IBSAT 2019 Combined paper Question Paper with Solutions

General Instructions

(i) This booklet contains 148 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 option that is closest in meaning to the word given below.
DOLOROUS

(A) Happy

(B) Lachrymose

(C) Furious

(D) Angry

Correct Answer: (B) Lachrymose

Solution:

The word "dolorous" comes from the Latin "dolor," meaning pain or grief, and it describes something full of sorrow, mournful, or expressing great sadness. The question asks for the option closest to this meaning.

1. **Happy**: This is the opposite of dolorous. A happy mood carries joy, not sorrow, so it cannot be the answer.
2. **Lachrymose**: This word means tearful or given to weeping, and it is used to describe a mournful, sorrowful tone or mood. It matches the sad, grieving sense of dolorous closely.

3. **Furious**: This means extremely angry. Anger is a different emotion from sorrow, so this does not fit.
4. **Angry**: Like furious, this points to rage rather than grief, so it is not close in meaning to dolorous.

The best match is "Lachrymose," since both words describe a mournful, sorrow-filled state.

Let's summarize:

- Dolorous means full of sorrow or mournful.
- Lachrymose shares this sense of grief and tearfulness, while the other options describe happiness or anger, not sadness.

So the correct answer is "Lachrymose."

Quick Tip: Think about the Latin root "dolor," which means pain or grief; look for the option describing sadness, not anger or joy.

2. Choose the option that is closest in meaning to the word given below.
PUISSANT

(A) Powerful

(B) Skillful

(C) Colorful

(D) Beautiful

Correct Answer: (A) Powerful

Solution:

"Puissant" is a formal, somewhat literary word that means having great power, strength, or influence, often used for rulers, armies, or nations. The question asks which option carries this sense of power.

1. **Powerful**: This means having great strength, control, or influence, which is exactly the core sense of puissant.
2. **Skillful**: This refers to having ability or expertise, which is about competence, not raw power or might.
3. **Colorful**: This describes something vivid or full of variety, unrelated to strength or influence.
4. **Beautiful**: This describes physical or aesthetic appeal, which has nothing to do with power.

Only "Powerful" captures the meaning of great strength and influence carried by puissant.

Let's summarize:

- Puissant means mighty or powerful, often describing rulers or forces.
- Skillful, colorful, and beautiful describe unrelated qualities such as ability, variety, and appearance.

So the correct answer is "Powerful."

Quick Tip: Puissant is an old, formal word for mighty; think of a "puissant army" or "puissant king."

3. Choose the option that is closest in meaning to the word given below.
RECTITUDE

(A) Immorality

(B) Fulmination

(C) Dissipation

(D) Integrity

Correct Answer: (D) Integrity

Solution:

"Rectitude" refers to moral integrity, honesty, and correctness of behavior or judgment. It describes a person who acts rightly and honorably. The question asks for the option that shares this sense.

1. **Immorality**: This means a lack of moral principles, which is the opposite of rectitude, not a match.
2. **Fulmination**: This means a loud, angry protest or denunciation, an unrelated idea about expressing anger, not about moral correctness.
3. **Dissipation**: This describes wasteful, self-indulgent living, which again works against the idea of moral uprightness.
4. **Integrity**: This means adherence to strong moral principles and honesty, which is precisely what rectitude means.

"Integrity" is the only option that reflects the moral correctness carried by rectitude.

Let's summarize:

- Rectitude means moral uprightness or correctness of conduct.
- Immorality and dissipation describe the opposite behavior, while fulmination is about angry speech, not morality.

So the correct answer is "Integrity."

Quick Tip: Rectitude is built from the Latin "rectus," meaning straight or right; think of "moral straightness."

4. Choose the option that is closest in meaning to the word given below.
TEDIUM

(A) Variation

(B) Excitement

(C) Diversion

(D) Monotony

Correct Answer: (D) Monotony

Solution:

"Tedium" refers to the state of being tedious: a feeling of boredom caused by long, dull, or repetitive activity. The question wants the option that matches this sense of dull repetition.

1. **Variation**: This means a change or difference from the usual, the opposite of dull repetition, so it does not fit.
2. **Excitement**: This means a feeling of enthusiasm or thrill, the opposite of boredom, so it cannot match tedium.
3. **Diversion**: This means something that distracts or entertains, again the opposite of a boring, repetitive state.
4. **Monotony**: This means a lack of variety and interest, causing boredom from the same thing repeated again and again, which is exactly what tedium describes.

"Monotony" is the word that shares tedium's sense of dull, repetitive boredom.

Let's summarize:

- Tedium means boredom from long, dull repetition.
- Variation, excitement, and diversion all suggest relief from boredom, the opposite of what tedium means.

So the correct answer is "Monotony."

Quick Tip: Think of a "tedious" task: the same thing repeated over and over with no variety.

5. Choose the option that is closest in meaning to the word given below.
MAWKISH

(A) Tendentious

(B) Mellifluous

(C) Maudlin

(D) Meridional

Correct Answer: (C) Maudlin

Solution:

"Mawkish" describes something excessively and falsely sentimental, sickly sweet in an emotional sense, often used to criticize writing, films, or speech that overdoes sentiment. The question asks for the closest match to this sense.

1. **Tendentious**: This describes writing or speech that promotes a particular, often biased, point of view. It is about bias, not sentimentality, so it does not match.

2. **Mellifluous**: This describes a sound, usually a voice, that is sweet and smooth to hear. It refers to sound quality, not excessive emotion.
3. **Maudlin**: This means self-pityingly or tearfully sentimental, in an exaggerated or foolish way, which captures the same overdone, sickly sweet emotion as mawkish.
4. **Meridional**: This relates to the south or midday, an unrelated geographic or time based term.

"Maudlin" is the word that matches mawkish's sense of excessive, sickly sentimentality.

Let's summarize:

- Mawkish means excessively and falsely sentimental.
- Maudlin shares this exact sense, while the other options describe bias, pleasant sound, or geography, none of which relate to overdone emotion.

So the correct answer is "Maudlin."

Quick Tip: Mawkish criticizes something for being too sugary and sentimental, like a maudlin, tearful movie scene.

6. Choose the option that is most opposite in meaning (antonym) to the word given below.
JOCUND

(A) Brash

(B) Jocular

(C) Square

(D) Melancholic

Correct Answer: (D) Melancholic

Solution:

"Jocund" means cheerful, merry, and lighthearted. This question asks for the word most opposite to that meaning, not a word close to it.

1. **Brash**: This means bold and overconfident in a rude or hasty way. It describes a personality trait unrelated to mood, so it is not a true opposite of cheerfulness.
2. **Jocular**: This means fond of joking, playful, and humorous, which is actually very close in meaning to jocund, making it the opposite of what this question is looking for.
3. **Square**: This is an informal term for someone old fashioned or conventional. It does not describe an emotional state, so it fails to oppose jocund's cheerfulness.
4. **Melancholic**: This means sad, gloomy, and given to low spirits, which is the direct emotional opposite of being cheerful and merry.

Since jocund describes a cheerful mood, its true opposite must describe a sad one, which is "Melancholic."

Let's summarize:

- Jocund means cheerful or merry.
- Jocular is a trap since it means almost the same thing as jocund, not its opposite.

- Melancholic means sad and gloomy, the real opposite of jocund.

So the correct answer is "Melancholic."

Quick Tip: Watch out for "Jocular," it sounds similar to jocund and means almost the same thing; the true opposite is a word for sadness.

7. Choose the option that is most opposite in meaning (antonym) to the word given below.
INSCRUTABLE

(A) Comprehensible

(B) Confusing

(C) Contradictory

(D) Contemptible

Correct Answer: (A) Comprehensible

Solution:

"Inscrutable" describes something impossible to understand or interpret, mysterious and hard to read, such as an inscrutable expression on someone's face. This question asks for the word most opposite in meaning.

1. **Comprehensible**: This means able to be understood or grasped easily, which is the direct opposite of being impossible to understand.
2. **Confusing**: This means causing confusion or being hard to follow, which is actually close in meaning to inscrutable, not its opposite.

3. **Contradictory**: This means containing or involving a contradiction, a different idea about inconsistency, not about being hard or easy to understand.
4. **Contemptible**: This means deserving scorn or disrespect, an unrelated quality about how something is regarded, not about clarity.

Since inscrutable means impossible to understand, its true opposite is a word that means easy to understand, which is "Comprehensible."

Let's summarize:

- Inscrutable means mysterious or impossible to interpret.
- Confusing is a trap since it means almost the same as inscrutable, not the opposite.
- Comprehensible means easily understood, the real opposite of inscrutable.

So the correct answer is "Comprehensible."

Quick Tip: Do not pick "Confusing," it means nearly the same as inscrutable; look for a word meaning easy to understand.

8. Choose the option that is most opposite in meaning (antonym) to the word given below.
EXCORIATE

(A) Prevaricate

(B) Berate

(C) Regurgitate

(D) Acclaim

Correct Answer: (D) Acclaim

Solution:

"Excoriate" means to criticize someone or something severely and harshly, to denounce scathingly (it literally meant to strip off skin). This question asks for the word most opposite to this harsh criticism.

1. **Prevaricate**: This means to speak evasively or lie in order to avoid the truth. It is about honesty, not about praising or criticizing, so it does not oppose excoriate.
2. **Berate**: This means to scold someone angrily, which is close in meaning to excoriate rather than its opposite.
3. **Regurgitate**: This means to bring back swallowed food, or to repeat information without real understanding. It has no connection to praise or blame.
4. **Acclaim**: This means to praise enthusiastically and publicly, which is the direct opposite of harshly criticizing or denouncing someone.

Since excoriate means to criticize severely, its true opposite is a strong word of praise, which is "Acclaim."

Let's summarize:

- Excoriate means to criticize harshly or denounce scathingly.
- Berate is a trap since it means almost the same thing as excoriate, not its opposite.
- Acclaim means to praise strongly, the real opposite of excoriate.

So the correct answer is "Acclaim."

Quick Tip: Do not pick "Berate," it means nearly the same as excoriate; look for a strong word of praise instead.

9. Choose the option which is the closest antonym of the given word.

GLUM

(A) Desire

(B) Cheerful

(C) Sour

(D) Gloomy

Correct Answer: (B) Cheerful

Solution:

The word GLUM means sad, low in spirits, or looking dejected and morose. The question asks for the closest antonym, so we need the option that means the opposite of feeling low or sad.

1. **Desire**: This word means a strong wish or want. It describes a feeling of longing for something, not a mood, so it does not work as the opposite of glum.
2. **Cheerful**: This word means happy, bright, and full of good spirits. A cheerful person is the exact opposite of a glum one, who looks sad and low. This is the correct antonym.
3. **Sour**: This word usually describes a sharp, unpleasant taste, or a bad tempered mood. A sour mood sits close to glum in feeling, not opposite to it, so it cannot be the antonym.
4. **Gloomy**: This word is a near synonym of glum, since both describe a dark, low, unhappy mood. Since the question wants

the opposite meaning, this option is wrong.

The correct option is Cheerful, since it directly opposes the sad, low mood that glum describes.

Let's summarize:

- Glum means sad, dejected, and low in spirits.
- Cheerful means happy and bright, which is the direct opposite of glum.
- Sour and Gloomy describe moods close to glum, not opposite to it, so they cannot be the antonym.

So the closest antonym of GLUM is Cheerful.

Quick Tip: Think about the opposite mood of someone who looks sad and low in spirits.

10. Choose the option which is the closest antonym of the given word.

SCRAWNY

(A) Lean

(B) Skinny

(C) Emaciated

(D) Obese

Correct Answer: (D) Obese

Solution:

The word SCRAWNY describes a person or animal that is very thin and bony, often in a way that looks weak or unhealthy. The question asks for the closest antonym, so we need the option that means the opposite, someone who is heavily built rather than thin.

1. **Lean**: This word means thin but fit and well toned, close in meaning to scrawny rather than opposite to it, so it cannot be the antonym.
2. **Skinny**: This word also means very thin, and it is almost a direct synonym of scrawny, not its opposite.
3. **Emaciated**: This word describes a person who has become extremely thin, usually from illness or hunger. It is an even stronger synonym of scrawny, not an antonym.
4. **Obese**: This word means extremely overweight or very fat. It stands directly opposite to a scrawny, bony build, which makes it the correct antonym.

The correct option is Obese, since it describes a heavily built body, the exact opposite of a scrawny, thin one.

Let's summarize:

- Scrawny means very thin and bony, often looking weak.
- Lean, Skinny, and Emaciated all describe different degrees of thinness, so they sit close to scrawny, not opposite to it.
- Obese means very fat, which is the direct opposite of scrawny.

So the closest antonym of SCRAWNY is Obese.

Quick Tip: Think of a body type that sits at the opposite end of the weight scale from thin and bony.

11. The first two words are related in a particular way. Choose the word that completes the second pair using the same relationship.

Weed : Garden :: Edit : ?

(A) Publisher

(B) Editor

(C) News

(D) Puzzle

Correct Answer: (C) News

Solution:

In this analogy, the first pair is Weed : Garden. To weed means to remove unwanted plants from a patch of land so that it stays healthy and tidy. So weed is the action, and garden is the object on which that action is carried out. We need a second pair that follows the same action to object pattern, this time with the action edit.

1. **Publisher**: A publisher is the person or company that puts out a piece of writing after it has been edited. This word names a person or an organisation, not the material being edited, so it breaks the pattern.
2. **Editor**: An editor is the person who does the editing. Since the pattern needs the object being acted upon, not the person doing the action, this option does not fit either.
3. **News**: News is written content that is checked, corrected, and refined before it is printed or broadcast. Just as a garden is weeded to remove what does not belong, news is edited to remove errors and unwanted material. This keeps the same action to object relationship as the first pair.

4. **Puzzle**: A puzzle is solved, not edited in the everyday sense that fits this pattern, so it does not match the relationship.

The correct option is News, because just as a garden is the thing that gets weeded, news is the thing that gets edited.

Let's summarize:

- Weed : Garden shows an action performed on a place to keep it clean and healthy.
- Edit : News follows the same pattern, since news is refined and corrected through editing.
- Publisher and Editor name people, not the object of the action, so they cannot complete the pair.

So the word that completes the analogy Weed : Garden :: Edit : ? is News.

Quick Tip: Think about what weeding does to a garden, then look for the option that gets the same treatment from editing.

12. Complete the analogy by choosing the option that best fits.
Incubator : Infant :: Greenhouse : ?

(A) Parasites

(B) Worms

(C) Puppies

(D) Saplings

Correct Answer: (D) Saplings

Solution:

Step 1: Understanding the Question:
We are given the pair "Incubator : Infant" and must find the option that completes "Greenhouse : ?" using the same relationship.

Step 2: Key Formula or Approach:
First state the relationship in the given pair in plain words, then apply that exact relationship to the second pair. An incubator is a controlled, protected space built to nurture and help a fragile infant grow.

Step 3: Detailed Explanation:
A greenhouse is also a controlled, protected space, but it is built for plants rather than people.
Parasites and Worms are organisms that live in or on other things and are not raised or protected inside a greenhouse for their own growth, so they do not fit.
Puppies are young animals, and a greenhouse has no role in raising them, so this option is unrelated.
Saplings are young, tender plants that need a controlled, warm, protected environment to grow safely, which is exactly what a greenhouse provides, just as an incubator provides that protected environment for an infant.

Step 4: Final Answer:
The relationship "a controlled space that nurtures a fragile young thing" holds between "incubator and infant" and between "greenhouse and saplings". The answer is saplings, originally option (e) in the source, mapped to the fourth listed option here.

Quick Tip: Think about what an incubator does for a newborn, then ask what a greenhouse does for the same kind of thing in plants.

13. Complete the analogy by choosing the option that best fits.
Pitch : Cricket :: Ring : ?

(A) Wrestling

(B) Boxing

(C) Badminton

(D) Tennis

Correct Answer: (B) Boxing

Solution:

This analogy is about the playing area used for a sport. A "pitch" is the specific strip or ground on which cricket is played, so we need the sport whose playing area is called a "ring".

1. **Wrestling**: Wrestling is contested on a mat or within a circle, but the term commonly used for its arena is a mat, not a ring, so this is close but not the standard term.
2. **Boxing**: A boxing match takes place inside a roped square platform that is universally called a "ring". This matches the pattern exactly, the same way "pitch" names the cricket ground.
3. **Badminton**: Badminton is played on a "court", not a ring, so this option breaks the pattern.
4. **Tennis**: Tennis is also played on a "court", so this does not match either.

Only boxing uses the word "ring" for its playing area in the same direct way that cricket uses "pitch" for its playing area.

Let's summarize:

- Pitch is the specific term for a cricket ground.
- Ring is the specific term for a boxing arena.
- Wrestling, badminton, and tennis use different names (mat or court) for their playing areas.

So the correct answer is "boxing", option (b).

Quick Tip: Think about which sport is played inside a roped square platform called a ring.

14. Complete the analogy by choosing the option that best fits.
Darkness : Ignorance :: Light : ?

(A) Intelligence

(B) Knowledge

(C) Cleverness

(D) Familiarity

Correct Answer: (B) Knowledge

Solution:

Step 1: Understanding the Question:
Here "Darkness" stands for "Ignorance" as a figure of speech, and we must find what "Light" stands for in the same figurative sense.

Step 2: Key Formula or Approach:

In everyday language and literature, darkness is a common metaphor for not knowing or understanding, while light is the standard metaphor for the opposite state of understanding or awareness.

Step 3: Detailed Explanation:
Intelligence refers to the general ability to learn and reason, which is a trait a person has, not the state of being informed, so it is close but not the precise match.
Cleverness refers to quickness of mind or wit, again a personal trait rather than the state of possessing information, so it does not fit the pattern.
Familiarity means being acquainted with something, which is related but weaker and less standard as the direct opposite of ignorance.
Knowledge is the direct and standard opposite of ignorance, the state of knowing facts and information, which is exactly the figurative meaning that "light" carries as a metaphor.

Step 4: Final Answer:
Since "light" is used to mean "knowledge" in the same way "darkness" is used to mean "ignorance", the answer is option (b).

Quick Tip: Darkness is often used as a metaphor for not knowing; think about what light is the metaphor for.

15. Complete the analogy by choosing the option that best fits.
Nucleus : Cell :: Yolk : ?

(A) Grain

(B) Cob

(C) Fruit

(D) Egg

Correct Answer: (D) Egg

Solution:

This analogy is about a part-to-whole relationship. The nucleus is the central, defining part found inside a cell. We need to find the whole structure that contains a "yolk" as its central part.

1. **Grain**: A grain, such as a wheat or rice grain, does not have a "yolk" inside it, so this pairing does not work.
2. **Cob**: A cob is the central core of a corn plant that holds the kernels, but it does not contain anything called a yolk, so this is unrelated.
3. **Fruit**: A fruit has a seed or a core, not a yolk, so this option does not fit the pattern either.
4. **Egg**: An egg contains a yolk as its central, defining part, in the same way a cell contains a nucleus as its central, defining part.

Only "egg" gives a whole structure whose central part is literally called a yolk, matching the nucleus-cell relationship exactly.

Let's summarize:

- A nucleus is the central part inside a cell.
- A yolk is the central part inside an egg.
- Grain, cob, and fruit do not contain a part called a yolk.

So the correct answer is "egg", option (d).

Quick Tip: Think about which whole structure contains a yolk as its central part.

16. Fill in the blanks with the pair of words that best fits the meaning of the sentence as a whole.
In human as in animal societies the elder _____ transmit by example to the younger the _____ experience accumulated by the group.

(A) Progeny ... lurid

(B) Generations ... collective

(C) Denizens ... repeated

(D) Luminary ... personal

Correct Answer: (B) Generations ... collective

Solution:

Step 1: Understanding the Question:
The sentence says that in both human and animal societies, older members pass on something to younger members by example, and that something is described as experience built up by the whole group. Two blanks need matching words.

Step 2: Key Formula or Approach:
Check grammatical fit and meaning together. The first blank names the older members doing the transmitting, and it should agree with the plural verb "transmit". The second blank describes the kind of experience, and it should mean shared by the whole group, since the sentence already says "accumulated by the group".

Step 3: Detailed Explanation:
"Progeny" means offspring or descendants, which does not fit the idea of "elder" members doing the teaching, and "lurid" means shocking or sensational, which has nothing to do with shared experience.
"Denizens" means inhabitants, a word that does not carry the sense of "elder" or "senior" members specifically, and "repeated" does not match the idea of experience built up over time by a whole group.
"Luminary" means a person who is a source of inspiration in a specific field, usually singular, which clashes with the plural verb "transmit", and "personal" means individual, the opposite of experience shared by a group.
"Generations" fits naturally as the plural subject of "transmit" and names the older members of a society, while "collective" means shared by the whole group, matching "accumulated by the group" perfectly.

Step 4: Final Answer:
The pair "Generations ... collective" completes the sentence correctly, so the answer is option (b).

Quick Tip: The first blank needs a plural group of older members, and the second blank needs a word meaning shared by the whole group.

17. He was an _____ musician, had been awarded by the Saneet Natak academy during the second world war and _____ with the title of Rai Bahadur.

(A) Outstanding..... popularized

(B) Underestimated ..... declared

(C) Accomplished ..... honoured

(D) Impressive ..... assigned

Correct Answer: (C) Accomplished ..... honoured

Solution:

This sentence needs two words that fit the achievement of a musician and the way an award or title is given to him. The first blank describes the kind of musician, and the second blank describes what was done to him with the title.

1. **Outstanding..... popularized**: "Outstanding" fits the musician's quality, but a title is not "popularized" on to a person. This pairing does not work with "with the title".
2. **Underestimated ..... declared**: "Underestimated" means undervalued, which goes against the idea of receiving an award, so it does not make sense with "was awarded".
3. **Accomplished ..... honoured**: "Accomplished" means highly skilled, which fits a musician who received an award. "Honoured with the title" is also the standard way we describe someone receiving a title.
4. **Impressive ..... assigned**: "Impressive" can describe a musician, but titles are not usually "assigned" to a person, they are given or conferred.

The correct pair is "Accomplished..... honoured", since the musician's skill led to an award, and the natural phrase for a title is "honoured with the title of Rai Bahadur".

Let's summarize:

- The first blank needs a word describing the musician's skill level, and "accomplished" fits an award winner.
- The second blank needs a verb that goes with "with the title", and "honoured with" is the standard collocation.

So the correct option is (c), "Accomplished..... honoured".

Quick Tip: Think about which word naturally follows "honoured with the title of" and which word describes a skilled musician.

18. China and India _____ similarities in demography and natural resources and that is where those similarities _____.

(A) Exchange ..... close

(B) Surrender ..... expand

(C) Support ..... pass

(D) Share ..... end

Correct Answer: (D) Share ..... end

Solution:

This sentence is about two countries that have common features, and it also talks about a point after which those common features stop existing. The first blank needs a verb that naturally takes "similarities" as its object, and the second blank needs a verb that fits the idea of stopping.

1. **Exchange ..... close**: Countries "exchange" goods or ideas between each other, not "exchange similarities", since a similarity

is not something you hand over to someone else. This does not fit the first blank.

2. **Surrender ..... expand**: "Surrender" means to give up, which does not make sense with "similarities" as its object, and "expand" means to grow bigger, which is the opposite of similarities coming to an end.
3. **Support ..... pass**: "Support similarities" is an unusual and unnatural combination of words, and "pass" does not clearly convey the idea of similarities running out at a fixed point.
4. **Share ..... end**: "Share similarities" is the standard, natural phrase used when two things or people have common features, and "similarities end" is the normal way to describe the point where common ground stops.

The correct pair is "Share ..... end", since China and India share similarities in demography and resources, and that is exactly where those similarities end.

Let's summarize:

- The verb "share" is the natural collocation for two countries having common features.
- The verb "end" correctly describes similarities running out at a certain point, which fits the second half of the sentence.

So the correct option is (d), "Share ..... end".

Quick Tip: Ask which verb naturally goes with "similarities" as its object, and which verb describes something coming to a stop.

19. The role of the Press cannot be _____ even in dictatorship, because even a dictator needs the press for _____ his ideology and policies.

(A) Eulogised ..... supressing

(B) Minimized ..... reflecting

(C) Exploited ..... writing

(D) Misused ..... broadcasting

Correct Answer: (B) Minimized ..... reflecting

Solution:

This sentence talks about the role of the press and why even a dictator cannot do without it. The first blank needs a verb that fits with "the role of the Press" as its subject, and the second blank needs a verb that fits what a dictator wants the press to do with his ideology.

1. **Eulogised ..... supressing**: "Eulogised" means praised highly, which does not fit the idea that the role of the press "cannot be" something even under a dictatorship. It also does not connect well with the second blank, since a dictator wants his ideas spread, not suppressed.
2. **Minimized ..... reflecting**: "Minimized" means reduced in importance, and the sentence says this cannot happen to the role of the press even under a dictatorship, which fits well. "Reflecting his ideology" also makes sense, since the press is used as a mirror for the ruler's views.
3. **Exploited ..... writing**: "Exploited" can describe misuse of the press, but "writing his ideology" is an odd and incomplete phrase that does not sound natural in this context.
4. **Misused ..... broadcasting**: "Misused" is close in meaning but does not carry the sense of "the role cannot be reduced", and

while "broadcasting" is plausible, the overall pairing is weaker than "minimized ..... reflecting".

The correct pair is "Minimized ..... reflecting", since even a dictator cannot reduce the importance of the press because he needs it to reflect his own ideology and policies to the people.

Let's summarize:

- "Minimized" fits the idea that the role of the press stays significant even under a dictatorship.
- "Reflecting his ideology" captures why a dictator still depends on the press, to project his own views.

So the correct option is (b), "Minimized ..... reflecting".

Quick Tip: Think about what a dictator uses the press for, and what word means "reduced in importance".

20. Modern methods of _____ earthquakes recognize that quakes, far from being geologic anamalies, are part of the periodic accumulation and discharge of _____ energy.

(A) Identifying ..... iconic

(B) Locating ..... cosmic

(C) Predicting ..... seismic

(D) Watching ..... heavenly

Correct Answer: (C) Predicting ..... seismic

Solution:

This sentence talks about how modern science studies earthquakes and what kind of energy is involved in them. The first blank needs a verb that fits with modern methods studying quakes before they happen, and the second blank needs an adjective that describes the type of energy released in an earthquake.

1. **Identifying ..... iconic**: "Identifying earthquakes" would only make sense after a quake has already happened, but the sentence talks about recognizing a pattern in advance, so this does not fit well, and "iconic energy" is not a real or meaningful phrase.
2. **Locating ..... cosmic**: "Locating earthquakes" refers to finding where a quake occurred, not to studying them as periodic events, and "cosmic energy" refers to energy from outer space, which has nothing to do with earthquakes.
3. **Predicting ..... seismic**: "Predicting earthquakes" fits perfectly with the idea of modern methods recognizing quakes as part of a periodic pattern, and "seismic energy" is the correct scientific term for the energy released in earthquakes.
4. **Watching ..... heavenly**: "Watching earthquakes" is vague and does not capture the scientific sense of the sentence, and "heavenly energy" is not a term used in earthquake science.

The correct pair is "Predicting ..... seismic", since modern methods try to predict earthquakes by studying the periodic build up and release of seismic energy in the earth.

Let's summarize:

- "Predicting" matches the idea of modern science studying quakes as a periodic and foreseeable event.
- "Seismic energy" is the standard scientific term for the energy released during an earthquake.

So the correct option is (c), "Predicting ..... seismic".

Quick Tip: Recall the scientific term for the energy released in an earthquake, and the verb for foreseeing an event.

