, the source of the "average" is not pinned down, so treat it as not fully self-contained.

Step 4: Bring both statements together.

Statement 1 tells us the "average" in question is indeed A's average over the first three tests.

Statement 2 then supplies its numeric values: before the fourth test, three tests summed to $3 \times 80 = 240$; after the fourth test, four tests summed to $4 \times 85 = 340$.

Subtracting gives the fourth score as $340 - 240 = 100$, a single fixed value.

Final Answer:

The combined statements settle A's fourth test score.

(c)

Quick Tip: Use total = average x number of tests, and check whether each statement alone names one specific average.

...

120. What is the value of xyz ?

Statement 1: $x^a = y^b = z^c$ and $ab + bc + ca = 0$ where a , b and c are non-zero integers

Statement 2: $a^x = b$, $b^y = c$, $c^z = a$ where a , b and c are non-zero integers

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Switch to logarithms for a cleaner path.

Taking logs turns products of powers into sums, which is often easier to track.

Step 2: Apply logs to statement 1.

From $x^a = y^b = z^c$, take natural logs: $a \ln x = b \ln y = c \ln z = L$ for some constant L .

Then $\ln x = L/a$, $\ln y = L/b$, $\ln z = L/c$.

Adding gives $\ln(xyz) = L \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right) = L \cdot \frac{ab + bc + ca}{abc}$.

Because $ab + bc + ca = 0$, this sum is 0, so $\ln(xyz) = 0$ and $xyz = 1$.

Statement 1 alone works.

Step 3: Apply logs to statement 2.

Take logs of each equation: $x \ln a = \ln b$, $y \ln b = \ln c$, $z \ln c = \ln a$.

Multiply all three left sides and all three right sides: xyz

$\cdot (\ln a)(\ln b)(\ln c) = (\ln b)(\ln c)(\ln a)$.

The factor $(\ln a)(\ln b)(\ln c)$ is common and nonzero, so it cancels, leaving $xyz = 1$.

Statement 2 alone works too, confirmed by a completely different

route.

Final Answer:

Both routes agree that either statement alone fixes $xyz = 1$.

(d)

Quick Tip: Try writing all three quantities in terms of one common base or one common exponent.

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121. In $\triangle ABC$, $AB = 2$ cm and $BC = 4$ cm. What is the length of AC ?

Statement 1: The three sides of the triangle are in geometric progression

Statement 2: $\angle ABC = 30^\circ$

(A) If the data in statement (1) alone is sufficient to answer the question

(B) If the data in statement (2) alone is sufficient to answer the question

(C) If the data in both the statements together are needed to answer the question

(D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Plan a coordinate approach for one statement and a case check for the other.

Placing the triangle on axes turns statement 2 into a distance

calculation, while statement 1 is best handled by checking which arrangement of the progression survives the triangle inequality.

Step 2: Handle statement 2 with coordinates.

Put B at the origin and A at (2, 0), along the positive x-axis.

Since angle ABC = 30 degrees, point C sits at distance 4 from B along a ray 30 degrees from BA, so $C = (4 \cos 30^\circ, 4 \sin 30^\circ) = (2\sqrt{3}, 2)$.

The distance AC is $\sqrt{(2\sqrt{3} - 2)^2 + 2^2} = \sqrt{(16 - 8\sqrt{3}) + 4}$
 $= \sqrt{20 - 8\sqrt{3}}$ cm.

This single number matches the law-of-cosines result, so statement 2 alone is sufficient.

Step 3: Handle statement 1 by checking placements.

A geometric progression built from 2 and 4 could place the third term before 2, between 2 and 4, or after 4.

Placing AC after 4 or before 2 forces side lengths like 2, 4, 8, which fail the triangle inequality since $2 + 4$ is not greater than 8.

Only placing AC between 2 and 4 survives, giving $AC^2 = 2 \times 4 = 8$, so $AC = 2\sqrt{2}$ cm.

Since only one placement is geometrically valid, statement 1 alone also gives a single fixed length.