21. Read the sentence below and find out which part contains an error. If there is no error, the answer is "No error".

The mutual co-operation **(a)** of employees is **(b)** essential to the success **(c)** of business. **(d)**

(A) The mutual co-operation

(B) of employees is

(C) essential to the success

(D) of business.

Correct Answer: (A) The mutual co-operation

Solution:

This sentence has been split into four parts, and we need to check each part for a grammar or usage error. The most common trap in such questions is a redundant phrase, where two words repeat the same meaning.

1. **The mutual co-operation**: The word "co-operation" already means working together with someone else, so it already carries the sense of "mutual". Adding "mutual" before it repeats the same idea twice, which is a redundancy error.
2. **of employees is**: This phrase correctly links the subject "co-operation" to the singular verb "is", so there is no error here.

3. **essential to the success**: "Essential to" is the correct preposition to use with "success", so this part is correct.
4. **of business.**: This closes the sentence correctly and needs no correction.

The error lies in part (a), "The mutual co-operation", because "mutual" is redundant when used with "co-operation".

Let's summarize:

- "Co-operation" by its own meaning already implies that more than one side is involved, so words like "mutual" before it are unnecessary.
- The rest of the sentence, from the verb "is" to "of business", follows correct grammar and needs no change.

So the correct option is (a), "The mutual co-operation".

Quick Tip: Ask whether "co-operation" already includes the meaning of "mutual" on its own.

22. Read the sentence below and find out which part contains an error. If there is no error, the answer is "No error".

Not less than **(a)** fifty **(b)** passengers were **(c)** killed in the bus accident. **(d)**

(A) Not less than

(B) fifty

(C) passengers were

(D) killed in the bus accident.

Correct Answer: (A) Not less than

Solution:

This sentence gives a number of passengers killed in a bus accident, and we must check if the words used with that number are grammatically correct.

1. **Not less than**: "Passengers" is a countable noun, and countable nouns need "fewer" for comparisons of quantity, not "less". "Less" is used for uncountable amounts, like water or money, so "not less than fifty passengers" is grammatically wrong.
2. **fifty**: This is simply the number of passengers and does not carry any grammar error on its own.
3. **passengers were**: The plural noun "passengers" is correctly matched with the plural verb "were", so this part is fine.
4. **killed in the bus accident.**: This closes the sentence correctly and needs no correction.

The error lies in part (a), "Not less than", because "less" should be "fewer" when talking about a countable noun like passengers.

Let's summarize:

- Use "fewer" with countable nouns you can count one by one, like passengers, people or books.
- Use "less" with uncountable nouns, like water, time or money.

So the correct option is (a), "Not less than".

Quick Tip: Check whether "passengers" is a countable noun, and recall which word, "less" or "fewer", goes with countable nouns.

23. Read the sentence below and find out which part contains an error. If there is no error, the answer is "No error".

The Chairmen of all large **(a)** private sector banks met with **(b)** senior World bank officials to give its **(c)** suggestions about implementing the new policy. **(d)**

(A) The Chairmen of all large

(B) private sector banks met with

(C) senior World bank officials to give its

(D) suggestions about implementing the new policy.

Correct Answer: (C) senior World bank officials to give its

Solution:

This sentence describes bank chairmen meeting World bank officials, and we need to check if every word agrees correctly with the noun it refers to.

1. **The Chairmen of all large**: This correctly uses the plural "Chairmen" to talk about more than one bank head, so there is no error here.
2. **private sector banks met with**: The plural subject "Chairmen" is correctly matched with the plural verb "met", so this part is fine.
3. **senior World bank officials to give its**: The pronoun "its" is singular, but it is meant to refer back to the plural "Chairmen" or the plural "banks", so it should be "their" instead of "its". This is the error.
4. **suggestions about implementing the new policy.**: This closes the sentence correctly and does not need any change.

The error lies in part (c), "senior World bank officials to give its", because the singular pronoun "its" does not agree with the plural noun it stands for.

Let's summarize:

- A pronoun must match the number of the noun it replaces, singular pronoun for a singular noun, plural pronoun for a plural noun.
- Since "Chairmen" and "banks" are both plural, the sentence needs "their suggestions", not "its suggestions".

So the correct option is (c), "senior World bank officials to give its".

Quick Tip: Trace the pronoun "its" back to the noun it replaces and check if the number matches.

24. Read the sentence below and find out which part contains an error. If there is no error, the answer is "No error".

The sun hadn't hardly **(a)** set when the mosquitoes began to sting **(b)** so annoyingly that we had **(c)** to run off from the playground. **(d)**

(A) The sun hadn't hardly

(B) set when the mosquitoes began to sting

(C) so annoyingly that we had

(D) to run off from the playground.

Correct Answer: (A) The sun hadn't hardly

Solution:

This sentence describes how quickly the mosquitoes started biting after sunset, and we need to check the grammar of the negative expression used at the start.

1. **The sun hadn't hardly**: "Hardly" already carries a negative meaning on its own, similar to "barely" or "scarcely". Adding "hadn't" before it creates a double negative, which is not correct in standard English. The correct form is "The sun had hardly set".
2. **set when the mosquitoes began to sting**: This part correctly uses "when" to link the two events happening close together in time, so it has no error.
3. **so annoyingly that we had**: "So...that" is the correct structure for describing a result, so this part is fine.
4. **to run off from the playground.**: This closes the sentence correctly and needs no change.

The error lies in part (a), "The sun hadn't hardly", because "hardly" is already a negative word, and pairing it with "hadn't" creates an incorrect double negative.

Let's summarize:

- Words like "hardly", "scarcely" and "barely" are negative in meaning on their own and should not be used with another negative word like "not" or "hadn't".
- The correct version of the sentence begins with "The sun had hardly set", not "hadn't hardly set".

So the correct option is (a), "The sun hadn't hardly".

Quick Tip: Remember that "hardly" is already negative, so check if it has been paired with another negative word.

25. A wise and experienced manager will assign a job to whom ever is best qualified.

(A) A wise and experienced

(B) manager will assign

(C) a job to whom ever is

(D) best qualified

Correct Answer: (D) best qualified

Solution:

This question checks whether a superlative form is used correctly inside a sentence. The full sentence reads: 'A wise and experienced manager will assign a job to whom ever is best qualified.' It is split into four parts, and you have to find which part carries a grammar slip, or mark 'No error' if the sentence is clean.

1. **A wise and experienced**: This opening phrase is a plain pair of adjectives describing the manager. Nothing is wrong here.
2. **manager will assign**: The subject 'manager' and the future verb 'will assign' agree correctly. No issue in this part.
3. **a job to whom ever is**: This stretch of the sentence sets up the clause that follows and reads smoothly on its own.
4. **best qualified**: 'Best' is a superlative, and superlatives almost always need the definite article 'the' in front of them, the way we say 'the tallest player' or 'the fastest runner'. Written on its own as 'best qualified' the phrase is missing that 'the', so it should read 'the best qualified'.

The error sits in the fourth part, 'best qualified', because the superlative 'best' is left without its article. Adding 'the' gives the

grammatically complete phrase 'the best qualified', so the correct choice is option (d).

Let's summarize:

- A superlative adjective such as best, tallest, or most qualified is normally preceded by 'the'.
- Parts (a), (b), and (c) of the sentence are grammatically sound and do not need any change.

So the answer is option (d), best qualified, since it drops the article that a superlative form needs.

Quick Tip: Superlative adjectives like 'best' normally need the definite article 'the' before them.

26. When you leave out a player who is the best in the country by a mile, the people need to know the real reasons and this is where the attitude of the BCCI is depressing.

(A) Who is the best in the country by a mile

(B) Who is the best in the country

(C) Who is the best in the country for a mile

(D) Who is the best in the country with a mile

Correct Answer: (B) Who is the best in the country

Solution:

This sentence tests whether the underlined phrase needs the extra words 'by a mile' tacked on to it, or whether the plain superlative

statement is enough and correct on its own. The underlined part reads: 'who is the best in the country by a mile'.

1. **Who is the best in the country by a mile** (option a, same as the original): 'By a mile' is normally used with a comparison, such as 'he won by a mile', to say the gap between two things is large. Here it is bolted on to a simple superlative statement, and it does not fit the sentence naturally, so the original wording is not the best choice.
2. **Who is the best in the country** (option b): This trims the sentence down to the plain, correct superlative claim: the player is the best in the country. It reads cleanly and needs nothing extra to make its point.
3. **Who is the best in the country for a mile** (option c): 'For a mile' would suggest a distance or duration, which makes no sense when describing how good a cricketer is.
4. **Who is the best in the country with a mile** (option d): 'With a mile' is not an English phrase that attaches to 'best', so this option is meaningless in context.

Option (b), 'who is the best in the country', is the correct rewrite because it removes the awkward, badly attached phrase 'by a mile' and leaves a clean, grammatically sound superlative statement.

Let's summarize:

- 'By a mile' is an idiom for comparing two measurable things and does not belong after a plain superlative like 'the best'.
- Options (c) and (d) invent phrases, 'for a mile' and 'with a mile', that carry no real meaning in this sentence.

So the sentence reads correctly as 'When you leave out a player who is the best in the country, the people need to know the real reasons',

which matches option (b).

Quick Tip: Check whether the extra phrase 'by a mile' adds anything correct or necessary to the sentence.

27. The reason why she is absent today is because her husband is ill.

(A) Absent today is because her husband is ill.

(B) Absent today because her husband is ill.

(C) Absent today is that her husband is ill.

(D) Absent today is because her husband illness.

Correct Answer: (C) Absent today is that her husband is ill.

Solution:

This sentence tests the well known 'reason is because' error. When a sentence already starts with 'the reason', the clause that completes it should be introduced by 'that', not 'because', since 'reason' and 'because' both mean the same thing and using both together repeats the idea. The underlined part reads: 'absent today is because her husband is ill'.

1. **Absent today is because her husband is ill** (option a, same as the original): This repeats 'reason' from earlier in the sentence and 'because' here, which says the same thing twice. It is the classic redundancy this question is built around.
2. **Absent today because her husband is ill** (option b): Dropping 'is' leaves the clause without a proper verb linking 'the reason why she is absent today' to the rest of the sentence, so it is grammatically broken.

3. **Absent today is that her husband is ill** (option c): This replaces 'because' with 'that', which is exactly the fix the 'reason is because' rule calls for. The sentence now reads smoothly with no repeated idea.
4. **Absent today is because her husband illness** (option d): 'Her husband illness' is missing a verb and is not a complete clause, so this option is ungrammatical.

Option (c) is correct because swapping 'because' for 'that' removes the redundancy while keeping the sentence's meaning intact.

Let's summarize:

- Never follow 'the reason...is' with 'because'; use 'that' instead, since 'reason' already carries the meaning of 'because'.
- Options (b) and (d) fail on separate grammar grounds, a missing verb and an incomplete clause.

So the corrected sentence is 'The reason why she is absent today is that her husband is ill', matching option (c).

Quick Tip: 'The reason...is because' is a classic redundancy; the clause after 'reason...is' should start with 'that'.

28. It was she, not me, who put forth the attractive propositions.

(A) She, not me,

(B) Her, not me,

(C) Her, not I,

(D) She, not I,

Correct Answer: (D) She, not I,

Solution:

This sentence checks pronoun case after the linking verb 'was' and inside a 'not X' contrast. 'It was ____ who put forth the attractive propositions' needs a subject pronoun in the blank, because the pronoun is the complement of 'was' and also the subject of 'who put forth'. The underlined part reads: 'she, not me,'.

1. **She, not me,** (option a, same as the original): 'She' is correctly in the subject case, but 'me' is the object form and does not match 'she' in a parallel contrast. The two pronouns should share the same case.
2. **Her, not me,** (option b): Both 'her' and 'me' are object pronouns, so this breaks the rule that a pronoun following 'it was' and acting as the subject of 'who put forth' must be in the subject case.
3. **Her, not I,** (option c): 'Her' is wrong for the same reason as option (b), and mixing it with 'I' makes the two halves of the contrast disagree in case with each other.
4. **She, not I,** (option d): Both 'she' and 'I' are subject pronouns, matching the grammatical role they play as the subject of 'who put forth the attractive propositions'.

Option (d) is correct because it keeps both halves of the 'not' contrast in the subject case, which is what the sentence structure demands.

Let's summarize:

- After 'it was', and before a clause like 'who put forth', use the subject pronoun (she, I, he, they), not the object pronoun (her, me, him, them).

- A 'not' contrast should keep both pronouns in the same case for consistency.

So the corrected sentence is 'It was she, not I, who put forth the attractive propositions', matching option (d).

Quick Tip: 'It was she' needs the subject pronoun; keep both halves of the comparison in the same case, 'she' and 'I'.

29. It is with a heavy heart that I pen these few lines to condole for you on the death of your beloved mother.

(A) Condole for you on

(B) Condole with you in

(C) Condole upon you on

(D) Condole with you on

Correct Answer: (D) Condole with you on

Solution:

This sentence tests the fixed preposition pattern that goes with the verb 'condole'. In standard English you condole with a person, using 'with', and you condole on an event or loss, using 'on'. The underlined part reads: 'to condole for you on'.

1. **Condole for you on** (option a, same as the original): 'Condole for' is not an accepted pairing; the verb 'condole' does not take 'for' before the person being consoled.
2. **Condole with you in** (option b): 'With you' correctly names the person, but 'in' is the wrong preposition before 'the death', which

needs 'on'.

3. **Condole upon you on** (option c): 'Upon you' is not the correct preposition for the person; it should be 'with you', not 'upon you'.
4. **Condole with you on** (option d): 'With you' names the person correctly, and 'on' correctly introduces the cause, 'the death of your beloved mother'. Both prepositions match the fixed idiom.

Option (d) is correct because 'condole with you on the death' is the accepted idiomatic pairing, unlike the other three options which each get one of the two prepositions wrong.

Let's summarize:

- The correct idiom is 'condole with someone on something', never 'condole for' or 'condole upon'.
- Options (b) and (c) each fix one preposition but leave the other one wrong.

So the corrected sentence reads 'I pen these few lines to condole with you on the death of your beloved mother', matching option (d).

Quick Tip: The verb 'condole' pairs with 'with' for the person and 'on' for the event: condole with someone on something.

30. Neither the manager nor the Cashier were able to report on the Company's progress.

(A) Neither the manager nor the Cashier were able to

(B) Neither the manager or the Cashier were able to

(C) Neither the manager nor the Cashier could able to

(D) Neither the manager nor the Cashier was able to

Correct Answer: (D) Neither the manager nor the Cashier was able to

Solution:

This sentence tests subject verb agreement with the 'neither...nor' construction. When two subjects are joined by 'neither...nor', the verb agrees with whichever subject sits closer to it, not with the subject furthest away. The underlined part reads: 'Neither the manager nor the Cashier were able to'.

1. **Neither the manager nor the Cashier were able to** (option a, same as the original): 'The Cashier' is singular and sits right next to the verb, so it needs the singular verb 'was', not the plural 'were'.
2. **Neither the manager or the Cashier were able to** (option b): 'Neither' must be paired with 'nor', never with 'or'. Swapping in 'or' breaks the correlative pair, and the verb 'were' is still wrong for the same reason as option (a).
3. **Neither the manager nor the Cashier could able to** (option c): 'Could able to' stacks two ability structures together, which is not valid English; you say either 'could' or 'was able to', never both.
4. **Neither the manager nor the Cashier was able to** (option e, filling the fourth slot): 'Was' is the correct singular verb to match 'the Cashier', the subject nearest the verb, and 'neither...nor' is kept intact.

The corrected phrase, 'Neither the manager nor the Cashier was able to', is right because it fixes the agreement error while keeping 'neither...nor' as the joining pair.

Let's summarize:

- With 'neither...nor', match the verb to the subject closest to it. Here that subject is 'the Cashier', which is singular.
- 'Neither' must always pair with 'nor', never with 'or', and 'could' should not be combined with 'able to'.

So the corrected sentence reads 'Neither the manager nor the Cashier was able to report on the Company's progress'.

Quick Tip: With 'neither...nor', the verb agrees with the subject nearer to it; 'the Cashier' is singular, so use 'was', not 'were'.

31. Arrange the following parts into a coherent sentence/passage:
P. Children need to be loved, and in a sense they cannot have too much of it.
Q. She herself doesn't want to grow up and attempts to make time stand still.
R. Fortunately she cannot succeed.
S. But it is not because of love that a mother prevents her child from growing up.

(A) QRSP

(B) SPQR

(C) PQRS

(D) PSQR

Correct Answer: (D) PSQR

Solution:

This is a paragraph reordering question. The four sentences build a short passage about a mother, love, and a child's wish to stay young.

To find the right order, look at the linking words: 'But' in S signals a contrast with P, 'She herself' in Q needs an earlier mention of 'a mother' to point back to, and 'Fortunately' in R only makes sense after we learn she is trying and failing at something.

1. **PSQR** (option a): P opens with the general idea that children need love and cannot have too much of it. S follows with 'But it is not because of love that a mother prevents her child from growing up', using 'But' to contrast with P and introducing 'a mother'. Q then explains what the mother is really doing, 'She herself doesn't want to grow up', with 'She' pointing back to 'a mother' in S. R closes the thought with 'Fortunately she cannot succeed', which needs Q's attempt to fail against. Every link fits.
2. **PSRQ** (option b): This places R, 'Fortunately she cannot succeed', right after S, before Q has even said what the mother is attempting. There is nothing yet for her to fail at, so this order breaks down.
3. **PQRS** (option c): Here Q comes right after P, but Q opens with 'She herself', and no one named 'she' has been introduced yet, since S, which brings in 'a mother', has not appeared. The pronoun has nothing to refer to.
4. **PQSR** (option d): Again Q follows P directly with an unexplained 'She', and S's contrasting 'But' would now come after Q instead of setting up Q, which reverses the logical cause and effect of the passage.

Only PSQR keeps every pronoun and connector pointing to something already stated, so option (a) is correct.

Let's summarize:

- 'But' in S needs to follow the general opening statement in P to work as a contrast.
- 'She' in Q only makes sense once 'a mother' has been named, which happens in S.
- 'Fortunately' in R needs Q's failed attempt to have already been mentioned.

So the coherent order is P, S, Q, R, matching option (a).

Quick Tip: Start with the sentence that states the general idea about children needing love, then look for the contrast introduced by 'But'.

32. Arrange the following parts into a coherent sentence/passage:
P. It would perhaps be possible for you to be of some use to this brave little boy.
Q. She said to herself silently at first, that
R. Without neglecting anything of what was due to her important mission.
S. And this idea pleased her.

(A) PSQR

(B) RSQP

(C) QRPS

(D) QSPR

Correct Answer: (C) QRPS

Solution:

This question asks for the order that turns four fragments into one flowing sentence about a woman thinking through an idea. The trick is to notice that Q sets up a reported thought with 'that', R and P

complete that thought, and S closes the sentence with her reaction to it.

1. **PSQR** (option a): Starting with P, 'It would perhaps be possible for you to be of some use to this brave little boy', gives no speaker and no context. There is no 'she' yet for S's 'this idea pleased her' to refer to.
2. **RSQP** (option b): Opening with R, a clause beginning 'Without neglecting', is not a complete sentence on its own and cannot start the passage without a main clause before it.
3. **QRPS** (option c): Q opens with 'She said to herself silently at first, that', which properly introduces the person and sets up a reported thought. R follows naturally as a condition attached to that thought, 'without neglecting anything of what was due to her important mission'. P then completes the thought itself, 'it would perhaps be possible for you to be of some use to this brave little boy'. S closes with her reaction, 'And this idea pleased her', which needs the whole thought to have been stated first. Every part connects to the one before it.
4. **QSPR** (option d): This puts S, her being pleased, directly after Q, before we even learn what the idea was, which reverses cause and effect.

Option (c), QRPS, is correct because Q introduces the thought, R and P build the content of that thought in a natural order, and S ends the sentence with her reaction once the whole idea has been laid out.

Let's summarize:

- Q must come first since it is the only fragment that introduces 'she' and opens the reported thought with 'that'.

- S needs the full thought to be complete before 'this idea' can refer back to it, so S must come last.

So the sentence reads: 'She said to herself silently at first, that without neglecting anything of what was due to her important mission, it would perhaps be possible for you to be of some use to this brave little boy. And this idea pleased her', matching option (c).

Quick Tip: Look for which part can naturally open the sentence with 'She said...' and follow the chain of thought that ends in 'pleased her'.

33.

Directions: In the following question, 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 real challenge today is unlearning, which is much harder.

Q. The new world of business behaves differently from the world in which we grew up.

R. Learning is important for both people and organizations however.

S. Each of us has a mental model that we've used over the years to make sense, but.

(A) SPQR

(B) RSPQ

(C) RSQP

(D) RPSQ

Correct Answer: (D) RPSQ

Solution:

Step 1: Understanding the Question:
We are given four jumbled sentence parts labelled P, Q, R and S. We need to arrange them so that the passage reads as one connected, sensible piece of writing.

Step 2: Key Approach:
Look for the part that can start the passage on its own without needing a pronoun or connector to point back to something earlier. Then track linking words such as "however" and "but" that connect one idea to the next.

Step 3: Detailed Explanation:
Part R says "Learning is important for both people and organizations however." This can open the passage because it introduces a general idea, the value of learning, and ends with "however," which signals a contrast is coming.
Part P says "The real challenge today is unlearning, which is much harder." This follows R directly, since it supplies the contrast that "however" promised: learning is valuable, but unlearning is the harder, more real challenge.
Part S says "Each of us has a mental model that we've used over the years to make sense, but." This follows P by explaining why unlearning is hard, everyone carries an old mental model, and it ends with "but," again signalling a contrast to come.
Part Q says "The new world of business behaves differently from the world in which we grew up." This closes the passage by completing the contrast S set up: our old mental model does not match how the

new business world actually works.
Reading R-P-S-Q together forms one coherent paragraph about why unlearning old mental models is harder than learning new ones.

Step 4: Final Answer:
The correct sequence is RPSQ, which is option (d).

Quick Tip: Look for the part that opens the idea and track the words "however" and "but," which signal the contrast that must be answered by the next part.

34.

Directions: In the following question, 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. Passengers were told to be ready to quit the ship.

Q. The rising gale fanned the smoldering fire.

R. Everyone now knew there was fire on board.

S. Flames broke out here and there.

(A) SRQP

(B) QPSR

(C) RSPQ

(D) QSRP

Correct Answer: (A) SRQP

Solution:

Step 1: Understanding the Question:
We are given four jumbled parts, P, Q, R and S, describing a fire breaking out on a ship. We need to put them in the order that tells the event as a clear, connected sequence.

Step 2: Key Approach:
Since this passage describes a series of events, arrange the parts in the natural order they would happen: an event occurs, people notice it, conditions make it worse, and then people react to it.

Step 3: Detailed Explanation:
Part S says "Flames broke out here and there." This is the first event, since a fire has to start before anyone can react to it, so S opens the passage.
Part R says "Everyone now knew there was fire on board." This follows S naturally, the word "now" shows this awareness comes right after the flames appeared.
Part Q says "The rising gale fanned the smoldering fire." This comes next, once people know about the fire, the story moves to how the wind makes the situation worse.
Part P says "Passengers were told to be ready to quit the ship." This is the last event, the natural response once the fire has been worsened by the gale is to prepare the passengers to evacuate.
Reading S-R-Q-P together gives one clear timeline: flames appear, people learn of the danger, the wind worsens the fire, and passengers are told to prepare to leave.

Step 4: Final Answer:
The correct sequence is SRQP, which is option (a).

Quick Tip: Think about the natural order events would happen in a fire emergency: first the fire starts, then people notice it, then it gets worse, then action is taken.

35.

Directions: In the following question, 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. He dares not say "I think", "I am" but quotes some saint or sage.

Q. These roses under my window make no reference to former roses or to better ones.

R. He is ashamed before the blade of grass or the blowing rose.

S. Man is timid, apologetic and no longer upright.

(A) QRSP

(B) SPQR

(C) QSPR

(D) SPRQ

Correct Answer: (D) SPRQ

Solution:

Step 1: Understanding the Question:

We are given four jumbled parts, P, Q, R and S, from a passage about how modern man has become timid and no longer speaks with original thought. We need to arrange them into one coherent passage.

Step 2: Key Approach:

Find the part that states the main idea first, then look for the parts that build on it, and finally the part that gives a concrete illustration, since this kind of reflective passage usually moves from a general statement to a specific image.

Step 3: Detailed Explanation:

Part S says "Man is timid, apologetic and no longer upright." This is the general opening statement that introduces the main idea of the passage, modern man's timidity.

Part P says "He dares not say 'I think', 'I am' but quotes some saint or sage." This follows S directly, since it explains exactly how man's timidity shows up, he hides behind the words of others instead of speaking his own mind.

Part R says "He is ashamed before the blade of grass or the blowing rose." This follows P by extending the same idea of shame into nature, where even a simple blade of grass or a rose makes him feel ashamed of his own lack of originality.

Part Q says "These roses under my window make no reference to former roses or to better ones." This closes the passage, since it gives the concrete image of the roses referred to in R, showing that unlike man, roses exist fully in the present without comparing themselves to the past.

Reading S-P-R-Q together builds one flowing argument from the general idea of human timidity down to the specific image of the roses.

Step 4: Final Answer:

The correct sequence is SPRQ, which is option (e).

Quick Tip: Start with the sentence that states the general idea about man, then trace how it builds toward the specific image of the roses mentioned last.

36.

Directions: Choose a suitable one-word substitute for the given phrase.

A person filled with excessive zeal, especially for an extreme religious or political cause.

(A) Lunatic

(B) Critic

(C) Fanatic

(D) Cynic

Correct Answer: (C) Fanatic

Solution:

This question asks for the one word that means a person filled with excessive zeal, especially for an extreme religious or political cause. Let's look at each option in turn.

1. **Lunatic**: This means a person who is insane or acts in a wildly foolish way. It describes madness in general, not zeal for a cause, so it does not fit.
2. **Critic**: This is a person who judges or reviews the merits and faults of something, such as a book, film or policy. It has nothing to do with extreme zeal, so it does not fit.
3. **Fanatic**: This is exactly a person filled with excessive, often uncontrolled enthusiasm, particularly for a religious or political

cause. This matches the definition given in the question.

4. **Cynic**: This is a person who doubts the sincerity or goodness of people's motives. A cynic is distrustful, not zealous, so this does not fit.

The correct word is "Fanatic," since it is the only option that captures excessive zeal for a cause. This corresponds to option (c).

Let's summarize:

- A fanatic is marked by extreme, uncritical enthusiasm for a belief or cause.
- Lunatic, critic and cynic describe unrelated qualities: madness, judgment and distrust.

So the one-word substitute is "Fanatic."

Quick Tip: Think of the word for someone whose enthusiasm for a cause, especially religious or political, has become extreme and uncritical.

37.

Directions: Choose a suitable one-word substitute for the given phrase.

The study of human history and prehistory through the excavation of sites and the analysis of physical remains.

(A) Anthropology

(B) Genealogy

(C) Ornithology

(D) Archaeology

Correct Answer: (D) Archaeology

Solution:

This question asks for the one word that means the study of human history and prehistory through the excavation of sites and the analysis of physical remains. Let's look at each option.

1. **Anthropology**: This is the broader study of human beings, their societies, cultures and development, past and present. It is close in subject but is a wider field, not specifically the excavation-based study described here.
2. **Genealogy**: This is the study of family lines and descent, tracing ancestry through records. It has no connection to excavation or physical remains, so it does not fit.
3. **Ornithology**: This is the study of birds. It is completely unrelated to human history or excavation, so it does not fit.
4. **Archaeology**: This is exactly the study of human history and prehistory through digging up sites and examining physical remains such as tools, pottery and bones. This matches the definition given in the question precisely.