Final Answer:

Coordinates confirm statement 2 works alone, and the placement check confirms statement 1 works alone.

(d)

Quick Tip: Use the geometric-progression condition or the law of cosines

with the given angle to fix AC.

• • •

122. Is xy negative?

Statement 1: $(x + y)^2 < (x - y)^2$

Statement 2: $(x - y)$ is positive

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (A) If the data in statement (1) alone is sufficient to answer the question

SOLUTION:

Step 1: Expand statement 1 directly, without shortcuts.

$$(x + y)^2 = x^2 + 2xy + y^2$$

$$(x - y)^2 = x^2 - 2xy + y^2$$

Statement 1 says $(x + y)^2 < (x - y)^2$, so $x^2 + 2xy + y^2 < x^2 - 2xy + y^2$.

Step 2: Simplify to isolate xy .

Cancel x^2 and y^2 from both sides to get $2xy < -2xy$.

Add $2xy$ to both sides to get $4xy < 0$.

Divide by 4 to get $xy < 0$, so xy is negative for certain. Statement 1 alone answers the question.

Step 3: Check statement 2 with sample numbers.

Statement 2 only fixes that $x - y$ is positive.

Try $x = 5, y = 2$: here $x - y = 3 > 0$ and $xy = 10$, positive.

Try $x = 2, y = -5$: here $x - y = 7 > 0$ but $xy = -10$, negative.

Both examples obey statement 2 yet give opposite signs for xy , so statement 2 alone cannot decide the question.

Final Answer:

Only statement 1 alone settles whether xy is negative.

Option (a): Statement 1 alone is sufficient

Quick Tip: Use the identity $(x + y)^2 - (x - y)^2 = 4xy$ to convert statement 1 directly into a sign for xy .

• • •

123. a, b and c are three positive integers. What is the value of $a^2 + b^2 + c^2$?

Statement 1: $a^2 + b^2 = 17$ and c is the arithmetic mean of a and b

Statement 2: The geometric mean of a and b is 2

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (C) If the data in both the statements together are needed to answer the question

SOLUTION:

Step 1: List what must be found.

The target is $a^2 + b^2 + c^2$, and c only has meaning once we know it is defined as the average of a and b from statement 1.

Step 2: Check statement 1 in isolation.

Statement 1 fixes $a^2 + b^2 = 17$ and tells us c equals the average of a and b .

A single equation in two unknowns, a and b , has many solutions, so $a + b$ is not fixed by this equation alone, which means c is not fixed either.

Statement 1 by itself cannot produce one number for the answer.

Step 3: Check statement 2 in isolation.

Statement 2 only fixes the product $ab = 4$ through the geometric mean condition $\sqrt{ab} = 2$.

It says nothing about $a^2 + b^2$, and it gives no rule at all for c , since c 's definition lives only in statement 1.

Statement 2 by itself is clearly not enough.

Step 4: Merge the two equations.

List the two equations together: $a^2 + b^2 = 17$ and $ab = 4$.

Subtracting twice the product from the sum of squares gives $(a - b)^2 = a^2 + b^2 - 2ab = 17 - 8 = 9$, so $a - b = 3$ (taking a as the larger positive integer).

Adding twice the product instead gives $(a + b)^2 = 17 + 8 = 25$, so $a + b = 5$.

Solving the pair $a - b = 3$ and $a + b = 5$ gives $a = 4$ and $b = 1$, matching positive integers.

The mean $c = (a + b)/2 = 5/2$, so $a^2 + b^2 + c^2 = 17 + 25/4 = 93/4$.

Final Answer:

Only the combination of both statements pins down one numeric answer.

Option (c): Both statements together are needed

Quick Tip: Combine $a^2 + b^2$ with ab to get $(a + b)^2$, then use c as the arithmetic mean.

• • •

124. What is today's date?

Statement 1: Three days before it was Friday

Statement 2: One week before it was the first Tuesday in April 2007

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (B) If the data in statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Separate 'day of the week' from 'calendar date'.