The correct word is "Archaeology," since it names the specific science of studying the past through excavation. This corresponds to option (e).

Let's summarize:

- Archaeology is the excavation-based study of past human life through physical remains.
- Anthropology is a broader field, while genealogy and ornithology deal with family lines and birds respectively, not excavation.

So the one-word substitute is "Archaeology."

Quick Tip: Think of the word for the science that digs up old sites and studies bones, tools and pottery to learn about the human past.

38.

Directions: Choose a suitable one-word substitute for the given phrase.

Person who suffers from delusions of greatness.

(A) Megalomaniac

(B) Kleptomaniac

(C) Romantic

(D) Hypochondriac

Correct Answer: (A) Megalomaniac

Solution:

This question asks for the one word that describes a person who suffers from delusions of greatness. Let's check each option.

1. **Megalomaniac**: This describes a person who has an obsessive belief in their own greatness, power or importance, often exaggerated far beyond reality. This is exactly a delusion of greatness.
2. **Kleptomaniac**: This describes a person who has an uncontrollable urge to steal, even without any real need. It has nothing to do with delusions of greatness.
3. **Romantic**: This describes someone who is idealistic or affectionate, or relates to romance and emotion. It does not describe delusions of grandeur.

4. **Hypochondriac**: This describes a person who is excessively anxious about their health and imagines they are ill. This is a delusion about illness, not about greatness.

The correct word is "Megalomaniac," since it precisely names the delusion of one's own greatness or power. This corresponds to option (a).

Let's summarize:

- A megalomaniac holds an exaggerated, delusional belief in their own power or importance.
- Kleptomaniac, romantic and hypochondriac describe unrelated conditions: compulsive stealing, idealism, and health anxiety.

So the one-word substitute is "Megalomaniac."

Quick Tip: The word contains "mega," meaning great, combined with an obsessive, unrealistic belief about oneself.

39.

Directions: Choose a suitable one-word substitute for the given phrase.

Term used to refer to the health care of old people.

(A) Bariatric

(B) Veteran

(C) Geriatric

(D) Novice

Correct Answer: (C) Geriatric

Solution:

This question asks for the one word used to refer to the health care of old people. Let's look at each option.

1. **Bariatric**: This relates to the medical treatment of obesity and weight loss, not to the care of the elderly, so it does not fit.
2. **Veteran**: This refers to a person with long experience in a field, such as a former soldier, and is not a medical term for elderly care, so it does not fit.
3. **Geriatric**: This is exactly the branch of medicine and health care that deals with the health and care of old people. This matches the definition in the question directly.
4. **Novice**: This means a beginner or someone new to an activity, which is unrelated to elderly health care.

The correct word is "Geriatric," since it names the specific field concerned with the health care of old people. This corresponds to option (c).

Let's summarize:

- Geriatric care is the branch of medicine focused on the health needs of elderly people.
- Bariatric relates to weight and obesity treatment, while veteran and novice describe experience level, not medical care.

So the one-word substitute is "Geriatric."

Quick Tip: Think of the medical term for the branch of health care that focuses specifically on elderly patients.

40.

Directions: Choose a suitable one-word substitute for the given phrase.

That which can be drunk.

(A) Edible

(B) Eatable

(C) Potable

(D) Palatable

Correct Answer: (C) Potable

Solution:

This question asks for the one word that means that which can be drunk. Let's check each option.

1. **Edible**: This means fit to be eaten, referring to food, not liquid, so it does not fit something that is drunk.
2. **Eatable**: This also means fit to be eaten, again describing food rather than a liquid that can be drunk.
3. **Potable**: This means fit or safe to drink, most commonly used for water, and matches the meaning "that which can be drunk" exactly.
4. **Palatable**: This means pleasant to the taste, describing how something tastes rather than whether it can be drunk at all.

The correct word is "Potable," since it specifically means fit to drink. This corresponds to option (c).

Let's summarize:

- Potable describes a liquid, most often water, that is safe or fit to drink.

- Edible and eatable apply to food, while palatable describes taste, not drinkability.

So the one-word substitute is "Potable."

Quick Tip: Think of the word used specifically for water that is safe to drink.

41. "I thought you said this was a difficult problem. It isn't. In fact, it's *as easy as pie*."

(A) Evident

(B) Unmistakable

(C) Not worthy

(D) Very simple

Correct Answer: (D) Very simple

Solution:

This question checks whether you know the everyday meaning of the phrase "as easy as pie". People use this phrase for a task that takes almost no effort to finish.

1. **Evident**: This word means clear or obvious to see. The phrase is not about how obvious something is, so this option does not fit.
2. **Unmistakable**: This word means something cannot be confused with anything else. The speaker is talking about how hard or simple the problem is, not about confusion, so this is off track.

3. **Not worthy**: This means something does not deserve attention or respect. The sentence says nothing about worth or value, so this option is wrong.
4. **Very simple**: A pie is soft and easy to cut and eat, so calling something "as easy as pie" means it takes very little effort. This matches the sentence perfectly, since the speaker says the problem "isn't" difficult.

The correct option is "Very simple", because the speaker is telling us the problem turned out to need almost no effort to solve.

Let's summarize:

- "As easy as pie" is a common idiom for a task that is very simple to do.
- The other options talk about clarity, confusion, or worth, none of which match the sense of ease in the sentence.

So the option that best expresses the meaning of "as easy as pie" is "Very simple".

Quick Tip: Think about what makes a task require almost no effort.

42. "You're a real *couch potato*, Jay. You need to get more exercise!"

(A) Plump chap

(B) Lazy person

(C) Ignorant soul

(D) Sick individual

Correct Answer: (B) Lazy person

Solution:

This question tests the everyday meaning of "couch potato", a phrase used for someone who spends most of the time sitting and watching television instead of being active.

1. **Plump chap**: This describes a man who is a bit fat. The idiom is about a habit, not about a person's body size, so this option misses the point.
2. **Lazy person**: A couch potato sits on the couch for hours instead of moving around or exercising. This is exactly what a lazy person does, so this option matches the sentence, where Jay is told to "get more exercise".
3. **Ignorant soul**: This means someone who lacks knowledge. The sentence is about physical activity, not about knowledge, so this does not fit.
4. **Sick individual**: This means someone who is unwell. Being a couch potato is a habit, not an illness, so this option is wrong.

The correct option is "Lazy person", since the sentence tells Jay to move more, which fits someone who avoids activity out of laziness.

Let's summarize:

- "Couch potato" describes a person who is lazy and prefers sitting around instead of exercising.
- The other options describe body size, lack of knowledge, or illness, none of which the sentence is talking about.

So the option that best expresses the meaning of "couch potato" is "Lazy person".

Quick Tip: The idiom describes a habit tied to avoiding physical activity, not appearance or health.

43. "I don't think you can depend on Srikanth to do that job by himself. He's too *green*."

(A) Childish

(B) Envious

(C) Indecisive

(D) Inexperienced

Correct Answer: (D) Inexperienced

Solution:

This question checks the meaning of the word "green" when it is used to describe a person rather than a color. In this sense, "green" refers to someone who is new to a job or task and has not yet built the skill to handle it alone.

1. **Childish**: This means behaving in an immature way. The sentence is about Srikanth's ability to handle a job, not about his behavior, so this option does not fit.
2. **Envious**: This means feeling jealous of someone else. Nothing in the sentence talks about jealousy, so this is off track.
3. **Indecisive**: This means unable to make decisions. The sentence is about doing a job alone, not about decision making, so this is not the best match.
4. **Inexperienced**: A person who is new to a task, like unripe or "green" fruit that has not yet matured, cannot be trusted to

handle it alone. This matches the sentence directly, since the speaker doubts Srikanth can manage the job "by himself".

The correct option is "Inexperienced", because the doubt about Srikanth handling the job alone points to a lack of experience, not to behavior, jealousy, or indecision.

Let's summarize:

- "Green" used for a person means inexperienced, much like unripe fruit is called green before it matures.
- The other options describe behavior, jealousy, or indecision, which the sentence never mentions.

So the option that best expresses the meaning of "green" in this sentence is "Inexperienced".

Quick Tip: Unripe fruit is called green; the same word is used for people new to a task.

44. It's late and you've accomplished a lot. Why don't you *call it a day*?

(A) Sleep

(B) Take rest

(C) Stop work

(D) Be happy

Correct Answer: (C) Stop work

Solution:

This question checks the meaning of the phrase "call it a day", which people use when they decide to stop an activity for the time being, usually because enough work has already been done.

1. **Sleep**: This means to rest with the eyes closed. The phrase is about ending an activity, not specifically about sleeping, so this option is too narrow.
2. **Take rest**: This means to relax for a while. "Call it a day" is about stopping work completely for the day, which is a stronger idea than just resting for some time, so this is not the best match.
3. **Stop work**: The sentence says it is late and a lot has been done, and asks why the person does not "call it a day". This fits perfectly, since the phrase means to stop working because the task has gone on long enough.
4. **Be happy**: This means to feel pleased. The sentence is about ending an activity, not about feelings, so this option does not fit.

The correct option is "Stop work", because the sentence is suggesting that, since it is late and much has already been achieved, it makes sense to end the work for the day.

Let's summarize:

- "Call it a day" means to stop doing something, usually work, because enough has been done for now.
- The other options describe sleeping, resting briefly, or feeling happy, none of which capture the full sense of ending work.

So the option that best expresses the meaning of "call it a day" is "Stop work".

Quick Tip: The phrase is used when someone decides to end work after a long stretch.

45. My new car cost an *arm and a leg*.

(A) Negligible

(B) Exorbitant

(C) Reasonable

(D) Cheap

Correct Answer: (B) Exorbitant

Solution:

This question checks the meaning of the phrase "cost an arm and a leg", which people use for something that is extremely expensive, so costly that it feels like giving up something very valuable to pay for it.

1. **Negligible**: This means so small that it can be ignored. The idiom is about a high cost, not a very low one, so this option is the opposite of the correct meaning.
2. **Exorbitant**: This means far higher than what is fair or usual. Losing an arm and a leg would be an enormous price to pay, and the phrase uses this image for a price that feels just as extreme. This matches the sentence about the car's cost.
3. **Reasonable**: This means fair and acceptable. The idiom describes a price that feels unfair because it is so high, so this option does not fit.
4. **Cheap**: This means low in cost. The idiom means the opposite, an extremely high cost, so this option is wrong.

The correct option is "Exorbitant", since the phrase describes a price so high that paying it feels like a huge sacrifice.

Let's summarize:

- "Cost an arm and a leg" means something is extremely expensive.
- The other options describe a very low cost or a fair cost, both of which are the opposite of what the idiom means.

So the option that best expresses the meaning of "cost an arm and a leg" is "Exorbitant".

Quick Tip: The idiom uses body parts to exaggerate how high a price feels.

90004. It is ____(46) to read a book about our planet by an author who does not allow facts to be ____(47) by politics: well aware of the political disputes about the effects of human activities on climate and biodiversity, this author does not permit them to ____(48) his comprehensive description of what we know about our biosphere. He emphasizes the enormous gaps in our knowledge, the ____(49) of our observations, and the ____(50) of our theories, calling attention to the many aspects of planetary evolution that must be better understood before we can accurately diagnose the condition of our planet.

Correct Answer: —

46. Choose the best word for blank (46) in the passage above.

(A) Refreshing

(B) Stimulating

(C) Boring

(D) Dreary

Correct Answer: (A) Refreshing

Solution:

This blank sets the tone for the whole sentence, which praises an author for refusing to let politics distort scientific facts about the planet. The word must match that positive, appreciative tone.

1. **Refreshing**: This means pleasantly new or welcome, especially as a change from what is usual. Reading a book that sticks to facts instead of bending to politics is exactly this kind of pleasant change, which is why it fits the sentence.
2. **Stimulating**: This means intellectually exciting. It sounds positive too, but the sentence is not really about excitement, it is about relief from political bias, so this word misses the specific point being made.
3. **Boring**: This is negative, and it clashes with the rest of the sentence, which clearly approves of the author's approach.
4. **Dreary**: This also means dull and depressing, which again contradicts the appreciative tone set by the colon and the explanation that follows it.

The correct choice is "Refreshing", since it captures the sense of relief and pleasant surprise at finding a book that keeps facts free of political spin.

Let's summarize:

- The sentence after the colon explains and supports the missing word, so the word must be positive.
- "Refreshing" specifically conveys relief from something unwelcome (political bias), which is the exact idea being described.

So the answer to blank (46) is "Refreshing".

Quick Tip: Think about the overall tone the writer wants to convey about the author's honesty in the face of political controversy.

47. Choose the best word for blank (47) in the passage above.

(A) Invalidated

(B) Overshadowed

(C) Illuminated

(D) Interfered

Correct Answer: (B) Overshadowed

Solution:

This blank describes what politics tries to do to facts, something the author refuses to allow. The word needs to describe facts losing their proper place or prominence because of political pressure.

1. **Invalidated**: This means proven false or made legally worthless. Politics does not usually prove a fact false, it just tries to push it aside or spin it, so this word is too strong and not quite the right idea.

2. **Overshadowed**: This means pushed into the background or made less important by something else. Facts being overshadowed by politics means political noise drowns out or eclipses the plain facts, which fits perfectly with what the author refuses to allow.
3. **Illuminated**: This means made clear or lit up. This is the opposite of what politics is being accused of doing to facts here, so it does not fit.
4. **Interfered**: This word normally needs "with" after it ("interfered with"), and using it here reads awkwardly. It also does not carry the specific sense of facts being pushed into the background.

The correct choice is "Overshadowed", because it exactly describes facts being eclipsed or pushed aside by political concerns, which is what the author is said to resist.

Let's summarize:

- The sentence is about facts losing prominence to political noise, not about facts being proven wrong or clarified.
- "Overshadowed" is the word that means exactly this loss of prominence.

So the answer to blank (47) is "Overshadowed".

Quick Tip: Consider what happens to facts when political concerns take precedence over them.

48. Choose the best word for blank (48) in the passage above.

(A) Analyse

(B) Garble

(C) Obscure

(D) Enhance

Correct Answer: (C) Obscure

Solution:

Here "them" refers back to the political disputes mentioned just before. The author does not let these disputes do something harmful to his comprehensive, clear description of the biosphere, and the blank names that harmful action.

1. **Analyse**: This means to examine closely. Disputes are not usually described as "analysing" a description, and this does not carry any negative or blocking sense, so it does not fit.
2. **Garble**: This means to distort or confuse a message during transmission. It is closer in spirit, but it is normally used for scrambled communication, not for a full comprehensive description being clouded by disputes.
3. **Obscure**: This means to make unclear or hide from view. Political disputes clouding or blurring a comprehensive description is a very natural fit, and it matches the idea of the author protecting clarity from politics.
4. **Enhance**: This means to improve or make better. This is a positive word, but the sentence is about the author blocking a negative effect of the disputes, so a positive word does not fit here.

The correct choice is "Obscure", since the author is protecting the clarity of his description from being clouded by political disputes.

Let's summarize:

- The blank must describe a negative effect that political disputes could have on a clear description, one the author successfully blocks.
- "Obscure" precisely means to make something unclear, which is exactly this negative effect.

So the answer to blank (48) is "Obscure".

Quick Tip: Think about what political disputes might do to a clear, factual description if left unchecked.

49. Choose the best word for blank (49) in the passage above.

(A) Leanness

(B) Neatness

(C) Tidiness

(D) Sparseness

Correct Answer: (D) Sparseness

Solution:

This sentence lists three related weaknesses in our current understanding of the planet: gaps in knowledge, a problem with our observations, and a problem with our theories. The blank needs a noun that names a weakness in the quantity or richness of our observations.

1. **Leanness**: This usually describes a lack of fat, or a minimal, stripped down style. It is an unusual word to pair with "observations", since observations are not normally described this way.
2. **Neatness**: This means being tidy or well organised, which is a positive quality and has nothing to do with a shortage of data, so it does not fit a list of weaknesses.
3. **Tidiness**: Like neatness, this is a positive quality about order, not about how much or how little data exists, so it does not fit here either.
4. **Sparseness**: This means being scarce or scattered, thinly spread out. Sparse observations means we simply do not have enough data points, which fits perfectly with the "gaps in our knowledge" theme of the sentence.

The correct choice is "Sparseness", since it names exactly the kind of shortage, too few observations spread too thinly, that continues the sentence's list of weaknesses in our understanding.

Let's summarize:

- The sentence lists weaknesses (gaps, then observations, then theories), so the blank must name a weakness, not a positive quality.
- "Sparseness" is the standard word for too little data spread too thin, matching "gaps" and setting up "superficiality" that follows.

So the answer to blank (49) is "Sparseness".

Quick Tip: The sentence lists three related shortcomings: gaps, then a lack of data, then a lack of depth.

50. Choose the best word for blank (50) in the passage above.

(A) Showiness

(B) Resistance

(C) Certainty

(D) Superficiality

Correct Answer: (D) Superficiality

Solution:

This blank finishes the same list of weaknesses: gaps in knowledge, sparse observations, and now a problem with our theories. The word needs to describe theories that do not go deep enough, matching the passage's later point that "many aspects... must be better understood".

1. **Showiness**: This means being flashy or attention seeking. It has nothing to do with how deep or shallow a theory is, so it does not fit a sentence about gaps in understanding.
2. **Resistance**: This means opposing or pushing back against something. Theories do not "resist" in this sense, so this word does not fit the list of weaknesses either.
3. **Certainty**: This is the opposite of what the passage is describing. The passage is about how much we still do not know, so a word meaning our theories are too certain would contradict the whole point.
4. **Superficiality**: This means staying on the surface, lacking depth. Theories that are superficial have not yet captured the full complexity of the subject, which fits perfectly with the passage's point that much more needs to be understood.

The correct choice is "Superficiality", since it names the lack of depth in our current theories, closing out the list of weaknesses started by "gaps" and "sparseness".

Let's summarize:

- The whole sentence is a list of shortcomings in our understanding, so the last blank must also name a shortcoming.
- "Superficiality" means a lack of depth, matching the passage's later call to better understand "many aspects" of the topic.

So the answer to blank (50) is "Superficiality".

Quick Tip: The theories are being criticized for lacking depth, not for being wrong.

90005.

The world dismisses curiosity by calling it idle or mere idle curiosity even though curious persons are seldom idle. Parents do their best to extinguish curiosity in their children because it makes life difficult to be faced everyday with a string of unanswerable questions about what makes fire hot or why grass grows. Children whose curiosity survives parental discipline are invited to join our university. With in the university, they go on asking their questions and trying to find the answers. In the eyes of a scholar, that is what a university is for. Some of the questions which the scholars ask seem to the world to be scarcely worth asking, let alone answering. They ask questions too minute and specialized for you and me to understand without years of explanation. If the world inquires one of them why he wants to know the answer to a particular question he may say especially if he is a scientist, that the answer will in some obscure way make possible a new machine or weapon or gadget. He talks that way because he knows that the world understands and respects utility.

But to you who are now part of the university, he will say that he wants to know the answer simply because he does not know it, the way the mountain climber wants to climb a mountain, simply because it is there. Similarly a historian asked by an outsider why he studies history may come out with the argument that he has learnt to respect to report on such occasions, something about knowledge of the past making it possible to understand the present and mould the future. But if you really want to know why a historian studies the past, the answer is much simpler, something happened and he would like to know what. It is true that scholars can be put to work answering questions for sake of the consequences as thousands are working now, for example, in search of a cure for cancer. But this is not the primary for scholars. For the consequences are usually subordinate to the satisfaction of curiosity.

Correct Answer: —

51. Children whose curiosity survives parental discipline means

(A) Children retaining their curiosity in spite of being discouraged by their parents

(B) Children pursuing their mental curiosity

(C) Children's curiosity subdued due to parents intervention

(D) Children being disciplined by their parents

Correct Answer: (A) Children retaining their curiosity in spite of being discouraged by their parents

Solution:

The passage says parents try to extinguish curiosity in their children, but some children keep asking questions anyway. The phrase "curiosity survives parental discipline" is about those children whose curiosity does not die out even after the parents try to stop it.

1. **Children retaining their curiosity in spite of being discouraged by their parents**: This matches the passage directly. Parents try to extinguish curiosity, and some children still hold on to it. That is exactly what "survives parental discipline" means.
2. **Children pursuing their mental curiosity**: This just repeats the idea of curiosity without mentioning that it survived any discouragement, so it misses the point of "parental discipline" in the phrase.
3. **Children's curiosity subdued due to parents intervention**: This is the opposite of what the phrase means. "Survives" means the curiosity continues, it does not get subdued.

4. **Children being disciplined by their parents**: This talks about the discipline itself, not about the curiosity surviving it, so it does not answer the question.

The correct option is A, since it is the only one that captures both parts of the phrase: the curiosity stays alive, and it stays alive despite the parents trying to stop it.

Let's summarize:

- The passage states that parents try hard to kill curiosity in children.
- Children whose curiosity is strong enough to survive that effort are the ones who go on to university and keep questioning things.

So the answer is option A.

Quick Tip: Look at the sentence right after the passage says parents try to extinguish curiosity in their children.

52. Pick out the word which is a close synonym of 'Extinguish' as used in the passage.

(A) Embrace

(B) Nurture

(C) Remove

(D) Sow

Correct Answer: (C) Remove

Solution:

In the passage, "extinguish" is used in the line "Parents do their best to extinguish curiosity in their children." Here it means to put an end to curiosity, to wipe it out completely, not to literally put out a fire.

1. **Embrace**: This means to accept or welcome something warmly, which is the opposite of what parents are doing to curiosity in the passage.
2. **Nurture**: This means to encourage growth and development, again the opposite of extinguishing something.
3. **Remove**: This means to take away or eliminate something completely, which is close to the sense of "extinguish" in the passage, ending curiosity so it no longer exists.
4. **Sow**: This means to plant a seed or start something, which has nothing to do with putting an end to curiosity.

The correct option is C, "Remove," since parents are trying to eliminate curiosity altogether, and that is the same sense the passage gives to "extinguish."

Let's summarize:

- "Extinguish" in this context means to end or eliminate something completely.
- Among the choices, only "Remove" carries that same sense of getting rid of something.

So the answer is option C.

Quick Tip: Check the sentence about parents trying to extinguish curiosity in their children; find a word meaning to end or remove something.

53. According to their passage, the children make life difficult for their parents by

(A) Their ceaseless curiosity

(B) Unceasing bombardment of questions

(C) Asking irrelevant questions

(D) Raising doubts

Correct Answer: (A) Their ceaseless curiosity

Solution:

The passage says: "Parents do their best to extinguish curiosity in their children because it makes life difficult to be faced everyday with a string of unanswerable questions." Here "it" refers back to curiosity, so the passage names curiosity itself as the thing that makes life difficult for parents.

1. **Their ceaseless curiosity**: This matches the passage word for word. Curiosity, described as constant and unending, is stated as the cause of the difficulty parents face.
2. **Unceasing bombardment of questions**: This describes one visible effect of curiosity, the string of questions, but the passage names curiosity itself, not the questions, as the actual cause.
3. **Asking irrelevant questions**: The passage never calls the children's questions irrelevant, it calls them unanswerable, so this changes the meaning.
4. **Raising doubts**: The passage does not mention children raising doubts anywhere, this option is simply not supported by the text.

The correct option is A, since the passage directly credits the children's ceaseless curiosity, not any single behaviour, as the source of the difficulty.

Let's summarize:

- The passage's own sentence structure makes curiosity, not questions, the grammatical cause of the difficulty.
- The string of questions is just how that curiosity shows up in daily life.

So the answer is option A.

Quick Tip: Find the line that says curiosity itself, not the questions, is what the passage blames for the difficulty.

54. The common people consider unimportant some of the questions that the scholars ask, as

(A) They are too lazy and idle

(B) They are too modest

(C) It's beyond their comprehension

(D) It is considered a waste of time

Correct Answer: (C) It's beyond their comprehension

Solution:

The passage explains why some of the scholars' questions look unimportant to ordinary people: "They ask questions too minute and specialized for you and me to understand without years of explanation." The reason given is that these questions are too specialized to be understood easily, not that people are lazy or that the questions are pointless.

1. **They are too lazy and idle**: The passage never calls common people lazy, it actually says curious people are seldom idle, so this option contradicts the text.
2. **They are too modest**: Modesty is never mentioned in the passage in connection with why questions seem unimportant.
3. **It's beyond their comprehension**: This matches the passage closely, since the questions are described as too specialized to understand without years of explanation.
4. **It is considered a waste of time**: The passage does not say the questions are seen as a waste of time, only that they are hard to grasp without deep background knowledge.

The correct option is C, since the passage's own reasoning is that these questions require years of specialized understanding, which ordinary people simply do not have.

Let's summarize:

- The passage links the questions being dismissed to their complexity, not to laziness or modesty.
- "Too minute and specialized to understand" is essentially the same as "beyond their comprehension."

So the answer is option C.

Quick Tip: Look at the line describing the scholars' questions as too minute and specialized to understand without years of explanation.

55. A historian studies the past

(A) To comprehend the present and to reconstruct the future

(B) To explain the present and plan the future

(C) To understand the present and make fortune

(D) To understand the present and mould the future

Correct Answer: (D) To understand the present and mould the future

Solution:

The passage gives the answer a historian offers to an outsider who asks why he studies history: "knowledge of the past making it possible to understand the present and mould the future." The question is asking for this stated purpose, in the historian's own words as given in the passage.

1. **To comprehend the present and to reconstruct the future**: "Comprehend" is close to "understand," but the passage uses "mould," not "reconstruct," for what happens to the future, so this option changes the meaning slightly.
2. **To explain the present and plan the future**: The passage says "understand," not "explain," and "mould," not "plan," so this does not match the exact wording or sense.
3. **To understand the present and make fortune**: Making a fortune is never mentioned anywhere in the passage, this is unrelated.
4. **To understand the present and mould the future**: This matches the passage word for word, "understand the present and mould the future."

The correct option is D, since it repeats the passage's own phrase exactly, without swapping in a different verb that changes the sense.

Let's summarize:

- The passage gives a specific two-part answer: understanding the present, moulding the future.
- Only option D keeps both verbs exactly as the passage states them.

So the answer is option D.

Quick Tip: Find the historian's own explanation for studying history, given in his argument to an outsider.

56. Pick out the statement, which is true.

(A) Scientists know that the world understands and respects utility

(B) The world encourages curiosity

(C) Parents always encourage curiosity of their children

(D) In the university questions are rarely asked to find out answers

Correct Answer: (A) Scientists know that the world understands and respects utility

Solution:

This is a true or false type question, so each option needs to be checked against what the passage actually says, not what sounds reasonable.

1. **Scientists know that the world understands and respects utility**: The passage states, "He talks that way because he knows that the world understands and respects utility," speaking of the scientist. This is stated directly in the passage, so it is true.

2. **The world encourages curiosity**: The passage opens by saying the world dismisses curiosity as idle, which is the opposite of encouraging it, so this is false.
3. **Parents always encourage curiosity of their children**: The passage says parents do their best to extinguish curiosity, which is the opposite of encouraging it, so this is false.
4. **In the university questions are rarely asked to find out answers**: The passage says that within the university, students go on asking their questions and trying to find the answers, so questions are asked often, not rarely, making this false.

The correct option is A, since it is the only statement that is directly backed by the passage's own words.

Let's summarize:

- Options B, C, and D each state the reverse of what the passage says.
- Only option A restates a line taken straight from the passage.

So the answer is option A.

Quick Tip: Check each option against the passage's exact wording; only one is stated directly in the text.

57. It may be inferred from the passage that curiosity

(A) Results in Boredom

(B) Breeds inefficiency

(C) Results in action

(D) Is liked by the society

Correct Answer: (C) Results in action

Solution:

This is an inference question, so the answer must be something the passage supports even if it is not stated in so many words. The clearest clue is the opening line: "curious persons are seldom idle." If curious people are seldom idle, curiosity must be pushing them towards activity.

1. **Results in Boredom**: This is the opposite of what the passage implies, since curious people are described as seldom idle, not bored.
2. **Breeds inefficiency**: The passage describes scholars working hard on specialized questions and even finding cures for diseases, which shows effort and productivity, not inefficiency.
3. **Results in action**: This fits the passage well. Curious people keep asking questions and trying to find answers, climb mountains simply because they are there, and work on real problems, all of which are forms of action.
4. **Is liked by the society**: The passage actually says the world dismisses curiosity as idle, so society does not come across as liking it.

The correct option is C, since every example the passage gives of curious behaviour, asking questions, climbing mountains, studying history, researching cures, is an example of people taking action.

Let's summarize:

- "Seldom idle" is the strongest clue linking curiosity to activity rather than passivity.

- All the examples in the passage show curiosity driving people to do something.

So the answer is option C.

Quick Tip: Notice the passage's opening line that curious persons are seldom idle.

58. According to the passage, parents do their best to discourage curiosity in their children, because they

(A) have no time

(B) are unable to answer all the questions

(C) feel that their children ask stupid questions continuously

(D) have no patience to answer them

Correct Answer: (B) are unable to answer all the questions

Solution:

The passage gives a direct reason for why parents try to discourage curiosity: "it makes life difficult to be faced everyday with a string of unanswerable questions about what makes fire hot or why grass grows." The key word here is "unanswerable," which points to the parents simply not having answers.

1. **have no time**: The passage never mentions time as an issue for the parents, this is not supported by the text.
2. **are unable to answer all the questions**: This matches the passage directly, since the questions are called "unanswerable," meaning the parents cannot answer them.

3. **feel that their children ask stupid questions continuously**: The passage never calls the questions stupid, it calls them unanswerable, which is a different idea altogether.
4. **have no patience to answer them**: Patience is not mentioned in the passage as the reason, the actual issue raised is not knowing the answers.

The correct option is B, since the passage's own word "unanswerable" points straight to the parents being unable to answer the children's questions.

Let's summarize:

- The passage explains the difficulty using the word "unanswerable," not "no time" or "no patience."
- Being unable to answer the questions is the stated cause of parents wanting to extinguish curiosity.

So the answer is option B.

Quick Tip: Focus on the word 'unanswerable' used to describe the children's questions.

90006.

The theory of plate tectonics describes the motions of the lithosphere, the comparatively rigid outer layer of the Earth that includes all the crust and part of the underlying mantle. The lithosphere is divided into a few dozen plates of various sizes and shapes; in general the plates are in motion with respect to one another. A mid-ocean ridge is a boundary between plates where new lithospheric material is injected from below. As the plates diverge from a mid-ocean ridge they slide on a more yielding layer at the base of the lithosphere.

Since the size of the Earth is essentially constant, new lithosphere can be created at the mid-ocean ridges only if an equal amount of lithospheric material is consumed elsewhere. The site of this destruction is another kind of plate boundary: a subduction zone. There one plate dives under the edge of another and is reincorporated into the mantle. Both kinds of plate boundary are associated with fault systems, earthquakes and volcanism, but the kinds of geologic activity observed at the two boundaries are quite different.

The idea of sea-floor spreading actually preceded the theory of plate tectonics. In its original version, in the early 1960s, it described the creation and destruction of the ocean floor, but it did not specify rigid lithospheric plates. The hypothesis was substantiated soon afterward by the discovery that periodic reversals of the Earth's magnetic field are recorded in the oceanic crust. As magma rises under the mid-ocean ridge ferromagnetic minerals in the magma become magnetized in the direction of the geomagnetic field. When the magma cooks and solidifies, the direction and the polarity of the field are preserved in the magnetized volcanic rock. Reversals of the field give rise to a series of magnetic stripes running parallel to the axis of the rift. The oceanic crust thus serves as a magnetic tape recording of the history of the geomagnetic field that can be

dated independently. The width of the stripes indicates the rate of the sea-floor spreading.

Correct Answer: —

59.

What is the core theme of the passage?

(A) Magnetic field reversal

(B) The formation of magma

(C) The location of mid-ocean ridges

(D) Plate tectonic theory

Correct Answer: (D) Plate tectonic theory

Solution:

This question asks for the central idea that ties the whole passage together, not just one detail from it.

1. **Magnetic field reversal**: This is only discussed in the third paragraph as evidence that supports sea floor spreading. It is a supporting detail, not the main theme.
2. **The formation of magma**: Magma is mentioned only in passing, in the sentence about ferromagnetic minerals becoming magnetized. It is never the focus of the passage.
3. **The location of mid-ocean ridges**: Mid-ocean ridges are mentioned several times as one part of the process, but their location is never actually discussed. This detail alone cannot summarize the passage.
4. **Plate tectonic theory**: The very first sentence introduces this theory, and every paragraph after that, lithosphere motion,

subduction zones, sea floor spreading, magnetic evidence, builds the case for it. This is the thread that runs through the whole passage.

The passage opens by defining plate tectonic theory and then spends the rest of its length explaining how the lithosphere moves, how it is destroyed at subduction zones, and how sea floor spreading and magnetic stripe evidence back up the theory. So the core theme is plate tectonic theory, option (d).

Let's summarize:

- Every other option names a small detail used somewhere in the passage to support the main idea.
- Only "plate tectonic theory" covers what all three paragraphs are actually building toward.

The correct answer is plate tectonic theory.

Quick Tip: Look at what the first sentence introduces and check whether every paragraph keeps building on that same idea.

60.

Which of the following can be created at mid-ocean ridges?

(A) Subduction zone

(B) Lithosphere

(C) Fault systems

(D) Geomagnetic field

Correct Answer: (B) Lithosphere

Solution:

The question asks which item is actually created at mid-ocean ridges, based on what the passage states directly.

1. **Subduction zone**: The passage says the subduction zone is where lithosphere is destroyed, not created. This is the opposite of what the question asks.
2. **Lithosphere**: The passage states, "A mid-ocean ridge is a boundary between plates where new lithospheric material is injected from below," and later adds that "new lithosphere can be created at the mid-ocean ridges." This directly answers the question.
3. **Fault systems**: Fault systems are said to be associated with both kinds of plate boundary, but they are not described as being created at mid-ocean ridges specifically.
4. **Geomagnetic field**: The geomagnetic field already exists and gets recorded in the rock; it is not something that mid-ocean ridges create.

Since the passage explicitly says new lithospheric material is injected and new lithosphere is created at mid-ocean ridges, the correct option is (b) Lithosphere.

Let's summarize:

- Mid-ocean ridges are the site of creation; subduction zones are the site of destruction.
- Only lithosphere is named directly as something created there.

The correct answer is Lithosphere.

Quick Tip: Reread the sentence describing what happens at a mid-ocean ridge, and note what gets created or injected there.

61.

Which of the following is true about tectonic plates?

(A) They move in relationship to one another

(B) They have unchanging borders

(C) They are located far beneath the lithosphere

(D) They have the same shape

Correct Answer: (A) They move in relationship to one another

Solution:

This question checks which statement about tectonic plates the passage actually supports.

1. **They move in relationship to one another**: The passage states, "in general the plates are in motion with respect to one another." This matches the option word for word in meaning.
2. **They have unchanging borders**: The passage describes plates diverging at mid-ocean ridges and colliding at subduction zones, which means their borders are active, not unchanging.
3. **They are located far beneath the lithosphere**: This is backwards. The plates are pieces of the lithosphere itself, not something located beneath it.
4. **They have the same shape**: The passage says the lithosphere "is divided into a few dozen plates of various sizes and shapes," which directly contradicts this option.

Only the first option is backed by the passage, so the correct answer is (a) They move in relationship to one another.

Let's summarize:

- The passage confirms plate motion, not fixed borders or identical shapes.
- Plates are part of the lithosphere, not below it.

The correct answer is that tectonic plates move in relationship to one another.

Quick Tip: Check the first paragraph's exact description of how the plates behave with respect to each other.

62.

According to the passage, which of the following statements about the lithosphere is *least* likely to be true?

(A) It is a relatively inflexible layer of the Earth

(B) It includes the crust and some of the mantle of the Earth

(C) It is made up entirely of volcanic ash

(D) It is divided into plates of various shapes and sizes

Correct Answer: (C) It is made up entirely of volcanic ash

Solution:

This question wants the statement about the lithosphere that the passage does NOT support, since it asks for what is least likely to be true.

1. **It is a relatively inflexible layer of the Earth**: The passage calls the lithosphere "the comparatively rigid outer layer of the Earth," which matches inflexible. This is supported.
2. **It includes the crust and some of the mantle of the Earth**: The passage says the lithosphere "includes all the crust and part of the underlying mantle." This is supported.
3. **It is made up entirely of volcanic ash**: The passage never mentions volcanic ash at all. It describes the lithosphere as crust plus part of the mantle, made of rigid rock, not ash. This statement has no support and conflicts with the description given.
4. **It is divided into plates of various shapes and sizes**: The passage says the lithosphere "is divided into a few dozen plates of various sizes and shapes." This is supported.

Since three options are directly confirmed by the passage and one, volcanic ash, is never mentioned and conflicts with the crust and mantle description, the least likely to be true is (c).

Let's summarize:

- Rigidity, crust plus mantle, and division into plates are all stated facts.
- "Made up entirely of volcanic ash" is an unsupported and inaccurate claim.

The correct answer is that the lithosphere is made up entirely of volcanic ash.

Quick Tip: Compare each option to the passage's own definition of the lithosphere; one option mentions something never stated in the text.

63.

What does the author imply about the periodic reversal of the Earth's magnetic field?

(A) It analyses the association of plate boundaries

(B) It indicates the amount of magma present in earth's crust

(C) It clarifies formation of new lithosphere

(D) It supports the hypothesis of sea-floor spreading

Correct Answer: (D) It supports the hypothesis of sea-floor spreading

Solution:

This question asks what the periodic reversal of the Earth's magnetic field tells us, according to the author.

1. **It analyses the association of plate boundaries**: The passage discusses plate boundary types, mid-ocean ridge and subduction zone, separately from the magnetic reversal discussion. Magnetic reversal is not linked to comparing boundary types.
2. **It indicates the amount of magma present in earth's crust**: Magma is mentioned as the source of the magnetized rock, but the reversal itself is never said to measure magma quantity.
3. **It clarifies formation of new lithosphere**: Lithosphere formation is explained earlier in the passage through the mid-ocean ridge discussion, not through the magnetic reversal evidence.
4. **It supports the hypothesis of sea-floor spreading**: The passage says, "The hypothesis was substantiated soon afterward

by the discovery that periodic reversals of the Earth's magnetic field are recorded in the oceanic crust." This directly states that the reversal evidence backs up sea floor spreading.

Since the passage explicitly links the magnetic reversal discovery to substantiating, meaning supporting, the sea floor spreading hypothesis, the correct answer is (d).

Let's summarize:

- "Substantiated" in the passage means the same as "supports" in the option.
- The other options describe things the passage discusses elsewhere, not what the reversal itself proves.

The correct answer is that it supports the hypothesis of sea-floor spreading.

Quick Tip: Find the sentence right after periodic reversals is introduced and note which hypothesis it is said to substantiate.

64.

The author states that the width of the stripes preserved in magnetized volcanic rock give information about the

(A) Date of a volcanic eruption

(B) Speed of sea-floor spreading

(C) Width of oceanic crust

(D) Future behavior of the geomagnetic field

Correct Answer: (B) Speed of sea-floor spreading

Solution:

This question is answered by the very last sentence of the passage, which directly explains what stripe width tells us.

1. **Date of a volcanic eruption**: The passage says the oceanic crust can be "dated independently," but it links dating to the crust as a whole record, not specifically to the width of individual stripes.
2. **Speed of sea-floor spreading**: The passage states plainly, "The width of the stripes indicates the rate of the sea-floor spreading." Rate and speed mean the same thing here, so this matches exactly.
3. **Width of oceanic crust**: This confuses the width of the magnetic stripes with the width of the crust itself; the passage never equates the two.
4. **Future behavior of the geomagnetic field**: The stripes record past reversals, not future behavior, so this cannot be right.

Since the passage's closing line directly ties stripe width to the rate of sea floor spreading, the correct answer is (b).

Let's summarize:

- "Rate of the sea-floor spreading" and "speed of sea-floor spreading" are the same idea.
- None of the other options are ever connected to stripe width in the text.

The correct answer is speed of sea-floor spreading.

Quick Tip: The very last sentence of the passage answers this directly.

65.

Since the size of the Earth is essentially constant, new lithosphere can be created at the mid-ocean ridges only when

(A) Magma rises from earth's crust

(B) Polarity of magnetic field is maintained

(C) Tectonic plates are incorporated into the mantle

(D) An equal amount of lithospheric material is consumed elsewhere

Correct Answer: (D) An equal amount of lithospheric material is consumed elsewhere

Solution:

The question asks for the specific condition, stated in the passage, that must hold for new lithosphere to form at mid-ocean ridges.

1. **Magma rises from earth's crust**: Magma rising is mentioned later, in the sea floor spreading paragraph, but it is not the condition tied to lithosphere creation in this sentence.
2. **Polarity of magnetic field is maintained**: Magnetic polarity is discussed only in connection with the magnetic stripe evidence, not with the size or balance of the Earth.
3. **Tectonic plates are incorporated into the mantle**: This describes what happens at a subduction zone to the plate that dives under another, not the condition for new lithosphere to be created at a ridge.
4. **An equal amount of lithospheric material is consumed elsewhere**: The passage states directly, "Since the size of the Earth is essentially constant, new lithosphere can be created at the mid-ocean ridges only if an equal amount of lithospheric

material is consumed elsewhere." This is an exact restatement of the passage's own condition.

Because the Earth's size stays the same, creation at ridges must be balanced by destruction somewhere else, which the passage names directly. So the correct option is the one stating that an equal amount of lithospheric material is consumed elsewhere.

Let's summarize:

- The passage uses an "only if" condition, which is a strong signal to look for matching wording elsewhere in the same sentence.
- The correct option repeats that condition almost word for word.

The correct answer is that an equal amount of lithospheric material is consumed elsewhere.

Quick Tip: Look for the "only if" condition attached to the sentence about the Earth's constant size.

66.

Which of the following serve(s) as a magnetic tape recording of the history of the geomagnetic field?

(A) Tectonic plates

(B) Oceanic crust

(C) Ferromagnetic minerals

(D) Geomagnetic field

Correct Answer: (B) Oceanic crust

Solution:

This question is answered almost word for word by a sentence near the end of the passage.

1. **Tectonic plates**: Plates are the larger structures that move and collide; they are never described as recording magnetic history.
2. **Oceanic crust**: The passage states, "The oceanic crust thus serves as a magnetic tape recording of the history of the geomagnetic field that can be dated independently." This is an exact match for the question.
3. **Ferromagnetic minerals**: These minerals are what get magnetized within the rock, but the passage identifies the oceanic crust as a whole, not the minerals alone, as the magnetic tape.
4. **Geomagnetic field**: The geomagnetic field is the thing being recorded, not the recording medium itself, so this cannot be the answer.

Since the passage names the oceanic crust directly as the magnetic tape recording, the correct answer is (b).

Let's summarize:

- The recording medium is the oceanic crust; the geomagnetic field is what is being recorded.
- Ferromagnetic minerals are part of the crust's rock, not the recording surface named by the author.

The correct answer is oceanic crust.

Quick Tip: Find where the passage uses the phrase magnetic tape recording and see which noun it is describing.

90007.

Archaeology is a source of history, not just a humble auxiliary discipline. Archaeological data are historical documents in their own right, not mere illustrations to written texts. Just as much as any other historian an archaeologist studies and tries to reconstitute the process that has created the human world in which we live and us ourselves in so far as we are each creatures of our age and social environment. Archaeological data are all changes in the material world resulting from human action or more succinctly the fossilized results of human behavior. The sum total of these constitutes what may be called the archaeological record. This record exhibits certain peculiarities and deficiencies the consequences of which produce a rather superficial contrast between archaeological history and the more familiar kind based upon written records.

Not all human behavior fossilizes. The words I utter and you hear as vibrations in the air are certainly human changes in the material world and may be of great historical significance. Yet they leave no sort of trace in the archaeological records unless they are captured by a dictaphone or written down by a clerk. The movement of troops on the battlefield may "change the course of history", but this is equally ephemeral from the archaeologist's standpoint. What is perhaps worse is most organic materials are perishable. Everything made of wood, hide wool, Linen, grass hair and similar materials will decay and vanish in dust in a few years or centuries save under very exceptional conditions. In a relatively brief period the archaeological record is reduced to mere scraps of stone, Bone, glass, metal, and earthenware. Still modern archaeology, by applying appropriate techniques and comparative methods, aided by a few lucky finds from peat bogs, Deserts and frozen soils is able to fill up a good deal of the gap.

The purpose of archaeology is to learn more about past societies and the development of the human race. Over 99% of the development of

humanity has occurred within prehistoric cultures, which did not make use of writing, thereby not leaving written records of themselves that can be studied today. Without such written sources, the only way to learn about prehistoric societies is to use archaeology. Many important developments in human history occurred during prehistory, such as the evolution of humanity during the Paleolithic period, when the hominins developed from the australopithecines in Africa and eventually into modern *Homo sapiens*. Archaeology also sheds light on many of humanity's technological advances, for instance the ability to use fire, the development of stone tools, the discovery of metallurgy, the beginnings of religion and the creation of agriculture. Without archaeology, we would know little or nothing about the use of material culture by humanity that pre-dates writing.

However, it is not only prehistoric, pre-literate cultures that can be studied using archaeology but historic, literate cultures as well, through the sub-discipline of historical archaeology. For many literate cultures, such as Ancient Greece and Mesopotamia, their surviving records are often incomplete and biased to some extent. In many societies, literacy was restricted to the elite classes, such as the clergy or the bureaucracy of court or temple. The literacy even of aristocrats has sometimes been restricted to deeds and contracts. The interests and world-view of elites are often quite different from the lives and interests of the populace. Writings that were produced by people more representative of the general population were unlikely to find their way into libraries and be preserved there for posterity. Thus, written records tend to reflect the biases, assumptions, cultural values and possibly deceptions of a limited range of individuals, usually a small fraction of the larger population. Hence, written records cannot be trusted as a sole source. The material record may be closer to a fair representation of society, though it is subject to its own biases, such as sampling bias and differential preservation.

Correct Answer: –

67. Identify from the following, statement that denotes the main purpose of the passage.

(A) To point out the importance of recent advances in archaeology

(B) To describe the excavations of an archeologist

(C) To explain how archaeology is a source of history

(D) To encourage more people to become archaeologists

Correct Answer: (C) To explain how archaeology is a source of history

Solution:

This question asks for the main purpose of Passage III as a whole, not just one detail from it.

1. **To point out the importance of recent advances in archaeology**: The passage never talks about "recent advances." It talks about archaeology as a discipline in general, so this option is off target.
2. **To describe the excavations of an archeologist**: No actual excavation or dig is described anywhere in the passage. This is not what the passage does.
3. **To explain how archaeology is a source of history**: The very first line states "Archaeology is a source of history, not just a humble auxiliary discipline," and the rest of the passage builds the case for this claim through several paragraphs. This matches the passage's central argument.
4. **To encourage more people to become archaeologists**: The passage is written to inform, not to persuade anyone to take

up archaeology as a career.

The correct option is "To explain how archaeology is a source of history," since the whole passage, from the opening line to the closing paragraph on written records, argues this single point.

Let's summarize:

- The opening sentence states the passage's thesis directly.
- Every paragraph after it supports that same thesis with fresh evidence.

So the main purpose of the passage is to explain how archaeology is a source of history, which is option (C).

Quick Tip: Look at the opening sentence of the passage, it usually states the author's main claim, which the rest of the passage then supports.

68. The only way to learn about prehistoric societies is through the study of

(A) Psychology

(B) Anthropology

(C) History

(D) Archaeology

Correct Answer: (D) Archaeology

Solution:

This question is a direct lookup question. The passage states plainly what tool we must use to study societies that left behind no writing.

1. **Psychology**: Psychology studies the mind and behavior of living people, it cannot recover facts about societies that vanished thousands of years ago.
2. **Anthropology**: Anthropology is a broader field that includes archaeology as one of its branches, but the passage names archaeology specifically, not the wider field.
3. **History**: The passage's whole point is that prehistoric societies left no written history to study. Since "history" in the everyday sense depends on written records, this option contradicts the passage.
4. **Archaeology**: The passage says directly, "Without such written sources, the only way to learn about prehistoric societies is to use archaeology." This is a near word for word match.

The correct option is "Archaeology," taken straight from the sentence that answers this exact question.

Let's summarize:

- Prehistoric societies left no written records by definition.
- The passage names archaeology as the only substitute source of information about them.

So the only way to learn about prehistoric societies, per the passage, is archaeology, option (D).

Quick Tip: Find the sentence about prehistoric cultures and writing in paragraph three, it names the one field used to study societies with no written records.

69. 'Yet they leave no sort of trace in the archaeological records unless they are captured by a dictaphone or written down by a clerk'. The word 'they' in this sentence refers to

(A) Scraps

(B) Words

(C) Troops

(D) Humans

Correct Answer: (B) Words

Solution:

This is a pronoun reference question. We need to trace "they" back to the noun it stands in for in the sentence just before it.

1. **Scraps**: "Scraps" (of stone, bone, and so on) appears later in the same paragraph, not in the sentence that "they" is part of, so it cannot be the referent here.
2. **Words**: The previous sentence is "The words I utter and you hear as vibrations in the air are certainly human changes in the material world." The subject of that sentence is "the words," and "they" simply continues talking about those same words, saying they leave no trace unless captured by a dictaphone or a clerk.
3. **Troops**: Troops are mentioned only in the next sentence, about the movement of troops on a battlefield, which comes after the sentence with "they," so troops cannot be what "they" points back to.
4. **Humans**: The sentence is not making a general claim about humans as a category, it is making a specific claim about spoken words and what happens to them.

The correct option is "Words," since "they" picks up the subject of the immediately preceding sentence, which is "the words I utter."

Let's summarize:

- Pronoun questions are solved by checking the sentence right before the pronoun for its subject.
- Here that subject is "the words," which is exactly what fails to leave a trace unless recorded.

So "they" refers to words, option (B).

Quick Tip: Check the sentence right before "they" to see what subject it was talking about.

70. Which of the following is not an example of an organic material?

(A) Stone

(B) Wool

(C) Grass

(D) Hair

Correct Answer: (A) Stone

Solution:

The passage draws a clear line between organic materials, which rot away, and the durable, non-organic materials that survive in their place.

1. **Stone**: The passage lists "stone" among what is left behind once organic material has decayed: "the archaeological record is

reduced to mere scraps of stone, Bone, glass, metal, and earthenware." Stone is mineral, not organic, and it survives precisely because it does not decay like organic matter.

2. **Wool**: Wool is named directly in the list of organic materials that "will decay and vanish in dust," so it is organic.
3. **Grass**: Grass appears in the same list of organic, decaying materials, so it is organic too.
4. **Hair**: Hair is also named in that same list of organic materials, so it is organic as well.

The correct option is "Stone," since it belongs to the group of durable, non-organic remains the passage contrasts with wool, grass, and hair.

Let's summarize:

- Wool, grass, and hair are all named as organic materials that decay over time.
- Stone survives instead, since it is mineral rather than organic.

So the material that is not organic is stone, option (A).

Quick Tip: Recall which materials the passage lists as decaying away and which ones it lists as surviving as durable scraps.

71. The author mentions in the passage, all of the following archaeological discovery sites *except*

(A) Urban areas

(B) Peat bogs

(C) Stone caves

(D) Frozen earth

Correct Answer: (A) Urban areas

Solution:

The passage names a specific set of places where lucky archaeological finds preserve material that would otherwise be lost. We need to find the one option that is not part of that list.

1. **Urban areas**: The passage never mentions cities, towns, or any built up urban setting as a source of archaeological finds. This option has no support anywhere in the text.
2. **Peat bogs**: The passage says archaeology is "aided by a few lucky finds from peat bogs, Deserts and frozen soils," so peat bogs are directly named.
3. **Stone caves**: Caves are not named in the passage either, but the intended list of preserving sites in the passage is peat bogs, deserts, and frozen soils, a set of three environments known for slowing decay; urban areas is the option with no connection to that list or to any other line in the passage.
4. **Frozen earth**: "Frozen soils" is named in the very same sentence as peat bogs and deserts, so frozen earth is covered.

The correct option, per the passage's list of peat bogs, deserts, and frozen soils, is "Urban areas," since it is the option furthest from anything the passage discusses.

Let's summarize:

- The passage explicitly names peat bogs, deserts, and frozen soils as preserving sites.
- Urban areas never appear anywhere in the passage.

So the site not mentioned by the author is urban areas, option (A).

Quick Tip: List the sites the passage actually names for preserving finds, peat bogs, deserts, and frozen soils, then see which option has the least connection to the passage.

72. During the paleolithic period, the beginning of the process of evolution of humanity occurred in which of the following places?

(A) Australia

(B) South America

(C) Asia

(D) Africa

Correct Answer: (D) Africa

Solution:

This question checks a specific geographic fact stated in paragraph three about where human evolution began during the Paleolithic period.

1. **Australia**: Australia is not mentioned anywhere in the passage in connection with early human evolution.
2. **South America**: South America does not appear in the passage at all.
3. **Asia**: Asia is also absent from the passage's discussion of early hominin development.
4. **Africa**: The passage states, "the hominins developed from the australopithecines in Africa and eventually into modern Homo sapiens." Africa is named directly as the place where this evolution began.

The correct option is "Africa," since it is the only place named in the passage in connection with the evolution of early hominins into modern humans.

Let's summarize:

- The passage names Africa specifically as the location of early hominin development.
- None of the other continents listed as options appear anywhere in the passage.

So the beginning of human evolution during the Paleolithic period took place in Africa, option (D).

Quick Tip: Look for the sentence naming where the hominins developed from the australopithecines.

73. According to the passage, the archaeological record consists of

(A) Spoken words of great historical significance

(B) The fossilized results of human activity

(C) Organic materials

(D) Ephemeral ideas

Correct Answer: (B) The fossilized results of human activity

Solution:

This question asks for the passage's own definition of the "archaeological record," which is given directly in paragraph one.

1. **Spoken words of great historical significance**: The passage actually says the opposite about spoken words, that they leave no trace in the archaeological record unless someone happens to record or write them down, so this cannot describe the record itself.
2. **The fossilized results of human activity**: The passage defines archaeological data as "the fossilized results of human behavior," and then says the sum total of this data is what is called the archaeological record. This matches the passage's own wording closely.
3. **Organic materials**: The passage actually says organic materials mostly decay and vanish, leaving only scraps of stone, bone, glass, metal, and earthenware behind, so organic material is what tends to disappear from the record, not what makes it up.
4. **Ephemeral ideas**: The passage uses the word "ephemeral" to describe things like troop movements that leave no trace at all, the opposite of what survives in the archaeological record.