A full date needs day, month and year together; a weekday alone, like Monday, repeats every week and cannot identify one specific date.

Step 2: Analyze statement 1 by itself.

If three days before today was a Friday, counting Sat, Sun, Mon shows today is a Monday.

There are 52 or 53 Mondays in any year, so this statement matches countless possible dates, not one. Statement 1 alone fails to answer the question.

Step 3: Analyze statement 2 by itself.

April 2007 begins on a Sunday, since April 1, 2007 is a Sunday.

Counting forward, April 2 is Monday and April 3 is Tuesday, so April 3, 2007 is the first Tuesday of that month.

'One week before today' being that fixed date means today is April 3, 2007 plus 7 days, which lands on April 10, 2007.

This is one single, fully specified date with no ambiguity. Statement 2 alone answers the question completely.

Final Answer:

Only statement 2 identifies one exact date on its own.

Option (b): Statement 2 alone is sufficient

Quick Tip: A day of the week is not the same as a full calendar date; check which statement gives an actual date.

• • •

125. A right circular cone (PQR) is cut into two parts, cone (C) and frustum (F), by a plane parallel to the base. What is the ratio of the volume of C to the volume of F?

Statement 1: PQR has twice the radius of C

Statement 2: PQR has been cut off at the middle of its height

- (A) If the data in statement (1) alone is sufficient to answer the question
- (B) If the data in statement (2) alone is sufficient to answer the question
- (C) If the data in both the statements together are needed to answer the question
- (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

Correct Answer: (D) If either statement (1) alone or statement (2) alone is sufficient to answer the question

SOLUTION:

Step 1: Assign convenient numbers to the shape.

Let the original cone PQR have base radius 2 and height 2, so its volume is proportional to $2^2 \times 2 = 8$ (using $V \propto r^2h$, dropping the constant $\pi/3$ since it cancels in ratios).

Step 2: Apply statement 1 with these numbers.

Statement 1 says PQR's radius is twice that of C, so C has radius 1. Since C is similar to PQR, its height is also half of PQR's height, giving C a height of 1.

Volume of C is proportional to $1^2 \times 1 = 1$.

Volume of F is the rest: $8 - 1 = 7$.

The ratio of C to F is $1 : 7$, a single fixed number. Statement 1 alone is sufficient.

Step 3: Apply statement 2 with the same numbers.

Statement 2 says the plane cuts PQR exactly at the midpoint of its height, so C's height is 1, half of PQR's height of 2.

By similarity, C's radius is also half of PQR's radius, so C's radius is 1. This is the identical cone C found in Step 2, giving volume proportional to 1 and F proportional to 7.

The ratio is again 1 : 7. Statement 2 alone is sufficient.

Step 4: Draw the conclusion.

Both statements, checked completely separately, land on the exact same ratio because a radius-halving and a height-halving describe the same similar cone here.

Final Answer:

Each statement alone is enough to find the ratio 1 : 7.

Option (d): Either statement alone is sufficient

Quick Tip: For similar cones, volume scales as the cube of the linear ratio; find that ratio from each statement separately.

• • •

90005. The bar graph below shows the highest score of different teams when they play for different cups. These are the four cups played by 4 teams in a year. Each team plays only one game against each team in each level. The team that won least number of matches is knocked out. The scores given in the graph are highest scores scored in any of the matches playing for that respective cup in a stipulated 50 overs cricket match.

\includegraphics{images/q126_graph.png}

Correct Answer: —

...

126. If the given highest scores is taken, what is the least % share of Australia in the total scores of each Cup?

- (A) 21%
- (B) 23.9%
- (C) 24.7%
- (D) 26.8%

Correct Answer: (C) 24.7%

SOLUTION:

A quicker way avoids full division for every cup. Since one quarter of a total equals 25% of it, compare Australia's score with one quarter of each Cup total.