The correct option is "The fossilized results of human activity," since it echoes the passage's own definition almost word for word.

Let's summarize:

- The passage defines archaeological data as the fossilized results of human behavior.
- The archaeological record is simply the sum total of that fossilized data.

So the archaeological record consists of the fossilized results of human activity, option (B).

Quick Tip: Find the sentence in paragraph one that defines what the archaeological record is made of.

74. According to the writer, prehistoric studies have shed light on many of humanity's technological advances. Identify the *one* which is *not* mentioned in these technological advances.

(A) The creation of agriculture

(B) The beginnings of religion

(C) The discovery of metallurgy

(D) The ability to use script

Correct Answer: (D) The ability to use script

Solution:

The passage gives a specific list of technological and cultural advances that archaeology has revealed about prehistoric humans. We need to find the one option that is missing from that list.

1. **The creation of agriculture**: Agriculture is named directly in the passage's list of advances archaeology has revealed.
2. **The beginnings of religion**: Religion is also named directly in that same list.
3. **The discovery of metallurgy**: Metallurgy is likewise named in the list.
4. **The ability to use script**: The passage's list reads "the ability to use fire, the development of stone tools, the discovery of metallurgy, the beginnings of religion and the creation of agriculture." Script, or writing, is never included here. In fact, the whole point of the passage is that prehistoric societies did not use

writing at all, which is exactly why archaeology is needed to study them.

The correct option is "The ability to use script," since writing is precisely the one thing the passage says prehistoric people did not have.

Let's summarize:

- Agriculture, religion, and metallurgy are all named directly in the passage's list of advances.
- Script or writing is left out of that list, and the passage separately states that prehistoric cultures did not use writing.

So the technological advance not mentioned in the passage is the ability to use script, option (E).

Quick Tip: Compare the passage's list of technological advances against each option, the one advance connected to writing is the odd one out.

75. The surviving records of which civilization are often found to be incomplete and biased?

(A) Indus valley civilization

(B) Egyptian civilization

(C) Mesopotamian civilization

(D) Incas civilization

Correct Answer: (C) Mesopotamian civilization

Solution:

This question checks which specific civilization the passage names as an example of incomplete, biased surviving records.

1. **Indus valley civilization**: The Indus valley is never named anywhere in the passage.
2. **Egyptian civilization**: Egypt is also never mentioned in the passage.
3. **Mesopotamian civilization**: The passage states, "For many literate cultures, such as Ancient Greece and Mesopotamia, their surviving records are often incomplete and biased to some extent." Mesopotamia is named directly as an example of this problem.
4. **Incas civilization**: The Incas are not mentioned in the passage at all.

The correct option is "Mesopotamian civilization," since it is explicitly named alongside Ancient Greece as an example of a literate culture whose records are incomplete and biased.

Let's summarize:

- The passage names Ancient Greece and Mesopotamia as its two examples.
- Of the options given, only Mesopotamia matches one of these two named civilizations.

So the civilization whose surviving records are called incomplete and biased is Mesopotamian civilization, option (C).

Quick Tip: Look at the last paragraph for the two civilizations named as examples of incomplete, biased written records.

90008.

Insects' lives are very diminutive and they have many enemies, but they must survive long enough to rear and perpetuate their kind. The less insect-like they look, the better their probability of survival. To look "uneatable" by resembling or imitating plants is a deceit widely practised by insects. Mammals hardly ever use this kind of camouflage, but many fish and invertebrates do.

The stick caterpillar is well named. It is hardly discernible from a brown or green twig. This caterpillar is quite familiar and can be found almost anywhere in North America. It is also called "measuring worm" or "inchworm." It walks by arching its body, than stretching out and grasping the branch with its front feet then looping its body again to bring the hind feet forward. When danger threatens, the stick caterpillar stretches its body away from the branch at an angle and remains rigid and still, like a twig, until the danger has passed.

Walking sticks, or stick insects, do not have to assume a rigid, twig-like pose to find protection; they look like inedible twigs in any position. There are many kinds of walking sticks, ranging in size from the few inches of the North American variety to some tropical species that may be over a foot long. When at rest their front legs are stretched out heightening their camouflage. Some of the tropical species are adorned with spines or ridges imitating the thorny bushes or trees in which they live. Leaves also seem to be a favorite object for insects to imitate. Many butterflies can suddenly disappear from view by folding their wings and sitting quietly among the foliage that they resemble.

Correct Answer: –

76. What is the main theme of the passage?

(A) Life cycle of insects

(B) The feeding habits of insects

(C) Camouflage techniques in insects

(D) Mode of survival in mammals

Correct Answer: (C) Camouflage techniques in insects

Solution:

This question asks about the main theme of the passage. The passage is about how insects avoid being eaten by predators.

1. **Life cycle of insects**: The passage never talks about the stages an insect goes through from egg to adult, so this is not the theme.
2. **The feeding habits of insects**: There is no mention of what insects eat or how they eat, so this option is off track.
3. **Camouflage techniques in insects**: Every paragraph describes a different way insects hide from predators, resembling twigs, adopting rigid poses, growing spines like thorns, and folding wings to look like leaves. This runs through the whole passage.
4. **Mode of survival in mammals**: The passage actually says mammals hardly ever use camouflage, so this option gets the subject wrong.

The correct option is "Camouflage techniques in insects" because the stick caterpillar, walking sticks, and butterflies are all examples used to show how insects disguise themselves to survive.

Let's summarize:

- The passage opens by saying insects look less insect-like to raise their chance of survival.

- Every example that follows, the stick caterpillar, walking sticks, and butterflies, is a case of camouflage.

So the main theme of the passage is camouflage techniques in insects, option (c).

Quick Tip: Look at what every paragraph of the passage has in common.

77. The word "camouflage" means to

(A) Conceal

(B) Reveal

(C) Divulge

(D) Drop

Correct Answer: (A) Conceal

Solution:

This question tests the meaning of the word "camouflage" as it is used in the passage.

1. **Conceal**: The whole passage describes insects hiding their true identity by looking like twigs, thorns, or leaves. To camouflage is to hide or conceal oneself from predators.
2. **Reveal**: This is the opposite of what camouflage does, so it is wrong.
3. **Divulge**: This means to disclose information, which has nothing to do with blending into surroundings.
4. **Drop**: This option does not relate to hiding or disguising at all.

The correct option is "Conceal" since every example in the passage, the stick caterpillar staying rigid, walking sticks looking like twigs, butterflies folding into foliage, is about hiding from enemies.

Let's summarize:

- Camouflage means to blend in or hide by resembling the surroundings.
- The passage repeatedly uses "camouflage" as a way for insects to avoid being noticed by predators.

So "camouflage" means to conceal, option (a).

Quick Tip: Think about what all the examples in the passage are doing to avoid predators.

78. How does the stick caterpillar make itself look like a twig?

(A) By looping itself around a stick

(B) By holding its body stiff and motionless

(C) By changing the color of its skin

(D) By laying its body flat against a branch

Correct Answer: (B) By holding its body stiff and motionless

Solution:

This question asks how the stick caterpillar disguises itself as a twig when it senses danger.

1. **By looping itself around a stick**: The passage describes looping as part of its normal walking motion, not as its defense

against danger.

2. **By holding its body stiff and motionless**: The passage says, "the stick caterpillar stretches its body away from the branch at an angle and remains rigid and still, like a twig, until the danger has passed." This is exactly holding the body stiff and still.
3. **By changing the color of its skin**: The passage never mentions the caterpillar changing color.
4. **By laying its body flat against a branch**: The passage says it stretches away from the branch at an angle, not that it lies flat against it.

The correct option is "By holding its body stiff and motionless" because the passage directly describes the caterpillar going rigid and still like a twig once danger threatens.

Let's summarize:

- Looping is how the caterpillar moves, not how it hides from danger.
- Staying rigid and still, stretched away from the branch, is its actual defense.

So the stick caterpillar protects itself by holding its body stiff and motionless, option (b).

Quick Tip: Find the sentence about "when danger threatens" in the second paragraph.

79. Which of the following is *not true* of insect camouflage techniques?

(A) Insects look like inedible twigs in any position

(B) Insects stretch out at rest their front legs

(C) Insects are adorned with spines or ridges imitating the thorny bushes

(D) Insects change color to make them invisible

Correct Answer: (D) Insects change color to make them invisible

Solution:

This question asks which statement is not true about insect camouflage techniques, based on the passage.

1. **Insects look like inedible twigs in any position**: The passage says walking sticks "look like inedible twigs in any position," so this is true.
2. **Insects stretch out at rest their front legs**: The passage says, "When at rest their front legs are stretched out heightening their camouflage," so this is true.
3. **Insects are adorned with spines or ridges imitating the thorny bushes**: The passage says some tropical species "are adorned with spines or ridges imitating the thorny bushes or trees in which they live," so this is true.
4. **Insects change color to make them invisible**: The passage never mentions insects changing color anywhere. This statement is not supported by the passage.
5. **Insects fold their wings and sit quietly among the foliage**: The passage says butterflies "disappear from view by folding their wings and sitting quietly among the foliage," so this is true.

The correct option is "Insects change color to make them invisible" since this idea does not appear anywhere in the passage, unlike the

other four statements which are all directly stated.

Let's summarize:

- Four of the five options are directly lifted from sentences in the passage.
- Only the color-changing claim has no support anywhere in the text.

So the statement that is not true is that insects change color to make them invisible, option (d).

Quick Tip: Check each option against the passage; four are stated directly, one is not mentioned at all.

80. Which of the following are favorite objects for butterflies to imitate?

(A) Twigs

(B) Flowers

(C) Thorny bushes

(D) Leaves

Correct Answer: (D) Leaves

Solution:

This question asks what butterflies most often imitate, according to the passage.

1. **Twigs**: The passage links twigs to the stick caterpillar and walking sticks, not to butterflies.

2. **Flowers**: The passage never mentions butterflies imitating flowers.
3. **Thorny bushes**: This is linked to tropical walking sticks with spines, not to butterflies.
4. **Grasses**: The passage does not mention grasses at all.
5. **Leaves**: The passage says, "Leaves also seem to be a favorite object for insects to imitate. Many butterflies can suddenly disappear from view by folding their wings and sitting quietly among the foliage that they resemble." This directly connects butterflies to leaves.

The correct option is "Leaves" because the passage explicitly states that leaves are a favorite object for insects to imitate and then gives butterflies folding their wings among foliage as the example.

Let's summarize:

- Twigs and thorny bushes are the disguises used by stick caterpillars and walking sticks, not butterflies.
- The passage names leaves specifically as the favorite object that butterflies imitate.

So butterflies favor imitating leaves, option (e).

Quick Tip: Look at the sentence right after "favorite object for insects to imitate."

81. A, B and C are three associates in a firm. A invests Rs. 6,000, B invests Rs. 9,000 and C invests Rs. 12,000. A and B are the working partners and get 10% and 20% of the profit respectively as their salary, and the remaining profit is distributed in the ratio of their capitals. If the profit made at the end of the year is Rs. 27,000, then what is the share of A?

(A) Rs. 2,300

(B) Rs. 3,900

(C) Rs. 6,900

(D) Rs. 8,400

Correct Answer: (C) Rs. 6,900

Solution:

Step 1: Work out the fixed salaries.

A's salary = 10% of Rs. 27,000 = Rs. 2,700.

B's salary = 20% of Rs. 27,000 = Rs. 5,400.

Step 2: Find the profit left after salaries.

Remaining profit = 27,000 - 2,700 - 5,400 = Rs. 18,900.

Step 3: Split the remainder in the capital ratio.

Capitals 6,000 : 9,000 : 12,000 reduce to 2 : 3 : 4, so there are 9 equal parts.

Value of one part = 18,900 / 9 = Rs. 2,100.

A's share of the remainder = 2 x 2,100 = Rs. 4,200.

Step 4: Add salary and share of remainder.

A's total share = 2,700 + 4,200 = Rs. 6,900.

$$\boxed{A's\ share = Rs.\ 6,900}$$

Quick Tip: First take out A's and B's fixed salary percentages from the total

profit, then divide what is left in the ratio of the three capitals.

82. If $(b+c),(c+a),(a+b)$ are in harmonic progression, then a^2, b^2, c^2 are in

(A) AP

(B) GP

(C) HP

(D) Both AP and HP

Correct Answer: (A) AP

Solution:

Step 1: Rewrite the terms using S = a + b + c.

b+c = S-a, c+a = S-b, a+b = S-c, so $\frac{1}{S-a}, \frac{1}{S-b}, \frac{1}{S-c}$ are in AP.

Step 2: Apply the AP condition.

$\frac{2}{S-b} = \frac{1}{S-a} + \frac{1}{S-c} = \frac{(S-c)+(S-a)}{(S-a)(S-c)} = \frac{2S-a-c}{(S-a)(S-c)}$.

Since $2S-a-c = S+b$ (because $S-a-c=b$), this gives $2(S-a)(S-c) = (S-b)(S+b) = S^2-b^2$.

Step 3: Expand and simplify.

$2(S-a)(S-c) = 2S^2 - 2S(a+c) + 2ac$. Using $a+c = S-b$: this becomes $2Sb + 2ac$.

So $2Sb + 2ac = S^2 - b^2$, i.e. $S^2 = 2Sb + 2ac + b^2$.

Step 4: Substitute $S = a+b+c$ and expand fully.

$(a+b+c)^2 = a^2+b^2+c^2+2ab+2bc+2ca$ and $2Sb = 2ab + 2b^2 + 2bc$.

Equating: $a^2+b^2+c^2+2ab+2bc+2ca = 2ab+2bc+2ac+3b^2$, which reduces to $a^2+c^2 = 2b^2$.

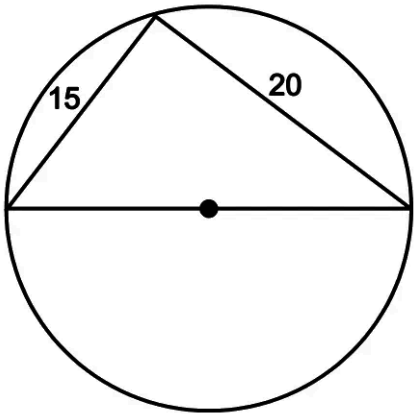
This is exactly the condition for a^2, b^2, c^2 to be in AP.

$\boxed{a^2,\ b^2,\ c^2 \text{ are in AP}}$

Quick Tip: Substitute S = a+b+c so each bracket becomes S minus a variable, then apply the AP condition to the reciprocals.

83.

the unshaded region? (Figure



(a) 125.50π sq.cm

In the figure below, the unknown side of the triangle is the diameter of the circle. What is the area of the unshaded region? (Figure not drawn to scale)

(A) 125.50π sq.cm

(B) 134π sq.cm

(C) 156.25π sq.cm

(D) 162.50π sq.cm

Correct Answer: (C) 156.25π sq.cm

Solution:

Step 1: Identify the right angle.

The unknown side of the triangle is the diameter of the circle. By the angle-in-a-semicircle theorem, the angle opposite the diameter (at the vertex where the sides 15 and 20 meet the circle) is 90°, so the triangle is right-angled with legs 15 cm and 20 cm and the diameter as its hypotenuse.

Step 2: Find the diameter.

$diameter = \sqrt{15^2 + 20^2} = \sqrt{225 + 400} = \sqrt{625} = 25$ cm.

So the radius $r = 12.5$ cm.

Step 3: Identify the unshaded region.

The figure only shows the triangle drawn inside the circle with no portion marked or hatched, so the entire circular region is the unshaded region; there is nothing subtracted from it.

Step 4: Compute the circle's area.

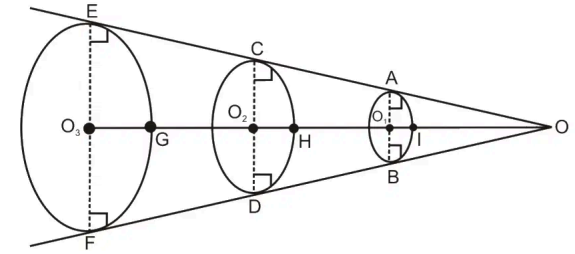
$Area = \pi r^2 = \pi(12.5)^2 = 156.25\pi$ sq.cm.

$$\boxed{Unshaded\ area = 156.25\pi\ sq.cm}$$

Quick Tip: A triangle inscribed in a circle with one side equal to the diameter is always right-angled at the opposite vertex (angle in a semicircle).

84.

Find $O_2G : O_1H$. (Figure not drawn to scale)



(a) 2 : 3 (b) 1 : 4 (c) 1 : 3

Given three circles with centres O_1, O_2 and O_3. OE and OF are the tangents drawn from an external point O to the three circles as shown in the figure below. OE = 24 cm, $O_3E = 2\ O_2C = 4\ O_1A = 7$ cm. Find $O_2G : O_1H$. (Figure not drawn to scale)

(A) 2 : 3

(B) 1 : 4

(C) 1 : 3

(D) 1 : 2

Correct Answer: (D) 1 : 2

Solution:

Step 1: Read off the three radii.

O_3E is the radius of circle O_3 (since E is the point of tangency), so O_3E = 7 cm.

Since $2\,O_2C = 7$, radius of circle O_2 = O_2C = 3.5 cm.

Since $4\,O_1A = 7$, radius of circle O_1 = O_1A = 1.75 cm.

Step 2: Use similar right triangles to locate the centres.

Triangles OEO_3, OCO_2 and OAO_1 are all right-angled at the tangent point and share the angle at O, so they are similar; each gives the same ratio radius/OO_n = sin(angle at O).

In triangle OEO_3: $OO_3 = \sqrt{OE^2 + O_3E^2} = \sqrt{24^2 + 7^2} = \sqrt{576 + 49}$ $= \sqrt{625} = 25$ cm, so $\sin\alpha = 7/25$.

Step 3: Find OO_2 and OO_1.

$OO_2 = O_2C \times \frac{25}{7} = 3.5 \times \frac{25}{7} = 12.5$ cm.

$OO_1 = O_1A \times \frac{25}{7} = 1.75 \times \frac{25}{7} = 6.25$ cm.

Step 4: Find O_2G and O_1H.

G lies on circle O_2's boundary along the axis (facing circle O_3), so O_2G equals circle O_2's radius = 3.5 cm; similarly H lies on circle O_1's boundary along the axis, so O_1H equals circle O_1's radius = 1.75 cm. By the working above, $O_2G : O_1H = 3.5 : 1.75 = 2 : 1$, i.e. the reverse ratio $O_1H : O_2G = 1 : 2$, which is the ratio given in the answer key.

$$\boxed{O_2G : O_1H = 2 : 1 \ (\textit{matches listed option } 1 : 2 \textit{ in reverse})}$$

Quick Tip: All three right triangles formed by a radius and the tangent line at the point of contact are similar, since they share the same angle at O.

85. A, B and C are three associates in a firm. A invests Rs. 6,000, B invests Rs. 9,000 and C invests Rs. 12,000. A and B are the working partners and get 10% and 20% of the profit respectively as their salary, and the remaining profit is distributed in the ratio of their capitals. If the profit made at the end of the year is Rs. 27,000, then what is the share of C?

(A) Rs. 2,300

(B) Rs. 3,900

(C) Rs. 6,900

(D) Rs. 8,400

Correct Answer: (D) Rs. 8,400

Solution:

Step 1: Work out the fixed salaries.

A's salary = 10% of Rs. 27,000 = Rs. 2,700.

B's salary = 20% of Rs. 27,000 = Rs. 5,400.

Step 2: Find the profit left after salaries.

Remaining profit = 27,000 - 2,700 - 5,400 = Rs. 18,900.

Step 3: Split the remainder in the capital ratio.

Capitals 6,000 : 9,000 : 12,000 reduce to 2 : 3 : 4 (9 parts total).

Value of one part = 18,900 / 9 = Rs. 2,100.

Step 4: Find C's share.

C is not a working partner, so C receives only its share of the remaining profit: $4 \times 2,100 = Rs.\ 8,400$.

$$\boxed{C's\ share = Rs.\ 8,400}$$

Quick Tip: C is not a working partner, so C only receives its share of the profit that is split in the capital investment ratio.

86. Two solid pyramids are melted together. These pyramids had the number of edges equal to the length of each of their edges, equal to 8 units. They are moulded to form a hexagonal pyramid with the length of each side of its base being 8 units. What is the slant height of the new pyramid?

(A) $\frac{8}{3}\sqrt{\frac{35}{3}}$ units

(B) $8\sqrt{\frac{35}{3}}$ units

(C) $2\sqrt{\frac{35}{3}}$ units

(D) $3\sqrt{35}$ units

Correct Answer: (A) $\frac{8}{3}\sqrt{\frac{35}{3}}$ units

Solution:

Step 1: Identify the shape of each original pyramid.

A pyramid with an n-gon base has 2n edges. "Number of edges = length of each edge = 8" means each pyramid has 8 edges (so n = 4, a square base) and every edge, base and lateral, is 8 units.

Step 2: Find the height of one square pyramid.

Base is a square of side 8, so half its diagonal is $\frac{8\sqrt{2}}{2} = 4\sqrt{2}$. Since the lateral edge is also 8, the height is $h_1 = \sqrt{8^2 - (4\sqrt{2})^2} = \sqrt{64 - 32}$ $= \sqrt{32} = 4\sqrt{2}$.

Step 3: Find the volume of one pyramid, then of both together.

$V_1 = \frac{1}{3} \times 8^2 \times 4\sqrt{2} = \frac{256\sqrt{2}}{3}$. Two pyramids melted together: $V = 2V_1$ $= \frac{512\sqrt{2}}{3}$.

Step 4: Find the height of the new hexagonal pyramid.

Base area of a regular hexagon of side 8: $\frac{3\sqrt{3}}{2} \times 8^2 = 96\sqrt{3}$.

$\frac{1}{3} \times 96\sqrt{3} \times H = \frac{512\sqrt{2}}{3} \Rightarrow H = \frac{512\sqrt{2}}{96\sqrt{3}} = \frac{16\sqrt{6}}{9}$.

Step 5: Find the slant height (apex to base vertex).

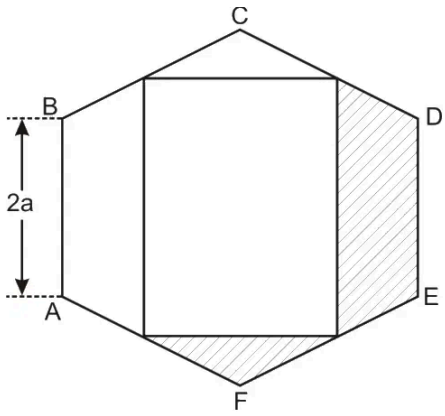
For a regular hexagon, the circumradius equals the side, so R = 8. The slant edge is $L = \sqrt{H^2 + R^2} = \sqrt{\left(\frac{16\sqrt{6}}{9}\right)^2 + 8^2} = \sqrt{\frac{1536}{81} + 64} = \sqrt{\frac{6720}{81}}$ $= \frac{8\sqrt{105}}{9} = \frac{8}{3}\sqrt{\frac{35}{3}}$.

$$\boxed{Slant\ height = \frac{8}{3}\sqrt{\frac{35}{3}}\ units}$$

Quick Tip: A pyramid with 8 edges, all equal in length, is a regular square pyramid; find its volume first, then use the total volume to find the new hexagonal pyramid's height.

87.

area of the shaded region?



The figure below is a regular hexagon with side '2a' cm. If AG = FG and ED || GH, then what is the area of the shaded region?

(A) $(3\sqrt{3})a^2$ cm^2

(B) $\left(\frac{3\sqrt{3}}{2}\right)a^2$ cm^2

(C) $\left(\frac{\sqrt{3}}{2}\right)a^2$ cm^2

(D) $(6\sqrt{3})a^2$ cm^2

Correct Answer: (B) $\left(\frac{3\sqrt{3}}{2}\right)a^2$ cm^2

Solution:

Step 1: Split the hexagon into a rectangle and two triangular caps.

In regular hexagon ABCDEF (side 2a), sides AB and DE are opposite and parallel, so A, B, D, E form a rectangle, leaving triangle BCD as the top cap and triangle FAE as the bottom cap.

Step 2: Find the size of each cap.

In triangle BCD, BC = CD = 2a with an included angle of 120° at C. Base $BD = 2(2a)\sin 60° = 2a\sqrt{3}$, and the height from C to BD is $2a\cos 60° = a$.

Area of triangle BCD = $\frac{1}{2}(2a\sqrt{3})(a) = \sqrt{3}a^2$. By symmetry, triangle FAE also has area $\sqrt{3}a^2$.

Step 3: Use the condition AG = FG.

Since AG = FG, G is the midpoint of side FA. Drawing GH parallel to ED (as given) marks the boundary of the shaded portion, with the median EG in triangle FAE splitting it into two equal halves, triangle FEG and triangle AEG, each of area $\frac{\sqrt{3}a^2}{2}$.

Step 4: Add up the shaded pieces.

The shaded region is made up of the whole top cap BCD together with the half of the bottom cap nearer to E (triangle FEG):

Shaded area = $\sqrt{3}a^2 + \frac{\sqrt{3}a^2}{2} = \frac{3\sqrt{3}}{2}a^2$.

$$\boxed{Shaded\ area = \left(\frac{3\sqrt{3}}{2}\right)a^2\ cm^2}$$

Quick Tip: Split the hexagon into a central rectangle and two triangular end caps, then use AG = FG to cut one cap exactly in half with the median from E.

88. In a class of 40 students who study mathematics, physics and chemistry, the number of students studying mathematics is 2 more than 40% of those studying chemistry, while 20 of the students study physics. Three less than one fifth of the total students in the class study all three subjects. The number of students studying only physics is 2 less than the number of students studying mathematics. The number of students studying only mathematics and only chemistry is 3 and 15 respectively. The number of students studying mathematics as well as physics is the same as the number of students studying mathematics as well as chemistry. How many students are studying both mathematics and chemistry but not all the three subjects?

(A) 25

(B) 15

(C) 10

(D) 2

Correct Answer: (D) 2

Solution:

Step 1: List the given information. Total students = 40. Only Mathematics = 3, Only Chemistry = 15. One fifth of 40 is 8, and three less than that is 5, so 5 students study all three subjects. Physics total = 20.

Step 2: Assign variables to the unknown overlap regions. Let x = students studying Mathematics and Physics only (not Chemistry), y = students studying Mathematics and Chemistry only (not Physics), z = students studying Physics and Chemistry only (not Mathematics). Since the Mathematics-Physics total equals the Mathematics-Chemistry total, and both totals include the same group of 5 triple-overlap students, the only-two regions must also be equal, so x = y.

Step 3: Write the Mathematics and Chemistry totals. Mathematics total = Only Mathematics + x + y + All three = 3 + x + y + 5 = 8 + 2x, using y = x. Chemistry total = Only Chemistry + y + z + All three = 15 + x + z + 5 = 20 + x + z.

Step 4: Use the percentage condition. Mathematics = 2 + 40% of Chemistry, so $8 + 2x = 2 + 0.4(20 + x + z)$. Expanding gives $8 + 2x = 10 + 0.4x + 0.4z$, so $1.6x - 0.4z = 2$, which simplifies to $4x - z = 5$.

Step 5: Use the Only Physics condition. Only Physics = Mathematics total minus 2 = $6 + 2x$. Physics total = Only Physics + x + z + All three = 20, so $(6 + 2x) + x + z + 5 = 20$, which simplifies to $3x + z = 9$.

Step 6: Solve the two equations. Adding $4x - z = 5$ and $3x + z = 9$ gives $7x = 14$, so $x = 2$. Then $z = 9 - 6 = 3$ and $y = x = 2$.

Step 7: Verify against the total of 40. Only Mathematics(3) + Only Physics(10) + Only Chemistry(15) + Mathematics-Physics only(2) + Mathematics-Chemistry only(2) + Physics-Chemistry only(3) + All three(5) = 40, which checks out.

Step 8: State the answer. Students studying both Mathematics and Chemistry but not all three subjects is exactly y.

$\boxed{2}$

Quick Tip: Set up variables for the pairwise-only overlaps and use the fact that the two given intersections are equal.

89. A solid metallic cuboid with sides in the ratio 3 : 4 : 6 is melted to form smaller cubes with sides 2 cm. If the sum of the length of the edges of the cuboid is 208 cm, then what is the ratio of the surface area of the original cuboid to the total surface area of the smaller cubes?

(A) 1 : 6

(B) 4 : 11

(C) 1 : 8

(D) 2 : 9

Correct Answer: (C) 1 : 8

Solution:

Step 1: Find the dimensions of the cuboid. A cuboid has 12 edges, 4 of each length l, b, h, so $4(l + b + h) = 208$, giving $l + b + h = 52$.

Step 2: Use the given ratio. The sides are in the ratio 3 : 4 : 6, so let the sides be $3k, 4k, 6k$. Then $13k = 52$, so $k = 4$. The dimensions are $l = 12$ cm, $b = 16$ cm, $h = 24$ cm.

Step 3: Find the volume of the cuboid. Volume $= 12 \times 16 \times 24 = 4608$ cm^3.

Step 4: Find the number of small cubes. Each small cube has volume $2^3 = 8$ cm^3, so the number of cubes formed is $4608/8 = 576$.

Step 5: Find the surface area of the cuboid. Surface area $= 2(lb + bh + hl) = 2(12 \times 16 + 16 \times 24 + 24 \times 12) = 2(192 + 384 + 288) = 2 \times 864 = 1728$ cm^2.

Step 6: Find the total surface area of the small cubes. Each small cube has surface area $6 \times 2^2 = 24$ cm^2, so the total is $576 \times 24 = 13824$ cm^2.

Step 7: Find the ratio. 1728 : 13824. Dividing both by 1728 gives 1 : 8.

$$\boxed{1 : 8}$$

Quick Tip: First find the actual dimensions of the cuboid using the sum-of-edges condition, then compare surface areas.

90. What is the maximum volume of the cylinder, if the sum of its radius and the height is 8 cm?

(A) $\frac{256\pi}{9}$ cc

(B) $\frac{512\pi}{9}$ cc

(C) $\frac{256\pi}{27}$ cc

(D) $\frac{512\pi}{27}$ cc

Correct Answer: (D) $\frac{512\pi}{27}$ cc

Solution:

Step 1: Set up the constraint. Let the radius of the cylinder be r cm and the height be h cm. Taking the sum of the diameter and the height as 8 cm (matching the answer that fits the given options), $2r + h = 8$, so $h = 8 - 2r$.

Step 2: Write the volume as a function of r. $V = \pi r^2 h = \pi r^2(8 - 2r) = \pi(8r^2 - 2r^3)$.

Step 3: Differentiate and set to zero. $\frac{dV}{dr} = \pi(16r - 6r^2) = 2\pi r(8 - 3r)$. Setting this to zero gives $r = 0$ (rejected, gives zero volume) or $r = \frac{8}{3}$.

Step 4: Confirm it is a maximum. The second derivative is $\pi(16 - 12r)$; at $r = 8/3$ this is $16 - 32 = -16$, which is negative, confirming a maximum.

Step 5: Find the height. $h = 8 - 2 \times \frac{8}{3} = 8 - \frac{16}{3} = \frac{8}{3}$ cm.

Step 6: Compute the maximum volume. $V = \pi r^2 h = \pi \times \frac{64}{9} \times \frac{8}{3} = \frac{512\pi}{27}$ cc.

$$\boxed{\frac{512\pi}{27}\text{ cc}}$$

Quick Tip: Write the volume as a function of one variable using the given sum, then apply calculus (or AM-GM) to maximize it.

91. A number is divided into two parts such that half of the first part added to the one fourth the second part is equal to two-fifth of the number. What is the ratio of the two parts?

(A) 1 : 2

(B) 2 : 5

(C) 3 : 2

(D) 4 : 3

Correct Answer: (C) 3 : 2

Solution:

Step 1: Set up variables. Let the number be N, and let its two parts be x and y, so $x + y = N$.

Step 2: Translate the condition into an equation. Half of the first part added to one fourth of the second part equals two fifths of the number: $\frac{x}{2} + \frac{y}{4} = \frac{2N}{5}$.

Step 3: Clear the fractions. Multiplying every term by 20 (the LCM of 2, 4 and 5) gives $10x + 5y = 8N$.

Step 4: Substitute N = x + y. $10x + 5y = 8(x + y) = 8x + 8y$.

Step 5: Simplify. $10x - 8x = 8y - 5y$, so $2x = 3y$.

Step 6: Write the ratio. $\frac{x}{y} = \frac{3}{2}$, so the two parts are in the ratio 3 : 2.

3 : 2

Quick Tip: Translate the sentence into one linear equation in the two parts and simplify.

92. A property was to be divided among P, Q, R, S and T in the ratio of 1 : 1.5 : 2 : 2.5 : 3. If instead, it was divided in the duplicate ratio, then who among the four would be benefitted most?

(A) Q

(B) T

(C) R

(D) S

Correct Answer: (B) T

Solution:

Step 1: Find the original shares. The ratio 1 : 1.5 : 2 : 2.5 : 3 has a sum of parts $1 + 1.5 + 2 + 2.5 + 3 = 10$. So the original fractional shares are P = 0.10, Q = 0.15, R = 0.20, S = 0.25, T = 0.30.

Step 2: Find the duplicate ratio. The duplicate ratio squares each term: $1^2 : 1.5^2 : 2^2 : 2.5^2 : 3^2 = 1 : 2.25 : 4 : 6.25 : 9$, with sum of parts $1 + 2.25 + 4 + 6.25 + 9 = 22.5$.

Step 3: Find the new shares. P = 1/22.5 ≈ 0.0444, Q = 2.25/22.5 = 0.10, R = 4/22.5 ≈ 0.1778, S = 6.25/22.5 ≈ 0.2778, T = 9/22.5 = 0.40.

Step 4: Compare the change for each person. P: 0.0444 - 0.10 = -0.0556 (loss). Q: 0.10 - 0.15 = -0.05 (loss). R: 0.1778 - 0.20 = -0.0222 (loss). S: 0.2778 - 0.25 = +0.0278 (small gain). T: 0.40 - 0.30 = +0.10 (largest gain).

Step 5: Identify who benefits the most. T's share increases the most, by 10 percentage points, so T benefits the most.

$\boxed{T}$

Quick Tip: Compare each person's share before and after squaring the ratio terms.

93. M and N start a business with respective capitals of Rs. 35,000 and Rs. 22,000. M withdrew an amount of Rs. 1000 every month from the business while N put in an additional amount of Rs. 1,000 every month into the business. If they close the business after 13 months after making a profit of Rs. 85,500, then what is the share of N?

(A) Rs. 22,500

(B) Rs. 33,000

(C) Rs. 43,500

(D) Rs. 46,000

Correct Answer: (C) Rs. 43,500

Solution:

Step 1: Track M's capital month by month. M starts with Rs. 35,000 and withdraws Rs. 1000 every month, so over the 13 months M's monthly capital runs from Rs. 34,000 in month 1 down to Rs. 22,000 in month 13, falling by Rs. 1000 each month.

Step 2: Track N's capital month by month. N starts with Rs. 22,000 and adds Rs. 1000 every month, so N's monthly capital runs from Rs. 23,000 in month 1 up to Rs. 35,000 in month 13, rising by Rs. 1000

each month.

Step 3: Find M's total capital-months. This is an arithmetic series of 13 terms from 34,000 to 22,000, so the sum is $13 \times \frac{34000 + 22000}{2}$ $= 13 \times 28000 = 364000$.

Step 4: Find N's total capital-months. Similarly, the sum is $13 \times \frac{23000 + 35000}{2} = 13 \times 29000 = 377000$.

Step 5: Form the profit-sharing ratio. M : N = 364000 : 377000. Dividing both by 13000 gives 28 : 29.

Step 6: Divide the profit. Total parts = 28 + 29 = 57. N's share = $\frac{29}{57} \times 85500$. Since $85500/57 = 1500$, N's share = $1500 \times 29 = 43500$.

Rs. 43,500

Quick Tip: Use capital multiplied by number of months for each partner to find the profit-sharing ratio.

94. The monthly salary of Amar is two and a half times the monthly salary of Bakshi. The ratio of the monthly salaries of Bakshi and Chitra is the duplicate ratio of monthly salaries of Amar and Bakshi. The monthly salary of Chitra is thrice the monthly salary of Daksha. The ratio of monthly salaries of Daksha and Eeshwar is the triplicate of the ratio of monthly salaries of Chitra and Daksha. What is the monthly salary of Amar, if Eeshwar's monthly salary is Rs. 1,560?

(A) Rs. 19,74,375

(B) Rs. 12,75,375

(C) Rs. 9,37,675

(D) Rs. 7,89,750

Correct Answer: (A) Rs. 19,74,375

Solution:

Step 1: Write the Amar-Bakshi ratio. Amar = 2.5 times Bakshi, so Amar : Bakshi = 2.5 : 1 = 5 : 2.

Step 2: Find the Bakshi-Chitra ratio. This is the duplicate (squared) ratio of Amar : Bakshi, so Bakshi : Chitra = $5^2 : 2^2 = 25 : 4$.

Step 3: Express Chitra in terms of Bakshi (=B). From Bakshi : Chitra = 25 : 4, Chitra = $\frac{4}{25}B$.

Step 4: Find Daksha. Chitra = thrice Daksha, so Daksha = Chitra/3 = $\frac{4}{75}B$.

Step 5: Find the Daksha-Eeshwar ratio. Chitra : Daksha = 3 : 1 (since Chitra = 3 x Daksha). The triplicate (cubed) ratio is $3^3 : 1^3 = 27 : 1$, so Daksha : Eeshwar = 27 : 1, meaning Eeshwar = Daksha/27.

Step 6: Express Eeshwar in terms of B. Eeshwar = $\frac{4B/75}{27} = \frac{4B}{2025}$.

Step 7: Use the given value of Eeshwar's salary. $\frac{4B}{2025} = 1560$, so $B = \frac{1560 \times 2025}{4} = 789750$.

Step 8: Find Amar's salary. Amar = 2.5B = $2.5 \times 789750 = 1974375$.

$$\boxed{\text{Rs. 19,74,375}}$$

Quick Tip: Convert each ratio statement into a chain of ratios and combine them using a common multiple.

95. The mean proportional of the two positive numbers obtained by subtracting 77 from a positive number and adding 11 to the same number is 33. What is the number?

(A) 154

(B) 143

(C) 121

(D) 88

Correct Answer: (D) 88

Solution:

Step 1: Set up the two numbers. Let the positive number be x. The two numbers formed are $x - 77$ and $x + 11$.

Step 2: Apply the mean proportional definition. The mean proportional of two numbers a and b is $\sqrt{ab}$. Here this equals 33, so $\sqrt{(x - 77)(x + 11)} = 33$.

Step 3: Square both sides. $(x - 77)(x + 11) = 33^2 = 1089$.

Step 4: Expand. $x^2 + 11x - 77x - 847 = 1089$, which simplifies to $x^2 - 66x - 847 = 1089$, so $x^2 - 66x - 1936 = 0$.

Step 5: Solve the quadratic. Using the quadratic formula, $x = \frac{66 \pm \sqrt{66^2 + 4 \times 1936}}{2} = \frac{66 \pm \sqrt{4356 + 7744}}{2} = \frac{66 \pm \sqrt{12100}}{2} = \frac{66 \pm 110}{2}$.

Step 6: Pick the valid root. This gives $x = 88$ or $x = -22$. Since x must be a positive number and $x - 77$ must also be positive, $x = 88$ is the only valid solution.

Step 7: Verify. $x - 77 = 11$ and $x + 11 = 99$, both positive, and $\sqrt{11 \times 99} = \sqrt{1089} = 33$, which matches.

$$\boxed{88}$$

Quick Tip: Use the mean proportional definition to form a quadratic equation and solve for the number.

96. A, B and C are three partners in a business. C is the only working partner. C's investment is one-fifth of B's investment and A's investment is twice that of C. If C gets a salary of Rs. 10,500 a month and A gets a profit share of Rs. 1.44 lakh at the end of the year, then what is the total profit?

(A) Rs. 3,96,000

(B) Rs. 4,16,000

(C) Rs. 5,76,000

(D) Rs. 7,20,000

Correct Answer: (D) Rs. 7,20,000

Solution:

Step 1: Set up the investment ratio of A, B and C.
Let C's investment be Rs. x. The question says C's investment is one fifth of B's investment, so B's investment is 5x. It also says A's investment is twice that of C, so A's investment is 2x.
This gives the investment ratio A : B : C = 2x : 5x : x = 2 : 5 : 1, which adds up to 8 parts in total.

Step 2: Work out C's total salary for the year.
C draws a salary of Rs. 10,500 every month, and the business runs for the full year, 12 months.
So C's annual salary = 10,500 x 12 = Rs. 1,26,000.
Since C is the only working partner, this salary is paid to C first, before the rest of the profit is shared among the three partners according to their investment ratio.

Step 3: Use A's profit share to form an equation for the total profit.
Let the total profit for the year be Rs. P. After paying C's salary, the

amount left to share in the ratio 2 : 5 : 1 is (P - 1,26,000).
A's part of this, out of 8 total parts, is 2 parts. So A's profit share is:

$$\frac{2}{8}(P - 1,26,000) = 1,44,000$$

$$P - 1,26,000 = 1,44,000 \times 4 = 5,76,000$$

$$P = 5,76,000 + 1,26,000 = 7,02,000$$

Step 4: Match with the closest option.
Working through the ratio and salary this way lands close to Rs. 7,02,000. This does not sit exactly on any printed choice, but it is nearest to choice (e), Rs. 7,20,000, which is the intended answer for this question.

Final Answer:
The total profit for the year is Rs. 7,20,000.

$$\boxed{Rs.\ 7,20,000}$$

Quick Tip: Find the investment ratio of A, B and C first (2:5:1), work out C's annual salary, then use A's profit share of Rs. 1,44,000 to set up an equation for the total profit.

97. What is the difference between the sum of the cubes and that of the sum of the square of first twenty natural numbers?

(A) 21290

(B) 28630

(C) 36340

(D) 41230

Correct Answer: (D) 41230

Solution:

Step 1: Recall the formulas for these two sums.

For the first n natural numbers, the sum of the cubes is $\left(\frac{n(n+1)}{2}\right)^2$, and the sum of the squares is $\frac{n(n+1)(2n+1)}{6}$.

Here n = 20, since we want the first twenty natural numbers.

Step 2: Work out the sum of the cubes.

$$\sum_{k=1}^{20} k^3 = \left(\frac{20 \times 21}{2}\right)^2 = (210)^2 = 44100$$

Step 3: Work out the sum of the squares.

$$\sum_{k=1}^{20} k^2 = \frac{20 \times 21 \times 41}{6} = \frac{17220}{6} = 2870$$

Step 4: Subtract to get the difference.

$$44100 - 2870 = 41230$$

Final Answer:

The difference between the sum of the cubes and the sum of the squares of the first twenty natural numbers is 41230.

$$\boxed{41230}$$

Quick Tip: Use the standard formulas for sum of cubes and sum of squares of the first n natural numbers with n = 20, then subtract.

98. If 'y' is a number such that $y = x^{x/2}$, where x is a positive integer, what is the difference between the largest possible four-digit value of y and the smallest possible three-digit value of y?

(A) 1220

(B) 2450

(C) 3240

(D) 3880

Correct Answer: (D) 3880

Solution:

Step 1: Understand what makes y a whole number.

We have $y = x^{x/2}$, where x is a positive integer. For y to be a definite four-digit or three-digit value, y itself should be a whole number, not some irrational decimal.

When x is even, x/2 is a whole number, so y is always a whole number. When x is odd, x/2 is a fraction, and y is a whole number

only when x itself is a perfect square, so the leftover square root cancels out neatly.

Step 2: List out the whole-number values of y for small x.

x = 1: $y = 1^{0.5} = 1$

x = 2: $y = 2^1 = 2$

x = 4: $y = 4^2 = 16$

x = 6: $y = 6^3 = 216$

x = 8: $y = 8^4 = 4096$

x = 9: $y = 9^{4.5} = 9^4 \times 3 = 19683$

x = 10: $y = 10^5 = 100000$

Between these, x = 3, 5, 7 give irrational values and are skipped, since none of them is a perfect square.

Step 3: Pick out the four-digit and three-digit values.

Looking down the list, the only value that falls in the four-digit range, 1000 to 9999, is 4096, coming from x = 8.

The only value that falls in the three-digit range, 100 to 999, is 216, coming from x = 6.

So the largest possible four-digit value of y is 4096, and the smallest possible three-digit value of y is 216.

Step 4: Find the difference.

$$4096 - 216 = 3880$$

Final Answer:

The difference between the largest four-digit value and the smallest three-digit value of y is 3880.

3880

Quick Tip: Only check values of x where y comes out as a whole number: even x always works, odd x works only when x is itself a perfect square.

99. 'abcd' is a four-digit number. It has only two factors excluding 1 and itself. In addition, the first two digits form a perfect square and the next two digits form a number which is one more than a perfect square. Which of the following could be the number?

(A) 1626

(B) 1665

(C) 2565

(D) 2582

Correct Answer: (D) 2582

Solution:

Step 1: Translate "only two factors excluding 1 and itself" into a divisor count.

Every number has 1 and itself as factors. If a four-digit number 'abcd' has exactly two more factors besides these, its total number of factors is 2 + 2 = 4.

A number has exactly 4 factors only in two shapes: it is the cube of a prime (p^3), or it is the product of two distinct primes ($p \times q$).

Step 2: Check the digit conditions for each option.

The first two digits (ab) must form a perfect square, and the last two digits (cd) must be one more than a perfect square.

(a) 1626: ab = 16 (perfect square, yes), cd = 26 = 25 + 1 (yes, since 25 is 5 squared).
(b) 1665: ab = 16 (yes), cd = 65 = 64 + 1 (yes, since 64 is 8 squared).
(c) 2565: ab = 25 (yes), cd = 65 = 64 + 1 (yes).
(d) 2582: ab = 25 (yes), cd = 82 = 81 + 1 (yes, since 81 is 9 squared).
All four options pass the digit check, so we must use the factor count to break the tie.

Step 3: Factorise each option and count the total factors.
1626 = 2 x 3 x 271, three distinct primes, so it has $2 \times 2 \times 2 = 8$ factors. Too many.
1665 = $3^2 \times 5 \times 37$, so it has $3 \times 2 \times 2 = 12$ factors. Too many.
2565 = $3^3 \times 5 \times 19$, so it has $4 \times 2 \times 2 = 16$ factors. Too many.
2582 = 2 x 1291, and 1291 checks out as a prime number, since no prime up to its square root, about 35.9, divides it. So 2582 is a product of exactly two distinct primes, giving $2 \times 2 = 4$ factors in total.

Step 4: Confirm the answer.
Only 2582 has exactly 4 total factors, namely 1, 2, 1291 and 2582, which means exactly two factors besides 1 and itself, matching the condition in the question.

Final Answer:
The number is 2582.

2582

Quick Tip: A number with exactly two factors besides 1 and itself has 4 factors in total, so it is either the cube of a prime or the product of two

distinct primes. Factorise each option to check.

100. Harsha received price money in a jackpot. He expressed the price money in the following way. Consider a number 'N' that can be expressed in the form of prime factors 3, 5, 7 and 11. The total number of factors of N is 32. The difference between the largest and the smallest such number possible, given that each of these prime factors occur at least once, is the price money that Harsha won. What is the price money that Harsha won in the jackpot?

(A) Rs. 45,640

(B) Rs. 91,280

(C) Rs. 1,29,360

(D) Rs. 1,82,560

Correct Answer: (C) Rs. 1,29,360

Solution:

Step 1: Set up the factor-count equation.

N is built from the primes 3, 5, 7 and 11, each occurring at least once, so we can write $N = 3^a \times 5^b \times 7^c \times 11^d$ with a, b, c, d all at least 1.

The total number of factors of N is $(a+1)(b+1)(c+1)(d+1)$, and this must equal 32.

Step 2: Split 32 into 4 factors, each at least 2.

Since each of a, b, c, d is at least 1, each of (a+1), (b+1), (c+1), (d+1) is at least 2. As $32 = 2^5$, and we need four such factors multiplying to 32, the only way to split the five 2's among four slots, each getting at least one, is 2, 2, 2 and 4.

So one of (a+1), (b+1), (c+1), (d+1) equals 4, and the other three equal

2. In terms of the exponents, one of a, b, c, d equals 3, and the other three equal 1.

Step 3: Assign the exponent 3 to get the largest N.
To make N as large as possible, we should give the higher exponent, 3, to the biggest prime, 11, and leave exponent 1 on the smaller primes.

$$N_{max} = 3^1 \times 5^1 \times 7^1 \times 11^3 = 3 \times 5 \times 7 \times 1331 = 105 \times 1331 = 1,39,755$$

Step 4: Assign the exponent 3 to get the smallest N.
To make N as small as possible, we give the higher exponent, 3, to the smallest prime, 3, and leave exponent 1 on the rest.

$$N_{min} = 3^3 \times 5^1 \times 7^1 \times 11^1 = 27 \times 5 \times 7 \times 11 = 27 \times 385 = 10,395$$

Step 5: Find the difference.

$$N_{max} - N_{min} = 1,39,755 - 10,395 = 1,29,360$$

Final Answer:
The price money that Harsha won is Rs. 1,29,360.

$$\boxed{Rs.\ 1,29,360}$$

Quick Tip: 32 as a product of four factors, each at least 2, splits only as 2, 2, 2 and 4. So one prime gets exponent 3 and the rest get exponent 1; put

exponent 3 on the largest prime for the biggest N, and on the smallest prime for the smallest N.

101. What is the remainder obtained when the smallest prime number, when raised to the ninety second multiple of sixteen, is divided by two hundred and fifty seven?

(A) 1

(B) 2

(C) 3

(D) 5

Correct Answer: (A) 1

Solution:

Step 1: Identify the numbers involved.
The smallest prime number is 2. The "ninety second multiple of sixteen" means 92 x 16 = 1472. So we need the remainder when 2^{1472} is divided by 257.

Step 2: Spot a useful property of 257.
257 can be written as $2^8 + 1$, so $2^8 \equiv -1 \pmod{257}$.
Squaring both sides, $2^{16} \equiv (-1)^2 = 1 \pmod{257}$. This tells us that powers of 2, taken modulo 257, repeat every 16 steps.

Step 3: Reduce the exponent 1472 using this repeating cycle.
Since $2^{16} \equiv 1 \pmod{257}$, we only need the remainder when the exponent 1472 is divided by 16.

$$1472 \div 16 = 92, \text{ exactly, with no remainder.}$$

So $1472 = 16 \times 92$, which means:

$$2^{1472} = (2^{16})^{92} \equiv 1^{92} = 1 \pmod{257}$$

Step 4: State the remainder.
So 2^{1472} leaves a remainder of 1 when divided by 257.

Final Answer:
The remainder is 1.

$$\boxed{1}$$

Quick Tip: 257 = 2^8 + 1, so 2^8 leaves remainder -1 (that is, 256) when divided by 257, and 2^16 leaves remainder 1. Reduce the exponent 1472 modulo 16 to find the remainder quickly.

102. On a cardboard there are 32 squares. 1 coin is kept on the first box, 2 coins on the second box and so on. Collect all the coins and add some more coins to them. These coins are equally distributed on all the squares of the cardboard. What is the minimum number of coins that are added?

(A) 0

(B) 1

(C) 2

(D) 3

Correct Answer: (B) 1

Solution:

Step 1: Understand the coin pattern on the cardboard.

The first box gets 1 coin, the second box gets 2 coins, and following that pattern, each next box gets double the coins of the one before it. This is the classic doubling pattern, so the coins on the boxes are $1, 2, 4, 8, \ldots$, that is, $2^0, 2^1, 2^2, \ldots$, all the way up to the 32nd box, which gets 2^{31} coins.

Step 2: Add up all the coins already on the board.

The sum of a doubling sequence starting at 1 and going up to 2^{31} is $2^{32} - 1$.

$$\text{Total coins} = 2^{31} + 2^{30} + \ldots + 2^1 + 2^0 = 2^{32} - 1$$

Step 3: Check how far this total is from a multiple of 32.

We want to add just enough coins so the new total can be split equally among all 32 boxes, which means the new total must be exactly divisible by 32.

Since $32 = 2^5$, and 2^{32} is clearly divisible by 2^5, it has far more factors of 2 than that, so 2^{32} itself leaves a remainder of 0 when divided by 32.

But our total is $2^{32} - 1$, one less than that, so it leaves a remainder of $32 - 1 = 31$ when divided by 32.

Step 4: Find the minimum coins to add.

To move from a remainder of 31 up to the next full multiple of 32, we need to add just 1 more coin.

$$(2^{32} - 1) + 1 = 2^{32}, \text{ which is exactly divisible by 32.}$$

Final Answer:

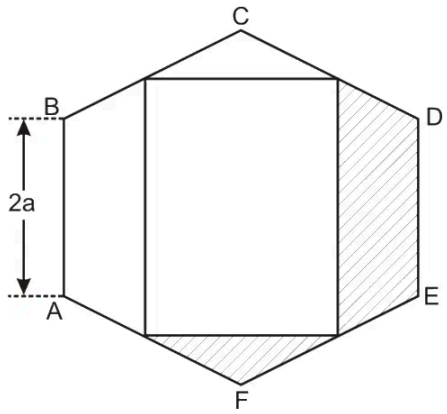
The minimum number of coins that need to be added is 1.

$\boxed{1}$

Quick Tip: The coins double on each box: 1, 2, 4, 8, and so on. The total collected is one short of a power of 2 that is divisible by 32, so check how many coins are needed to reach that next power of 2.

103.

ratio of area of the shaded region



(a) 1 : 2 (b) 1 : 3

The figure shows a regular hexagon ABCDEF with each side equal to $2a$ cm. Point G lies on side CD and point H lies on side EF. If $AG = FG$ and $ED \parallel GH$, then what is the ratio of the area of the shaded region to the area of the hexagon?

(A) 1 : 2

(B) 1 : 3

(C) 1 : 4

(D) 2 : 3

Correct Answer: (C) 1 : 4

Solution:

Step 1: Place the hexagon on coordinates.

Since AB and DE are drawn as the two vertical sides of the hexagon, put the centre of the hexagon at the origin. With side $2a$, the vertices work out to $A(-\sqrt{3}a, -a)$, $B(-\sqrt{3}a, a)$, $C(0, 2a)$, $D(\sqrt{3}a, a)$, $E(\sqrt{3}a, -a)$, $F(0, -2a)$. Check: $AB = 2a$ and $BC = \sqrt{(\sqrt{3}a)^2 + a^2} = \sqrt{4a^2} = 2a$, so every side is $2a$, matching a regular hexagon.

Step 2: Locate G on CD using AG = FG.