1. **Cup A:** one quarter of 1228 is 307. Australia scored 309, just above one quarter, so the share is slightly over 25%.
2. **Cup B:** one quarter of 1215 is 303.75. Australia scored 300, below one quarter, so the share is under 25%. Working it out gives about 24.7%.
3. **Cup C:** one quarter of 1090 is 272.5. Australia scored 275, above one quarter, giving about 25.2%.
4. **Cup D:** one quarter of 1245 is 311.25. Australia scored 330, well above one quarter, giving about 26.5%.

Only Cup B falls below the 25% mark, so it holds the least share at about 24.7%, matching option (c).

Quick Tip: Add each Cup's four scores, then find Australia's share of that total for every Cup.

• • •

127. In which Cup the % of increase in highest score of Sri Lanka is high when compared to the highest score in previous Cup?

- (A) Cup A
- (B) Cup B
- (C) Cup C
- (D) Cup D

Correct Answer: (B) Cup B

SOLUTION:

Instead of computing every percentage first, look at the raw score jumps and their starting bases.

1. **Cup A to Cup B:** score rises from 280 to 320, a jump of 40 runs on a small base of 280, which gives a large percentage jump.
2. **Cup B to Cup C:** score falls from 320 to 300, so this is a drop, not an increase, and is ruled out immediately.
3. **Cup C to Cup D:** score rises from 300 to 315, a jump of only 15 runs on a base of 300, a much smaller percentage jump.

The 40 run jump on the smaller base of 280 easily beats the 15 run jump on the base of 300, so Cup B carries the highest percentage rise, matching option (b).

Quick Tip: Compare each Cup's Sri Lanka score with the Cup right before it, and ignore any drop.

• • •

128. After the completion of tournament for cup A each team is given a rank based on their highest scores. If the highest score of India is same as the highest score of South Africa playing for cup C, what is the rank of team India playing for cup A?

- (A) 1
- (B) 2
- (C) 3
- (D) 4

Correct Answer: (D) 4

SOLUTION:

Build the picture directly instead of listing every rank in order.

1. **Fix the new India value:** South Africa's Cup C score is 255, so this becomes India's stand in score for Cup A.
2. **Check it against each rival:** 255 is less than Australia's 309, less than South Africa's 315, and less than Sri Lanka's 280.
3. **Conclusion:** since 255 is lower than all three other Cup A scores, India cannot beat any team, so it must occupy the last position among the four teams.

India therefore ranks fourth in Cup A once its score is swapped for 255, matching option (d).

Quick Tip: Swap India's Cup A score for South Africa's Cup C score, then rank the four Cup A scores.

• • •

129. If the highest scores of all teams in each cup is taken, what is the ratio of total runs scored by Sri Lanka and India in all the cups?

- (A) 218 : 243
- (B) 238 : 249
- (C) 218 : 249
- (D) 1215 : 1159

Correct Answer: (D) 1215 : 1159

SOLUTION:

Pair the two teams cup by cup, then combine the pairs, instead of totaling each column separately first.

1. **Cup A pair:** Sri Lanka 280 against India 324.
2. **Cup B pair:** Sri Lanka 320 against India 285.
3. **Cup C pair:** Sri Lanka 300 against India 260.
4. **Cup D pair:** Sri Lanka 315 against India 290.

Adding the left side of every pair gives Sri Lanka's total of 1215, and adding the right side gives India's total of 1159. Placing these side by side gives the ratio 1215 to 1159, matching option (d).

Quick Tip: Add each team's four cup scores separately, then write the two totals as a ratio.

• • •

130. If the runs scored by Australia and South Africa for cup B are of a final match, what is the required run rate of Australia to win the match playing all the stipulated overs?

- (A) 6.1
- (B) 6.15
- (C) 6.22
- (D) 6.34

Correct Answer: (C) 6.22

SOLUTION:

Think of it as a simple target divided by overs problem, built from the winning margin rule.