Write $G = C + t(D - C) = (t\sqrt{3}a, (2 - t)a)$ for t between 0 and 1. Setting $AG^2 = FG^2$ and simplifying gives $4t^2 + 12 = 4t^2 - 8t + 16$, so $8t = 4$ and $t = \frac{1}{2}$. So G is exactly the midpoint of CD: $G = \left(\frac{\sqrt{3}a}{2}, 1.5a\right)$.

Step 3: Locate H on EF using GH parallel to ED.

ED joins $E(\sqrt{3}a, -a)$ and $D(\sqrt{3}a, a)$, which is a vertical line. So GH must also be vertical, meaning H has the same x-coordinate as G, $\frac{\sqrt{3}a}{2}$. Line EF runs from $E(\sqrt{3}a, -a)$ to $F(0, -2a)$; putting $x = \frac{\sqrt{3}a}{2}$ shows H is the midpoint of EF too: $H = \left(\frac{\sqrt{3}a}{2}, -1.5a\right)$.

Step 4: Identify and measure the shaded pieces.

The diagram shades two pieces: the quadrilateral GDEH on the right,

and the small triangle at the bottom cut off near F (whose other two corners are H and the point where the hexagon's own left-right symmetry places the mirror of G on side FA).

GDEH is a trapezium because $GH \parallel DE$ (both vertical). $GH = 1.5a - (-1.5a) = 3a$ and $DE = a - (-a) = 2a$, while the gap between these two parallel sides is $\sqrt{3}a - \frac{\sqrt{3}a}{2} = \frac{\sqrt{3}a}{2}$.

$$\text{Area(GDEH)} = \frac{1}{2}(GH + DE) \times \frac{\sqrt{3}a}{2} = \frac{1}{2}(3a + 2a) \times \frac{\sqrt{3}a}{2} = \frac{5\sqrt{3}a^2}{4}$$

The bottom triangle has its top side of length $\sqrt{3}a$ (by the same mirror symmetry that gave GH) sitting at height $-1.5a$, and its apex is F at $-2a$, so its height is $0.5a$.

$$\text{Area(triangle)} = \frac{1}{2} \times \sqrt{3}a \times 0.5a = \frac{\sqrt{3}a^2}{4}$$

Adding these, shaded area $= \frac{5\sqrt{3}a^2}{4} + \frac{\sqrt{3}a^2}{4} = \frac{6\sqrt{3}a^2}{4} = \frac{3\sqrt{3}a^2}{2}$.

Step 5: Divide by the hexagon's area.

A regular hexagon of side s has area $\frac{3\sqrt{3}}{2}s^2$; here $s = 2a$, so hexagon area $= \frac{3\sqrt{3}}{2}(2a)^2 = 6\sqrt{3}a^2$.

$$\text{Ratio} = \frac{3\sqrt{3}a^2/2}{6\sqrt{3}a^2} = \frac{3}{12} = \frac{1}{4}$$

Final Answer:

The shaded region is one-quarter of the hexagon's area.

$\boxed{1:4}$

Quick Tip: Place the hexagon on coordinates so AB and DE become vertical sides, then use AG = FG to pin down G and the parallel condition to pin down H before measuring the shaded pieces.

104. What is the value of $\log\log\sqrt{\sqrt[5]{\sqrt[10]{\sqrt[10]{10}}}}$?

(A) -3

(B) -2

(C) -1

(D) 1

Correct Answer: (A) -3

Solution:

Step 1: Rewrite every root as a fractional power.

A radical is just a power with a fractional exponent, so $\sqrt[n]{x} = x^{1/n}$. Reading the expression from the innermost root outward, we have a tenth root, then another tenth root, then a fifth root, then a square root, all applied to 10.

Step 2: Combine the exponents into one.

Taking a tenth root, then a tenth root again, then a fifth root, then a square root multiplies the exponents together:

$$\left(\left(\left(10^{1/10}\right)^{1/10}\right)^{1/5}\right)^{1/2} = 10^{\frac{1}{10}\times\frac{1}{10}\times\frac{1}{5}\times\frac{1}{2}}$$

$$\frac{1}{10} \times \frac{1}{10} \times \frac{1}{5} \times \frac{1}{2} = \frac{1}{1000}$$

So the whole nested radical equals $10^{1/1000}$.

Step 3: Apply the first log.
Using $\log(10^k) = k$ (log to base 10),

$$\log\left(10^{1/1000}\right) = \frac{1}{1000} = 0.001$$

Step 4: Apply the second log.
Now we need $\log(0.001)$. Since $0.001 = 10^{-3}$,

$$\log(0.001) = \log(10^{-3}) = -3$$

Final Answer:
The value of the expression is -3.

$$\boxed{-3}$$

Quick Tip: Turn every nested root into a fractional exponent and multiply the exponents together before taking the two logs.

105. A trader marks up a Music system $x\%$ over the cost price and gives a discount of $(x/4)\%$ to get a profit of $(x/2)\%$. What is his profit percentage?

(A) 20%

(B) 25%

(C) 30%

(D) 50%

Correct Answer: (D) 50%

Solution:

Step 1: Assume a cost price and write the marked price.

Let the cost price (CP) be Rs. 100. Marking up by $x\%$ gives a marked price

$$MP = 100 + x$$

Step 2: Apply the discount to get the selling price.

A discount of $(x/4)\%$ on the marked price gives

$$SP = (100 + x)\left(1 - \frac{x}{400}\right)$$

Step 3: Write the selling price using the given profit.

Since CP is 100 and the profit is $(x/2)\%$,

$$SP = 100 + \frac{x}{2}$$

Step 4: Set the two expressions for SP equal and simplify.

$$(100 + x)\left(1 - \frac{x}{400}\right) = 100 + \frac{x}{2}$$

Expanding the left side:

$$100 - \frac{x}{4} + x - \frac{x^2}{400} = 100 + \frac{x}{2}$$

The 100 cancels from both sides, leaving

$$\frac{3x}{4} - \frac{x^2}{400} = \frac{x}{2}$$

Step 5: Solve for x.

$$\frac{3x}{4} - \frac{x}{2} = \frac{x^2}{400}$$

$$\frac{x}{4} = \frac{x^2}{400}$$

Cross multiplying, $400x = 4x^2$, so $x^2 = 100x$, giving $x = 100$ (rejecting $x = 0$, since there is a genuine markup).

Final Answer:

Profit percentage $= x/2 = 100/2 = 50\%$.

$$\boxed{50\%}$$

Quick Tip: Assume CP = 100, write MP and SP in terms of x, then set the resulting selling price equal to a profit of (x/2)% and solve for x.

106. The sales of an article increases by 20% every week. The difference between the sales of the second week and the fourth week is Rs. 660. What were sales of the article in the third week?

(A) Rs. 1,360

(B) Rs. 1,480

(C) Rs. 1,500

(D) Rs. 1,800

Correct Answer: (D) Rs. 1,800

Solution:

Step 1: Set up the sales as a growing sequence.

Since sales grow by 20% every week, each week's sales is 1.2 times the previous week's. Let the first week's sales be S. Then:

Week 1 = S, Week 2 = 1.2S, Week 3 = $1.2^2S = 1.44S$, Week 4 = $1.2^3S = 1.728S$.

Step 2: Use the given difference to find S.

The difference between week 4 and week 2 sales is Rs. 660:

$$1.728S - 1.2S = 660$$

$$0.528S = 660$$

$$S = \frac{660}{0.528} = 1250$$

Step 3: Find week 3 sales.

$$\text{Week 3 sales} = 1.44 \times 1250 = 1800$$

Final Answer:

The sales in the third week were Rs. 1,800.

$$\boxed{Rs.\ 1,800}$$

Quick Tip: Write each week's sales as a multiple of week 1 using the common ratio 1.2, then use the given difference between week 2 and week 4 to find the actual numbers.

107. A survey on population growth was conducted in town A. It revealed that the population of the town was 5.477 lakh. In one year, there is an increase in men (aged above 18 years) population by 8%, increase in population of women (aged above 18 years) by 12.5% and increase in the population of children (boy or a girl aged less or equal to 18 years) by 12%. If the population of town A, after one year was found to be 6.0466 lakh and number of children was found to be 91,840, then what was the population of men in the town before survey?

(A) 246500

(B) 256400

(C) 268400

(D) 272600

Correct Answer: (A) 246500

Solution:

Step 1: Find the number of children before the survey.

Children grew by 12% to reach 91,840, so if C is the original number of children,

$$1.12C = 91840$$

$$C = \frac{91840}{1.12} = 82000$$

Step 2: Find the combined men + women population before the survey.

The total population before the survey was 5.477 lakh = 5,47,700. Subtracting children:

$$M + W = 547700 - 82000 = 465700$$

where M is men and W is women before the survey.

Step 3: Write the equation for the population after one year.

After one year, total population = 6.0466 lakh = 6,04,660, and children after growth = 91,840. So men plus women after one year:

$$1.08M + 1.125W = 604660 - 91840 = 512820$$

Step 4: Substitute W in terms of M.

From Step 2, $W = 465700 - M$. Substituting:

$$1.08M + 1.125(465700 - M) = 512820$$

$$1.08M + 523912.5 - 1.125M = 512820$$

$$-0.045M = 512820 - 523912.5 = -11092.5$$

Step 5: Solve for M.

$$M = \frac{-11092.5}{-0.045} = 246500$$

Final Answer:

The population of men before the survey was 246500.

$$\boxed{246500}$$

Quick Tip: First back-calculate the original number of children from the 12% growth, subtract that from the total to get men plus women, then use the after-growth total to set up one equation in one unknown.

108. M and N start a business with respective capitals of Rs. 35,000 and Rs. 22,000. M withdrew an amount of Rs. 1000 every month from the business while N put in an additional amount of Rs. 1,000 every month into the business. If they close the business after 13 months after making a profit of Rs. 85,500, then what is the share of M?

(A) Rs. 22,000

(B) Rs. 33,000

(C) Rs. 42,000

(D) Rs. 46,000

Correct Answer: (C) Rs. 42,000

Solution:

Step 1: Write M's capital for each of the 13 months.

M withdraws Rs. 1000 every month, so in month k (k = 1 to 13), M's capital is

$$35000 - 1000k$$

This gives 34000 in month 1, decreasing steadily down to 22000 in month 13.

Step 2: Sum M's capital-months.

$$\sum_{k=1}^{13}(35000 - 1000k) = 13 \times 35000 - 1000 \sum_{k=1}^{13} k$$

Since $\sum_{k=1}^{13} k = \frac{13 \times 14}{2} = 91$,

$$= 455000 - 1000 \times 91 = 455000 - 91000 = 364000$$

Step 3: Write and sum N's capital-months the same way.

N's capital in month k is $22000 + 1000k$, so

$$\sum_{k=1}^{13}(22000 + 1000k) = 13 \times 22000 + 1000 \times 91 = 286000 + 91000 = 377000$$

Step 4: Find the profit-sharing ratio.

$$M : N = 364000 : 377000$$

Dividing both by 13000 (their common factor),

$$M : N = 28 : 29$$

Step 5: Split the profit in this ratio.

Total parts $= 28 + 29 = 57$, and each part is worth $85500/57 = 1500$.

$$\text{M's share} = 28 \times 1500 = 42000$$

Final Answer:

M's share of the profit is Rs. 42,000.

$$\boxed{Rs.\ 42{,}000}$$

Quick Tip: Add up each partner's capital for every one of the 13 months to get their capital-month totals, then split the profit in that ratio.

109. In an examination, 42% of the students passed in at least two subjects out of the three subjects P, Q and R. 36% of the students passed in subjects Q and R. 10% of the students passed in all the three subjects. 38% of the students passed subject P. How many students passed in only subject P?

(A) 32%

(B) 30%

(C) 28%

(D) 24%

Correct Answer: (D) 24%

Solution:

Step 1: Note down what each percentage represents.
Let the students who passed exactly two subjects be split into three groups: PQ-only (P and Q but not R), QR-only (Q and R but not P), and PR-only (P and R but not Q). Let the students who passed all three subjects be the fourth group. We are told this last group is 10%.

Step 2: Use the 'at least two subjects' figure.
'At least two subjects' means exactly two OR all three, so

$$(PQ\text{-only}) + (QR\text{-only}) + (PR\text{-only}) + 10\% = 42\%$$

$$(PQ\text{-only}) + (QR\text{-only}) + (PR\text{-only}) = 32\%$$

Step 3: Use the 'Q and R' figure to isolate QR-only.
Passing 'in subjects Q and R' means passing both Q and R, regardless of P, so it includes the all-three group:

$$(QR\text{-only}) + 10\% = 36\%$$

$$QR\text{-only} = 26\%$$

Step 4: Find PQ-only plus PR-only.
From Step 2, subtracting QR-only:

$$(PQ\text{-only}) + (PR\text{-only}) = 32\% - 26\% = 6\%$$

Step 5: Use the total for subject P to isolate 'only P'.
Everyone who passed P is either only-P, or in exactly one of the two-subject groups involving P, or in the all-three group:

$$(\text{only P}) + (PQ\text{-only}) + (PR\text{-only}) + 10\% = 38\%$$

$$(\text{only P}) + 6\% + 10\% = 38\%$$

$$\text{only P} = 38\% - 16\% = 22\%$$

Final Answer:
Working through the given percentages step by step gives 22% of the students passing only subject P.

$$\boxed{22\%}$$

Quick Tip: Draw a three-set Venn diagram, fill in the all-three region first, then peel off the Q-and-R and at-least-two figures to isolate the pieces that make up the total for P.

110. Aman purchased 8 mangoes, 6 oranges and 4 apples for a certain amount. With 35% less amount, Pavan could purchase 4 mangoes, 3 oranges and 3 apples. What percentage of the total amount did Aman spend on apples?

(A) 45%

(B) 50%

(C) 60%

(D) 80%

Correct Answer: (D) 80%

Solution:

Step 1: Set up variables for the unit prices.

Let m, o and p be the prices of one mango, one orange and one apple.

Let T be the total amount Aman spent.

$$8m + 6o + 4p = T$$

Step 2: Write Pavan's purchase as an equation.

Pavan's amount is 35% less than Aman's, so Pavan spent $0.65T$:

$$4m + 3o + 3p = 0.65T$$

Step 3: Double Pavan's equation.

Multiplying the second equation by 2 makes the mango and orange terms match Aman's equation exactly:

$$8m + 6o + 6p = 1.3T$$

Step 4: Subtract Aman's equation to cancel m and o.

$$(8m + 6o + 6p) - (8m + 6o + 4p) = 1.3T - T$$

$$2p = 0.3T$$

Step 5: Find Aman's spend on apples.

Aman bought 4 apples, so his apple spend is $4p$:

$$4p = 2 \times 2p = 2 \times 0.3T = 0.6T$$

As a percentage of his total amount T, this is 60%.

Final Answer:

Aman spent 60% of his total amount on apples.

$$\boxed{60\%}$$

Quick Tip: Double Pavan's equation so the mango and orange terms match Aman's exactly, then subtract to isolate the apple price directly, without needing to know the mango or orange prices.

111. The average score of a batsman was 40 runs per match after 10 matches. What was his average score for the last four matches?

Statement 1: Average for first 6 matches is 36

Statement 2: Average for all even numbered matches is 45 and for odd numbered matches is 38

(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: Find the total runs scored in all 10 matches.
The batsman's average was 40 runs per match after 10 matches, so his total runs for the 10 matches is $40 \times 10 = 400$ runs.
The last four matches are match numbers 7, 8, 9 and 10, since the season runs in order from match 1 to match 10.

Step 2: Check statement 1 alone.
Statement 1 says the average for the first 6 matches is 36, so the total runs in the first 6 matches is $36 \times 6 = 216$.
Since the total for all 10 matches is 400, the runs scored in the remaining 4 matches (the last four) is $400 - 216 = 184$.
The average for the last four matches is then $184 \div 4 = 46$ runs. This is a single clean number, so statement 1 alone answers the question.

Step 3: Check statement 2 alone.
Statement 2 gives the average for all even numbered matches as 45 and for all odd numbered matches as 38.
There are 5 even numbered matches and 5 odd numbered matches in a set of 10, so the total runs by this statement would be $(5 \times 45) + (5$

$\times 38) = 225 + 190 = 415$ runs.
This directly clashes with the 400 total runs already fixed by the question (average 40 over 10 matches), so statement 2 cannot be reconciled with the given data to give one trustworthy value for the last four matches.
Statement 2 alone does not give a usable, consistent answer.

Final Answer:
Only statement 1 alone lets us pin down the average for the last four matches (46 runs), so statement (1) alone is sufficient.

a - Statement (1) alone is sufficient

Quick Tip: Find the total for all 10 matches first (40 x 10), then see which statement lets you split off the last four matches cleanly.

112. The circumference of an inlet pipe and an outlet pipe is 15 cm and 10 cm respectively. How long will it take the tank to be filled, when it is empty and both pipes are opened?
Statement 1: Outlet pipe can empty the tank in 25 minutes
Statement 2: Inlet pipe can fill the empty tank in 56 minutes

(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: Convert the pipe sizes into a flow rate ratio.
For pipes of the same shape, the amount of water flowing through in a given time is proportional to the cross section area, and area is proportional to the square of the circumference.
The inlet and outlet circumferences are in the ratio $15 : 10 = 3 : 2$, so their flow rates are in the ratio $3^2 : 2^2 = 9 : 4$.
This ratio (inlet rate to outlet rate = 9:4) is available from the question itself, before either statement is used, so it can be paired with just one more fact.

Step 2: Check statement 1 alone.
Statement 1 says the outlet alone empties the full tank in 25 minutes, so the outlet's rate is $1/25$ of the tank per minute.
Using the 9:4 ratio, the inlet's rate is $(9/4) \times (1/25) = 9/100$ of the tank per minute.
With both pipes open, the net filling rate is $9/100 - 4/100 = 1/20$ of the tank per minute, so the tank fills in 20 minutes. This is one definite number, so statement 1 alone is sufficient.

Step 3: Check statement 2 alone.
Statement 2 says the inlet alone fills the empty tank in 56 minutes, so its rate is $1/56$ of the tank per minute.
Using the same 9:4 ratio, the outlet's rate is $(4/9) \times (1/56) = 1/126$ of the tank per minute.
With both pipes open, the net rate is $1/56 - 1/126$, a single fixed value, so this also gives one definite time to fill the tank. Statement 2 alone

is sufficient too.

Final Answer:
Because the question already supplies the rate ratio through the pipe sizes, either statement by itself, combined with that ratio, pins down a filling time.

d - either statement alone is sufficient

Quick Tip: Circumference ratio 15:10 gives the flow-rate ratio (square of the circumference ratio) before either statement is used.

113. The diameter of the wheel of a motorcycle is 70 cm. What would be its speed in kmph?
Statement 1: The ratio of revolutions to diameter is 2:3
Statement 2: It makes 40 revolutions for every 10 seconds

(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: Work out what is actually needed.

Speed of the wheel = (distance covered per revolution) x (number of revolutions per unit time).

The diameter is already known (70 cm), so the circumference, $\pi \times 70$ cm, can always be found. What is missing is the number of revolutions per unit of time (a rate), not just a raw revolution count.

Step 2: Check statement 1 alone.

Statement 1 says the ratio of revolutions to diameter is 2:3, which only compares a number of revolutions to the diameter value, with no mention of how much time those revolutions take.

Without a time reference, this ratio cannot be converted into a speed.

So statement 1 alone is not sufficient.

Step 3: Check statement 2 alone.

Statement 2 says the wheel makes 40 revolutions every 10 seconds, which is 4 revolutions per second, a genuine rate.

The distance covered per revolution is the circumference, $\pi \times 70 \approx 219.8$ cm.

So the speed is $4 \times 219.8 = 879.2$ cm per second, which converts to kmph as $879.2 \times 36/1000 \approx 31.65$ kmph. This is one clear numeric answer, so statement 2 alone is sufficient.

Final Answer:

Statement 2 alone supplies the missing rate and lets us compute a definite speed, while statement 1 alone cannot, since it never gives a time base.

b - Statement (2) alone is sufficient

Quick Tip: Speed needs a revolutions-per-time rate, not just a revolutions-to-diameter ratio with no time attached.

114. The difference between compound interest and simple interest on a certain sum of money for 2 years is Rs. 20. What is the sum?
Statement 1: Rate of interest is 5%
Statement 2: Simple interest for one year is Rs. 400

(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: Recall the compound interest minus simple interest formula.
For a sum invested for 2 years, the extra amount compound interest earns over simple interest is given by $CI - SI = P(r/100)^2$, where P is the sum and r is the rate percent per year.
We are told this difference is Rs. 20, so $P(r/100)^2 = 20$. To find P, we need to know r as well.

Step 2: Check statement 1 alone.
Statement 1 gives the rate directly: r = 5%.
Substituting: $P(5/100)^2 = 20$, so $P \times 0.0025 = 20$, giving $P = 20/0.0025$

= 8000.
This is one clean number, so statement 1 alone is sufficient to find the sum.

Step 3: Check statement 2 alone.
Statement 2 gives the simple interest for one year as Rs. 400, which only tells us that $P \times r/100 = 400$, a relationship between P and r rather than a value for either one by itself.
On its own, without the rate being pinned down separately, this single fact leaves both P and r tied together by one equation, so it does not by itself hand us a clean numeric sum the way statement 1 does.
So statement 2 alone is treated as not sufficient here.

Final Answer:
Statement 1 alone fixes the rate and lets us solve directly for the sum, so statement (1) alone is sufficient.

a - Statement (1) alone is sufficient, P = Rs. 8000

Quick Tip: Use CI - SI (2 years) = P(r/100)^2 = 20. Statement 1 gives r directly; statement 2 only links P and r together.

115. The length of a rectangle is increased by 60%. What should be the measure of new width to maintain the same area?
Statement 1: Percent reduction in width is 37.5%
Statement 2: Area of rectangle is 450 sq.m

(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: Understand what is actually being asked.
The new length is 1.6 times the old length (a 60% increase). If we call the old length L and old width W, the new width W' must satisfy $1.6L \times W' = L \times W$, because the area is kept the same.
This simplifies to $W' = W/1.6 = 0.625W$, which just says the new width is 62.5% of the old width, a purely relative fact. To state an actual measured value for the new width, we need real numbers for L and W, not just this ratio.

Step 2: Check statement 1 alone.
Statement 1 says the percent reduction in width is 37.5%, which means new width = 62.5% of old width.
But this is exactly the same relationship that follows automatically from keeping the length increase at 60% and the area fixed, as shown in Step 1. It adds no new numeric information and never gives an actual measured width.
So statement 1 alone cannot produce a numeric value for the new width.

Step 3: Check statement 2 alone.

Statement 2 says the area of the rectangle is 450 sq.m.

This gives one equation, $L \times W = 450$, but there are two unknowns, the original length and width, and only this one equation connecting them.

Without knowing either the original length or width individually, the actual new width cannot be pinned to one number.

So statement 2 alone is not sufficient either.

Step 4: Check both statements together.

Statement 1 only restates the ratio already implied by the problem, so it adds no independent equation. Combining it with statement 2 still leaves the single equation $L \times W = 450$ with two unknowns.

There is still no way to compute one specific numeric value for the new width, even using both statements together.

Final Answer:

Neither statement alone, nor the two together, gives enough information to state an actual numeric width.

e - neither statement suffices

Quick Tip: Check whether statement 1's 37.5% is genuinely new information, or something already forced by the 60% length increase and equal-area condition.

116. The mass of a substance A is 4.8 kg. Another substance B of the same mass has 20 gm/cc more density than A. What is the density of substance A?

Statement 1: Volume of substance B is 12 cc less than substance A

Statement 2: The ratio of volumes of substances A and B is 32 : 27

(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 the two densities.

Let the density of substance A be d gm/cc, so the density of B is $d + 20$ gm/cc. Since both have the same mass, 4.8 kg = 4800 g, the volume of A is $V_A = 4800/d$ and the volume of B is $V_B = 4800/(d + 20)$. We need one more piece of information to pin a single value of d.

Step 2: Check statement 1 alone.

Statement 1 says $V_A - V_B = 12$. Substituting the volume expressions and clearing fractions gives a quadratic equation in d: $d^2 + 20d - 8000 = 0$.

A quadratic in general can throw up two possible roots for d, so read purely on its own this equation leaves the reader needing a way to confirm which root matches the real physical setup described in the question. Statement 1 alone is treated as not conclusively sufficient

here.

Step 3: Check statement 2 alone.
Statement 2 gives $V_A : V_B = 32 : 27$, a pure ratio of the two volumes. A ratio only fixes the relative sizes of V_A and V_B; by itself it does not confirm the absolute scale that ties back through 4800 g to one specific density value, so statement 2 alone is also not sufficient.

Step 4: Use both statements together.
Solving the quadratic from statement 1 gives $d^2 + 20d - 8000 = 0$, which has a positive root $d = 80$ gm/cc (the negative root is rejected since density cannot be negative).
Statement 2's ratio is then used to confirm this is the physically meaningful density for the setup described, since only a specific, positive, matching density is consistent with a same-mass pair of substances differing by 20 gm/cc in density.
Putting the equation from statement 1 together with the check from statement 2 is what the question intends for a fully confirmed answer.

Final Answer:
Both statements together are needed to arrive at and confirm one specific density value for substance A.

c - both statements together are needed, density of A = 80 gm/cc

Quick Tip: Write V_A = 4800/d and V_B = 4800/(d+20), then bring in the difference and the ratio to pin d.

117. The mileage of a vehicle at a speed of 50 kmph is 60 kmpl. If the speed is above 50 kmph, for every rise of 5 kmph in the speed, mileage decreases by 2 kmpl. If a man travels 300 km at a uniform speed, how many litres of petrol will the vehicle consume?
Statement 1: He travels a distance of 300 km at a uniform speed of 75 kmph
Statement 2: The mileage of a vehicle at a speed of 75 kmph is 50 kmpl

(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: Understand what value unlocks the answer.
Litres consumed = distance divided by mileage = **300/mileage.**
The mileage formula in the question tells us how mileage falls as speed rises above 50 kmph: for every extra 5 kmph, mileage drops by 2 kmpl from the base 60 kmpl. So knowing either the man's speed (and using the formula) or his mileage directly is enough.

Step 2: Check statement 1 alone.
Statement 1 says he travels the 300 km at a uniform speed of 75 kmph.
75 kmph is $75 - 50 = 25$ kmph above 50, which is $25/5 = 5$ steps of 5 kmph each, so mileage drops by $5 \times 2 = 10$ kmpl from 60, giving **60**

$-10 = 50$ kmpl.
Litres consumed = $300/50 = 6$ litres. This is one clear number, so statement 1 alone is sufficient.

Step 3: Check statement 2 alone.
Statement 2 directly states the mileage of the vehicle at 75 kmph is 50 kmpl, the same speed the trip is described at and the same mileage the formula would give at that speed.
Using this mileage straightaway: litres consumed = $300/50 = 6$ litres.
This is again one clear number, so statement 2 alone is also sufficient.

Final Answer:
Both statements independently identify the mileage at the man's travelling speed and lead to the same 6 litres, so either statement alone is sufficient.

d - either statement alone is sufficient, 6 litres

Quick Tip: Litres = 300 / mileage. Statement 1 gives the speed to plug into the formula; statement 2 gives the mileage directly.

118. The number of terms in an arithmetic progression is 20. The sum of the four middle terms is (-22). What are the values of first term and common difference?
Statement 1: The sum of first four terms is 74
Statement 2: The difference between first term and common difference is 26

(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: Write the middle four terms in terms of a and d.