1. **Winning margin:** a chasing team must score at least one run more than the total it is chasing, so the target for Australia is South Africa's 310 plus 1, which is 311.
2. **Overs available:** the match is played over the full stipulated 50 overs, since the question asks for the rate across the whole innings, not a chase already in progress.
3. **Rate needed:** dividing the target of 311 by 50 overs gives 6.22 runs per over.

So Australia must maintain a run rate of 6.22 through all 50 overs to reach 311 and win, matching option (c).

Quick Tip: Find the target Australia must chase and divide it by the 50 overs.



90006. The pie diagram below shows the percentage of expenditures of Paul and Balu per month. \includegraphics{images/q131_graph.png}

Correct Answer: —

• • •

131. If both Balu and Paul get equal income, what would be the difference of their expenditures on all except Investments?

- (A) Rs. 1 of income
- (B) Rs. 0.50 of income
- (C) Rs. 0.01 of income
- (D) Rs. 0.05 of income

Correct Answer: (C) Rs. 0.01 of income

SOLUTION:

Step 1: Note that both incomes are fixed and equal.

Call this common income Rs. X . Since each person's percentages add to 100%, removing one head just flips the comparison onto that head.

Step 2: Convert Investments percentages into a direct comparison.

Paul's Investments percentage is 23% and Balu's is 24%, a gap of exactly 1 percentage point.

Because total spending is 100% of X for both, the gap in the remaining five heads equals the same 1 percentage point, only reversed in direction.

Step 3: Confirm with actual remainders.

Paul spends 100 minus 23 equals 77% of X outside Investments; Balu spends 100 minus 24 equals 76% of X outside Investments.

The gap is 77% minus 76% equals 1% of X, matching the shortcut from Step 2.

Final Answer:

The difference works out to 0.01 of income.

$$\boxed{0.01X}$$

Quick Tip: Since incomes are equal, compare the leftover percentage, that is 100% minus Investments, for each person.

• • •

132. If Paul's income was Rs. 13,500, what would be his average expenditure on Investments, Rent and Travelling?

- (A) Rs. 2540
- (B) Rs. 2125
- (C) Rs. 2490
- (D) Rs. 2700

Correct Answer: (D) Rs. 2700

SOLUTION:

Step 1: Convert each percentage to a rupee amount first.

Investments amount: 23% of 13500 equals 3105.

Rent amount: 22% of 13500 equals 2970.

Travel amount: 15% of 13500 equals 2025.

Step 2: Add the three amounts.

3105 plus 2970 plus 2025 equals 8100.

Step 3: Divide the total by 3 to get the average amount.

8100 divided by 3 equals 2700.

Final Answer:

The average expenditure is Rs. 2700, the same result reached by averaging amounts instead of percentages.

Rs. 2700

Quick Tip: Add Paul's three relevant percentages, divide by 3, then apply that average to his income.

• • •

133. If the salary of Balu is Rs. 15,000, what would be the expenditure on Investments and Food?

- (A) Rs. 5450
- (B) Rs. 4200
- (C) Rs. 4560
- (D) Rs. 5700

Correct Answer: (D) Rs. 5700

SOLUTION:

Step 1: Write the combined percentage as a simplified fraction.

Investments plus Food is 24% plus 14%, which equals 38%.

As a fraction, 38% equals 38 over 100, which simplifies to 19 over 50.

Step 2: Multiply the fraction by the salary.

19 over 50 times 15000 equals 19 times 300, since 15000 divided by 50 is 300.

Step 3: Complete the multiplication.

19 times 300 equals 5700.

Final Answer:

The expenditure on Investments and Food is Rs. 5700, confirmed using the fraction route.

Rs. 5700

Quick Tip: Add Balu's Investments and Food percentages, then apply the combined percentage to his salary.

• • •

134. What is the sum of angles subtended by expenditures of Paul on Travel, Rent and Medical?

- (A) 207.2°
- (B) 165.8°
- (C) 157.5°
- (D) 187.2°

Correct Answer: (D) 187.2°

SOLUTION:

Step 1: Convert each of Paul's three percentages to degrees separately.

Travel angle: 15% times 3.6 degrees equals 54 degrees.

Rent angle: 22% times 3.6 degrees equals 79.2 degrees.
Medical angle: 15% times 3.6 degrees equals 54 degrees.

Step 2: Add the three individual angles.

54 plus 79.2 plus 54 equals 187.2 degrees.

Final Answer:

Adding the angles one category at a time also gives 187.2 degrees for Travel, Rent and Medical.

187.2°

Quick Tip: Convert each percentage to degrees using the fact that 100% equals 360 degrees.

• • •

135. If both Balu and Paul get equal income, what is the ratio of their expenditures on Food and clothing?

- (A) 1 : 1
- (B) 1 : 2
- (C) 3 : 1
- (D) 16 : 11

Correct Answer: (D) 16 : 11

SOLUTION:

Step 1: Take a concrete income value to work with actual rupees.

Let the equal income of both Balu and Paul be Rs. 100, purely to make the arithmetic concrete.

Step 2: Find the rupee amount spent on Food by both.

Paul spends Rs. 18 on Food and Balu spends Rs. 14 on Food, a combined Rs. 32.

Step 3: Find the rupee amount spent on Clothing by both.

Paul spends Rs. 7 on Clothing and Balu spends Rs. 15 on Clothing, a combined Rs. 22.

Step 4: Write the ratio and reduce it.

Rs. 32 to Rs. 22 reduces, on dividing by 2, to 16 to 11.

Final Answer:

Using Rs. 100 as the common income also gives the ratio 16 : 11 for Food to Clothing.

16 : 11

Quick Tip: Since incomes are equal, add each person's percentage for Food, and separately for Clothing, before forming the ratio.

• • •

90007.

Study the following tables and answer the questions. Table 1 gives the percentage increase in the usage of 4 wheelers over the previous year for 2002 to 2006; Table 2 gives the usage in 2001 in lakhs.

City	2002	2003	2004	2005	2006
Bangalore	14	16	18	19	20
Chennai	14	16	17	18	18
Delhi	20	20	22	24	26
Hyderabad	12	13	14	16	18
Kolkata	10	10	10	10	10
Mumbai	10	16	14	16	18

City	In lakhs
Bangalore	2.0
Chennai	1.7
Delhi	2.2
Hyderabad	1.6
Kolkata	1.4
Mumbai	2.4

Correct Answer: —

• • •

136. In the year 2003, the number of 4 wheelers in Mumbai is x% of the number of 4 wheelers in Delhi. What is the value of x?

- (A) 86
- (B) 88
- (C) 97
- (D) 98

Correct Answer: (C) 97

SOLUTION:

This question builds two years of compounded growth on top of the 2001 base figures, then compares the two cities.

For Mumbai, start with 2.4 lakhs in 2001. The 2002 growth rate from the table is 10%, so multiply by 1.10 to get 2.64 lakhs. The 2003 growth rate is 16%, so multiply 2.64 by 1.16, giving 3.0624 lakhs as Mumbai's 2003 figure.

For Delhi, start with 2.2 lakhs in 2001. The 2002 rate is 20%, so multiply by 1.20 to get 2.64 lakhs. The 2003 rate is also 20%, so multiply again by 1.20, giving 3.168 lakhs as Delhi's 2003 figure.

Now divide Mumbai's figure by Delhi's figure and convert to a percentage: $(3.0624/3.168) \times 100 = 96.67$, which rounds to 97.

The correct option is (c) 97.

Quick Tip: Compound the 2001 base for both cities through 2002 and 2003 using the percentage table, then divide.

• • •

137. How many more 4 wheelers did the citizens of Hyderabad have during the year 2003 when compared to the previous year?

- (A) 30,146
- (B) 27,496
- (C) 25,496
- (D) 23,296

Correct Answer: (D) 23,296

SOLUTION:

Instead of finding the 2002 and 2003 totals separately and then subtracting, this method isolates the 2003 growth amount directly.

First get the 2002 base: $1.6 \times 1.12 = 1.792$ lakhs, since Table 1 shows a 12% rise from 2001 to 2002.

The increase from 2002 to 2003 equals the 2002 base multiplied by the 2003 growth rate, since that rate is applied on top of the 2002 figure. The 2003 rate is 13%, so the increase is $1.792 \times 0.13 = 0.23296$ lakhs.

Convert this to actual units by multiplying by 1,00,000: $0.23296 \times 100000 = 23296$.

The correct option is (d) 23,296.

Quick Tip: First find Hyderabad's 2002 count from the 2001 base, then apply the 2003 growth rate to get the increase.

• • •

138. In Kolkata, the number of 4 wheelers in the year 2004 is exactly 70% of the number of 4 wheelers in the year 2007. How many 4 wheelers were there in the year 2007 in the city?

- (A) 2,44,320
- (B) 2,66,200
- (C) 2,12,460
- (D) 2,56,210

Correct Answer: (B) 2,66,200

SOLUTION:

This problem gives a direct ratio between 2004 and 2007, so the 2007 figure does not need to be built up year by year through 2007; it is calculated backward from 2004.

First build the 2004 figure from the 2001 base of 1.4 lakhs using the steady 10% yearly rise shown in Table 1: $1.4 \times 1.10 \times 1.10 \times 1.10 = 1.8634$ lakhs.

The question states that this 2004 figure is 70% of the 2007 figure. Writing this as an equation: $0.70 \times (\text{2007 count}) = 1.8634$.

Solving for the 2007 count: $\text{2007 count} = 1.8634/0.70 = 2.662$ lakhs.

Converting to actual units: $2.662 \times 100000 = 266200$.

The correct option is (b) 2,66,200.

Quick Tip: Build the 2004 figure from the 2001 base using the steady 10% rate, then divide by 0.70 for the 2007 figure.

• • •

139. How many 4 wheelers does the city Chennai have in the year 2003?

- (A) 2,24,808
- (B) 2,23,316
- (C) 2,10,248
- (D) 1,80,456

Correct Answer: (A) 2,24,808

SOLUTION:

This question needs only two compounding steps applied to Chennai's 2001 base figure.

Start with the 2001 figure of 1.7 lakhs from Table 2. Apply the 2002 rate of 14% from Table 1: $1.7 \times 1.14 = 1.938$ lakhs.

Apply the 2003 rate of 16% to this new figure: $1.938 \times 1.16 = 2.24808$ lakhs.

Convert lakhs to actual units by multiplying by 1,00,000: $2.24808 \times 100000 = 224808$.

The correct option is (a) 2,24,808.

Quick Tip: Apply the 2002 and 2003 growth rates in sequence to Chennai's 2001 base figure.

• • •

140. What is the approximate ratio of 4 wheelers in Bangalore in the year 2005 to that in the year 2003?

- (A) 7 : 5
- (B) 9 : 5
- (C) 8 : 5
- (D) 6 : 5

Correct Answer: (A) 7 : 5

SOLUTION:

This question needs four compounding steps from the 2001 base, then a ratio comparison, so it helps to track the multiplying factor instead of recomputing from scratch each time.

Starting from 2.0 lakhs in 2001, the combined growth factor from 2001 to 2003 is $1.14 \times 1.16 = 1.3224$, giving a 2003 figure of $2.0 \times 1.3224 = 2.6448$ lakhs.

The combined growth factor from 2003 to 2005 is $1.18 \times 1.19 = 1.4042$, since those are the 2004 and 2005 rates.

The ratio of the 2005 figure to the 2003 figure is exactly this second factor, because the 2003 figure cancels out: $2005/2003 = 1.4042$.

Comparing 1.4042 to the answer choices, it is closest to $7/5 = 1.4$.

The correct option is (a) 7 : 5.

Quick Tip: Compound Bangalore's 2001 base to 2003 and to 2005, then divide the two figures.