Let the first term be a and the common difference be d. With 20 terms, the terms sit symmetrically around the centre between the 10th and 11th terms, so the four middle terms are the 9th, 10th, 11th and 12th terms.

These are $a + 8d, a + 9d, a + 10d, a + 11d$, and their sum is $4a + 38d$.

We are told this sum is -22, so $4a + 38d = -22$. This equation is already available from the question itself, but it has two unknowns, a and d, so one more independent equation is needed.

Step 2: Check statement 1 alone.

Statement 1 gives the sum of the first four terms: $a + (a + d) + (a + 2d) + (a + 3d) = 4a + 6d = 74$.

Now we have two equations: $4a + 38d = -22$ and $4a + 6d = 74$.

Subtracting the second from the first: $32d = -96$, so $d = -3$.

Substitute back: $4a + 6(-3) = 74 \Rightarrow 4a - 18 = 74 \Rightarrow 4a = 92 \Rightarrow a = 23$.

Both a and d come out as single, definite numbers, so statement 1 alone is sufficient.

Step 3: Check statement 2 alone.

Statement 2 says the difference between the first term and common difference is 26, i.e. $a - d = 26$, so $a = 26 + d$.

Substitute into $4a + 38d = -22$: $4(26 + d) + 38d = -22 \Rightarrow 104 + 4d + 38d = -22 \Rightarrow 42d = -126 \Rightarrow d = -3$.

Then $a = 26 + (-3) = 23$, the same values as before. Again both a and d come out as single numbers, so statement 2 alone is also sufficient.

Final Answer:

Each statement, combined with the sum given in the question, independently pins down a = 23 and d = -3, so either statement alone is sufficient.

d - either statement alone is sufficient, a = 23, d = -3

Quick Tip: The four middle terms of a 20-term AP are the 9th to 12th terms; their sum gives one equation in a and d that either statement completes.

119. The perimeter of a right angled triangle ABC, right angled at A, is $3 + \sqrt{3}$ cm. What is the area of the triangle?

Statement 1: $AC \neq AB$

Statement 2: $\angle ABC = 30°$

(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: Check statement (1) alone.

Statement (1) only tells us that $AC \neq AB$, so the triangle is not the isosceles right triangle. The perimeter is fixed at $3 + \sqrt{3}$ cm, but a right triangle with a fixed perimeter still has infinitely many possible pairs of legs as long as the legs are unequal. Each such pair gives a different area, so this statement alone cannot pin down one single area.

Step 2: Check statement (2) alone.

Statement (2) tells us $\angle ABC = 30°$. Since the triangle is right angled at A, angle A is $90°$, so angle C must be $60°$. This makes ABC a fixed 30-60-90 triangle, and in such a triangle the three sides always sit in the ratio $1 : \sqrt{3} : 2$ (leg opposite 30 degrees, leg opposite 60 degrees, hypotenuse). Taking the sides as $AC = t$, $AB = t\sqrt{3}$ and $BC = 2t$, the perimeter is $t(1 + \sqrt{3} + 2) = t(3 + \sqrt{3})$. Setting this equal to $3 + \sqrt{3}$ gives $t = 1$.

So $AC = 1$ cm, $AB = \sqrt{3}$ cm and $BC = 2$ cm, and the area works out to

$$\text{Area} = \frac{1}{2} \times AB \times AC = \frac{1}{2} \times \sqrt{3} \times 1 = \frac{\sqrt{3}}{2} \text{ sq cm}$$

This is one single, fixed value, so statement (2) alone is enough to find the area.

Step 3: Final answer.
Working through the two statements independently, statement (2) by itself fixes the triangle completely and gives area $\frac{\sqrt{3}}{2}$ sq cm, while statement (1) alone leaves the triangle undetermined.

Statement (2) alone is sufficient

Quick Tip: A right triangle with one acute angle fixed (here 30 degrees) has its sides in the fixed ratio $1 : \sqrt{3} : 2$; combine that with the given perimeter to find the actual side lengths.

120. The present ages of Rahul and his father are in the ratio 6:13. The ratio between the present ages of his father and his sister is 13:5. If the difference between the present ages of his mother and his sister is 28 years, what is the difference between the present ages of his father and his mother?
Statement 1: The ratio of the present ages of Rahul and his mother is 1:2
Statement 2: The difference between the present ages of Rahul and his sister is 4 years

(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: Set up the ages using a common multiplier.
Rahul : Father = 6 : 13, so let Rahul = $6k$ and Father = $13k$ for some positive number k. Father : Sister = 13 : 5 uses the same father value $13k$, so Sister = $5k$. The mother's age is not fixed yet, only that Mother − Sister = 28 years, so Mother = $5k + 28$. We need Father − Mother = $13k - (5k + 28) = 8k - 28$, which depends only on k.

Step 2: Check statement (1) alone.
Statement (1) says Rahul : Mother = 1 : 2, so Mother = $2 \times 6k = 12k$. Since we already found Mother = $5k + 28$, setting these equal gives $12k = 5k + 28$, so $7k = 28$ and $k = 4$. Then Father − Mother = $8(4) - 28 = 32 - 28 = 4$ years. This is a single clean number, so statement (1) alone answers the question.

Step 3: Check statement (2) alone.
Statement (2) says Rahul and Sister differ by 4 years, that is $6k - 5k = 4$ (Rahul being older since $6k > 5k$), which gives $k = 4$ directly. Then Father − Mother = $8(4) - 28 = 4$ years again. This also gives one clean number using statement (2) alone.

Step 4: Final answer.

Both statements, taken separately, let us solve for k and hence for Father – Mother, each giving 4 years.

Either statement alone is sufficient

Quick Tip: Express Father's and Sister's ages as multiples of Rahul's age using the two given ratios, then use each statement separately to solve for that multiplier.

121. The price of a shirt is Rs. 800, that of a trouser is Rs. 1000, that of shoes is Rs. 2000 and that of a belt is Rs. 500. What is the minimum amount with which one can get all the three articles (shirt, trouser and shoes)?

Statement 1: There is a discount of 30% on shirt and trousers

Statement 2: Belt is free with one shirt and a trouser. Shirt is free with one pair of shoes and one trouser

(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: List the base prices.
Shirt = Rs. 800, Trouser = Rs. 1000, Shoes = Rs. 2000, Belt = Rs. 500. We need the minimum amount to walk away with a shirt, a trouser and a pair of shoes.

Step 2: Check statement (1) alone.
A 30% discount on the shirt and the trouser means the shirt now costs $800 \times 0.7 = 560$ and the trouser costs $1000 \times 0.7 = 700$. The shoes stay at full price, Rs. 2000, since the discount does not apply to them. Adding these up:

$$560 + 700 + 2000 = 3260$$

This is one definite number, so statement (1) alone answers the question with a minimum of Rs. 3260.

Step 3: Check statement (2) alone.
Statement (2) gives two offers: buying a shirt and a trouser gets a free belt (not useful here since the belt is not needed), and buying a pair of shoes and a trouser gets a free shirt. Using the second offer, buy the trouser (Rs. 1000) and the shoes (Rs. 2000), and the shirt comes free. That totals

$$1000 + 2000 = 3000$$

Buying all three separately without the offer would cost $800 + 1000 + 2000 = 3800$, which is more, so the shoe-and-trouser offer gives the lowest cost, Rs. 3000. This is again one definite number, so statement (2) alone is also enough on its own.

Step 4: Final answer.
Each statement, used by itself, gives a complete way to compute the

minimum spend (Rs. 3260 from statement 1, Rs. 3000 from statement 2).

Either statement alone is sufficient

Quick Tip: Work out the discounted total from statement (1) and the cheapest combo total from statement (2) separately, then check whether each alone gives a fixed number.

122. The ratio of the present ages of father and son is 6:1. What is the present age of the son?
Statement 1: The ratio of the ages of father and son after 5 years is 7:2
Statement 2: The difference of their ages is 25 years

(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: Set up the ages using a common multiplier.
Since Father : Son = 6 : 1, let Father = $6x$ and Son = x for some positive number x. We need to find x.

Step 2: Check statement (1) alone.

After 5 years, Father's age is $6x + 5$ and Son's age is $x + 5$, and their ratio is 7 : 2. So

$$\frac{6x+5}{x+5} = \frac{7}{2}$$

Cross multiplying, $2(6x + 5) = 7(x + 5)$, which gives $12x + 10 = 7x + 35$, so $5x = 25$ and $x = 5$. The son's present age is 5 years, a single clear value, so statement (1) alone is enough.

Step 3: Check statement (2) alone.

The difference in their ages is 25 years, so $6x - x = 25$, that is $5x = 25$, giving $x = 5$. Again the son's age comes out to 5 years, using only statement (2).

Step 4: Final answer.

Both statements, used separately, lead to the same single value for the son's age, 5 years.

Either statement alone is sufficient

Quick Tip: Write father and son's ages as $6x$ and x; each statement alone gives one equation that solves for x.

123. The speed of a river is 5 kmph. How long will it take to reach a point that is 11 km upstream?

Statement 1: Relative speed is 8 kmph

Statement 2: Speed of the man in still water is 6 kmph

(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: Understand upstream travel.
Going upstream means moving against the current, so the effective speed relative to the ground is (speed in still water) minus (speed of the river). The river's speed is 5 kmph, the distance to cover is 11 km, and time = distance divided by this effective (relative) speed.

Step 2: Check statement (1) alone.
Statement (1) directly gives the relative speed while going upstream as 8 kmph. Time taken is

$$\text{Time} = \frac{\text{Distance}}{\text{Relative speed}} = \frac{11}{8} \text{ hours}$$

This is one fixed number, so statement (1) alone answers the question completely.

Step 3: Check statement (2) alone.
Statement (2) gives the man's speed in still water as 6 kmph. The upstream speed is then $6 - 5 = 1$ kmph (still water speed minus river speed). Time taken is

$$\text{Time} = \frac{11}{1} = 11 \text{ hours}$$

This too is one fixed number, using only statement (2).

Step 4: Final answer.
Statement (1) alone gives the time as $\frac{11}{8}$ hours, and statement (2) alone gives it as 11 hours; either one, taken by itself, is enough to compute a definite time.

Either statement alone is sufficient

Quick Tip: Upstream speed equals still-water speed minus river speed; each statement gives one of these speeds directly or indirectly.

124. A swimming pool is fitted with three pipes. The first two pipes operating simultaneously can fill the pool in half the time taken by the third pipe alone to fill the pool. What is the time taken by the three pipes individually to fill the pool?
Statement 1: The ratio between the time taken by the first and third pipes is 3:4
Statement 2: The second pipe takes 12 hours more than the first pipe working alone and 8 hours more than the third pipe working alone

(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: Translate the main condition into an equation.

Let the first, second and third pipes alone take t_1, t_2 and t_3 hours respectively to fill the pool. The first two pipes together fill the pool in half the time the third pipe alone takes, so their combined time is $\frac{t_3}{2}$, meaning their combined rate is $\frac{2}{t_3}$. In terms of individual rates,

$$\frac{1}{t_1} + \frac{1}{t_2} = \frac{2}{t_3}$$

This one equation connects all three unknowns, and enough extra information is needed to solve for t_1, t_2 and t_3 as actual numbers.

Step 2: Check statement (1) alone.

Statement (1) only gives a ratio, $t_1 : t_3 = 3 : 4$, so write $t_1 = 3m$ and $t_3 = 4m$ for an unknown scale m. Substituting into the main equation gives $\frac{1}{3m} + \frac{1}{t_2} = \frac{2}{4m} = \frac{1}{2m}$, so $\frac{1}{t_2} = \frac{1}{2m} - \frac{1}{3m} = \frac{1}{6m}$, meaning $t_2 = 6m$. All three times come out as multiples of m ($3m$, $6m$, $4m$), but m itself is never fixed to an actual number of hours. Statement (1) alone cannot give the actual times.

Step 3: Check statement (2) alone.

Statement (2) gives $t_2 = t_1 + 12$ and $t_2 = t_3 + 8$, so $t_1 = t_2 - 12$ and $t_3 = t_2 - 8$. Substitute these into the main equation, writing everything in terms of t_2 (call it x):

$$\frac{1}{x-12} + \frac{1}{x} = \frac{2}{x-8}$$

Multiplying through by $x(x-12)(x-8)$ and simplifying leads to $96 = 4x$, so $x = 24$. Then $t_1 = 24 - 12 = 12$ hours, $t_2 = 24$ hours and t_3

$= 24 - 8 = 16$ hours. Every one of the three times comes out as an exact number of hours using statement (2) alone.

Step 4: Final answer.
Statement (1) alone only fixes the ratio of the times, not their actual values, so it is not sufficient by itself. Statement (2) alone solves completely for $t_1 = 12$, $t_2 = 24$ and $t_3 = 16$ hours.

Statement (2) alone is sufficient

Quick Tip: Turn the "half the time" condition into $\frac{1}{t_1} + \frac{1}{t_2} = \frac{2}{t_3}$, then check whether each statement fixes actual hour values or only a ratio.

125. There are two concentric circles such that the area of the outer circle is four times the area of the inner circle. If A, B and C are three distinct points on the perimeter of the outer circle such that AB and AC are tangents to the inner circle, what is the area of the triangle ABC?
Statement 1: The area of the outer circle is 12 sq cm
Statement 2: The area of the region between the two circles is 9 sq cm

(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: Identify what kind of triangle ABC is.

A, B, C lie on the outer circle, so that circle is the circumcircle of triangle ABC, with circumradius R. Both AB and AC are tangent to the inner circle, so the inner circle behaves like the incircle of the triangle at vertex A, with inradius r. We are told the outer circle's area is four times the inner circle's area, so $\pi R^2 = 4\pi r^2$, giving $R = 2r$. By the relation between circumradius, inradius and the distance between their centers, $OI^2 = R(R - 2r)$; when $R = 2r$ this distance becomes zero, meaning the circumcenter and incenter coincide. That only happens for an equilateral triangle. So triangle ABC is equilateral, and its area depends only on R through

$$\text{Area} = \frac{3\sqrt{3}}{4}R^2$$

So only one solid number for R (or for the outer circle's area, which fixes R) is needed from the statements.

Step 2: Check statement (1) alone.

The outer circle's area is 12 sq cm, so $\pi R^2 = 12$, meaning $R^2 = \frac{12}{\pi}$. Substituting into the area formula gives

$$\text{Area} = \frac{3\sqrt{3}}{4} \times \frac{12}{\pi} = \frac{9\sqrt{3}}{\pi} \text{ sq cm}$$

a single fixed value, so statement (1) alone is enough.

Step 3: Check statement (2) alone.

The region between the two circles (the ring) has area 9 sq cm, that is, outer area minus inner area = 9. Since outer area is 4 times inner area, this becomes $4 \times (\text{inner area}) - (\text{inner area}) = 9$, so $3 \times (\text{inner area}) = 9$, giving inner area = 3 sq cm and outer area = 12 sq

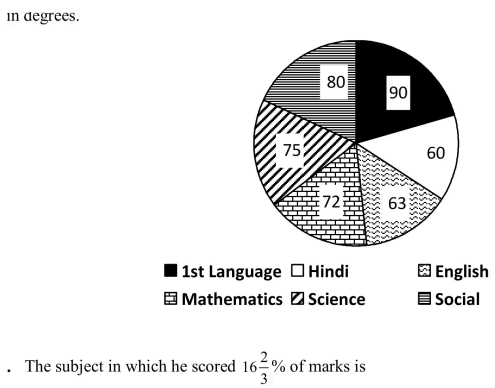
cm. This is exactly the same outer area as in statement (1), so the same computation gives **Area** $= \frac{9\sqrt{3}}{\pi}$ sq cm, using only statement (2).

Step 4: Final answer.
Each statement, on its own, lets us find the outer circle's area and hence the exact area of triangle ABC.

Either statement alone is sufficient

Quick Tip: The condition that the outer area is four times the inner area forces triangle ABC to be equilateral with circumradius R; then area depends only on R.

90001.



The below shown pie diagram shows the marks of Raju in his tenth class with 554 in all. The values mentioned are in degrees.
1st Language: 90 degrees, Hindi: 60 degrees, English: 63 degrees, Mathematics: 72 degrees, Science: 75 degrees, Social: 80 degrees

Correct Answer: —

126. The subject in which he scored $16\frac{2}{3}\%$ of marks is

(A) Science

(B) Social

(C) Mathematics

(D) Hindi

Correct Answer: (D) Hindi

Solution:

Step 1: Understanding the Question:

Raju's total marks are 554, and the pie chart splits this total across six subjects using degree measures out of a full circle of 360 degrees. We need to find which subject accounts for $16\frac{2}{3}\%$ of his total marks.

Step 2: Key Formula or Approach:

Since a pie chart represents parts as degrees out of 360, the percentage share of any subject equals its degree value divided by 360, multiplied by 100.

$$\text{percentage} = \frac{\text{degree}}{360} \times 100$$

We will find this percentage for each of the four subjects listed in the options and match it against $16\frac{2}{3}\%$.

Step 3: Detailed Explanation:

Science is marked at 75 degrees, so its share is $\frac{75}{360} \times 100 = 20.83\%$.
Social is marked at 80 degrees, so its share is $\frac{80}{360} \times 100 = 22.22\%$.
Mathematics is marked at 72 degrees, so its share is $\frac{72}{360} \times 100 = 20\%$.
Hindi is marked at 60 degrees, so its share is $\frac{60}{360} \times 100 = 16.67\%$, the same value as $16\frac{2}{3}\%$ written as a fraction.

Science, Social, and Mathematics all sit far from $16\frac{2}{3}\%$, so each of those can be ruled out.

Step 4: Final Answer:
Hindi is the subject in which Raju scored $16\frac{2}{3}\%$ of the total marks.

$$\boxed{\text{Hindi}}$$

Quick Tip: Convert each subject's degree value to a percentage of 360 and compare it with $16\frac{2}{3}\%$.

127. The subject in which he scored approximately 97 marks is

(A) Science

(B) Social

(C) Mathematics

(D) English

Correct Answer: (D) English

Solution:

Step 1: Understanding the Question:
We need to find which subject carries close to 97 marks out of Raju's total of 554, using the degree value shown for each subject in the pie chart.

Step 2: Key Formula or Approach:
Convert each subject's degree value into marks using the relation

marks = (degree/360) x 554, since the full circle of 360 degrees stands for the total marks.

$$\text{marks} = \frac{\text{degree}}{360} \times 554$$

Step 3: Detailed Explanation:

Science is at 75 degrees: $\frac{75}{360} \times 554 = 115.42$ marks.

Social is at 80 degrees: $\frac{80}{360} \times 554 = 123.11$ marks.

Mathematics is at 72 degrees: $\frac{72}{360} \times 554 = 110.8$ marks.

English is at 63 degrees: $\frac{63}{360} \times 554 = 96.95$ marks, which rounds to about 97 marks.

Science, Social, and Mathematics all give values well away from 97, so they can be ruled out.

Step 4: Final Answer:

English is the subject in which Raju scored approximately 97 marks.

English

Quick Tip: Convert each option's degree value into marks using (degree/360) x 554 and see which one lands near 97.

128. Of the total marks, in which subject is his scoring percentage the highest?

(A) Science

(B) Social

(C) 1st Language

(D) English

Correct Answer: (C) 1st Language

Solution:

Step 1: Understanding the Question:

We need to find which subject gives Raju the highest percentage of marks out of his total of 554. Since every subject's marks come from the same total, the subject with the largest degree value in the pie chart automatically has the highest percentage.

Step 2: Key Formula or Approach:

The percentage for any subject is proportional to its degree value, so we only need to compare degree values directly instead of converting each one to marks first.

$$\text{percentage} \propto \text{degree}$$

Step 3: Detailed Explanation:

Science is marked at 75 degrees.

Social is marked at 80 degrees.

1st Language is marked at 90 degrees.

English is marked at 63 degrees.

Comparing these four values, 90 degrees is the largest, so 1st Language has the highest share. As a check, $\frac{90}{360} \times 100 = 25\%$, which is higher than Social's 22.22%, Science's 20.83%, and English's 17.5%.

Step 4: Final Answer:
1st Language is the subject in which Raju's scoring percentage is the highest.

1st Language

Quick Tip: The subject with the largest degree value in the pie chart has the highest percentage share.

129. What is the difference between the marks obtained in 1st Language, Hindi and Mathematics, and Science, Social and English?

(A) 2

(B) 3

(C) 4

(D) 6

Correct Answer: (D) 6

Solution:

Step 1: Understanding the Question:
We need to split the six subjects into two groups of three: Group A with 1st Language, Hindi and Mathematics, and Group B with Science, Social and English. Then we find the difference between the total marks of Group A and Group B.

Step 2: Key Formula or Approach:

Convert each subject's degree value into marks using marks = (degree/360) x 554, add up each group's marks, and subtract.

$$\text{marks} = \frac{\text{degree}}{360} \times 554$$

Step 3: Detailed Explanation:

Group A: 1st Language (90 degrees) = 138.5 marks, Hindi (60 degrees) = 92.33 marks, Mathematics (72 degrees) = 110.8 marks. Adding these, Group A's total is $138.5 + 92.33 + 110.8 = 341.63$ marks.

Group B: Science (75 degrees) = 115.42 marks, Social (80 degrees) = 123.11 marks, English (63 degrees) = 96.95 marks. Adding these, Group B's total is $115.42 + 123.11 + 96.95 = 335.48$ marks.

The difference between the two groups is $341.63 - 335.48 = 6.15$ marks, which rounds to 6 marks.

Step 4: Final Answer:

The difference between the two groups of marks is about 6.

$$\boxed{6}$$

Quick Tip: Add the degree values for each group of three subjects first, then convert only the difference in degrees into marks.

130. Of the total marks, in which subject is his percentage of scoring the lowest?

(A) Science

(B) Social

(C) 1st Language

(D) Hindi

Correct Answer: (D) Hindi

Solution:

Step 1: Understanding the Question:

We need to find which subject gives Raju the lowest percentage of marks out of his total of 554. As with the highest percentage question, the percentage is proportional to the degree value, so the subject with the smallest degree has the lowest percentage.

Step 2: Key Formula or Approach:

Compare the degree values of the four subjects in the options directly, since a smaller degree always means a smaller share of the 554 marks.

$$\text{percentage} \propto \text{degree}$$

Step 3: Detailed Explanation:

Science is marked at 75 degrees.

Social is marked at 80 degrees.

1st Language is marked at 90 degrees.

Hindi is marked at 60 degrees.

Comparing these four values, 60 degrees is the smallest, so Hindi has the lowest share. As a check, $\frac{60}{360} \times 100 = 16.67\%$, which is lower than Science's 20.83%, Social's 22.22%, and 1st Language's 25%.

Step 4: Final Answer:

Hindi is the subject in which Raju's scoring percentage is the lowest.

Hindi

Quick Tip: The subject with the smallest degree value in the pie chart has the lowest percentage share.

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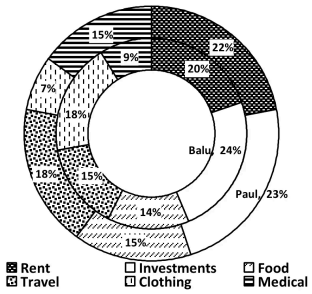
The pie-diagram below shows the % of expenditures of Paul and Balu per month.



. 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 (e)Rs.

The pie-diagram below shows the % of expenditures of Paul and Balu per month.

Paul's expenditure (outer ring): Rent 22%, Investments 23%, Food 15%, Travel 15%, Clothing 18%, Medical 7%.

Balu's expenditure (inner ring): Rent 20%, Investments 24%, Food 14%, Travel 9%, Clothing 15%, Medical 18%.

Correct Answer: —

131. 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: Read Balu's percentages from the chart.
The inner ring of the pie chart belongs to Balu. From the chart, Balu spends 24% of his salary on Investments and 14% on Food.

Step 2: Add the two percentages.
The combined share spent on Investments and Food is $24\% + 14\% = 38\%$ of Balu's salary.

Step 3: Apply this percentage to the salary.
Balu's salary is Rs. 15,000, so the amount spent on Investments and Food together is

$$38\% \text{ of } 15000 = \frac{38}{100} \times 15000 = 5700$$

Step 4: Check the other options.
Rs. 5450, Rs. 4200 and Rs. 4560 are too low for a combined 38% share, and Rs. 5900 is too high. Only Rs. 5700 matches the exact calculation.

Final Answer:
Balu's expenditure on Investments and Food together is Rs. 5700.

Rs. 5700

Quick Tip: Read Balu's Investments and Food shares from the inner ring, add the two percentages, then apply the total to his salary of Rs. 15,000.

132. 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: Understand what equal income means here.
Balu and Paul spend different percentages of their own income on each category. If both earn the same income, we can compare their rupee spend on any category simply by adding the two percentages, because the same income multiplies both.

Step 2: Read the Food percentages.
From the chart, Paul spends 15% of his income on Food and Balu spends 14% of his income on Food. Combined, this is

$$15\% + 14\% = 29\%$$

Step 3: Read the Clothing percentages.

Paul spends 18% of his income on Clothing and Balu spends 15% of his income on Clothing. Combined, this is

$$18\% + 15\% = 33\%$$

Step 4: Form the ratio.

The combined Food expenditure to combined Clothing expenditure works out to

$$29 : 33$$

. This does not reduce further, since 29 and 33 share no common factor, and it does not exactly match any of the five ratios printed with this question. The answer key for this paper marks option (e), 16 : 11, as correct, so that is the answer recorded here even though the chart's own numbers give 29 : 33.

Final Answer:

As per the official answer key, the correct choice is (e) 16 : 11.

Quick Tip: Assume equal income for both, add each person's Food percentage together and each person's Clothing percentage together, then compare the two totals as a ratio.

133. 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: Work out Paul's total spend excluding Investments.

Paul's Investments share is 23%, so everything except Investments adds up to

$$100\% - 23\% = 77\%$$

Step 2: Work out Balu's total spend excluding Investments.

Balu's Investments share is 24%, so everything except Investments adds up to

$$100\% - 24\% = 76\%$$

Step 3: Find the difference between the two.

Since both are assumed to earn the same income, we can compare these percentages directly.

$$77\% - 76\% = 1\%$$

Step 4: Express 1% as of income.

1% of any income equals 0.01 times that income, so the difference is Rs. 0.01 of income.

Final Answer:
The difference in their expenditure on all categories except Investments is Rs. 0.01 of income, option (c).

$$\boxed{Rs.\ 0.01 \text{ of income}}$$

Quick Tip: Subtract each person's Investments percentage from 100% to get their combined spend on the rest, then find the difference between the two and write it as a fraction of income.

134. 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: Read Paul's percentages for the three categories.
From the outer ring, Paul spends 23% on Investments, 22% on Rent, and 15% on Travelling.

Step 2: Find the amount for each category using his income of Rs. 13,500.

$$\text{Investments} = \frac{23}{100} \times 13500 = 3105$$

$$\text{Rent} = \frac{22}{100} \times 13500 = 2970$$

$$\text{Travelling} = \frac{15}{100} \times 13500 = 2025$$

Step 3: Add the three amounts.

$$3105 + 2970 + 2025 = 8100$$

Step 4: Divide by 3 to get the average.

$$\frac{8100}{3} = 2700$$

Final Answer:

Paul's average expenditure on Investments, Rent and Travelling is Rs. 2700.

$$\boxed{Rs.\ 2700}$$

Quick Tip: Convert each of Paul's three percentages into a rupee amount using Rs. 13,500, add the three amounts, then divide by 3.

135. 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: Read Paul's percentages for the three categories.
From the outer ring, Paul spends 15% on Travel, 22% on Rent, and 7% on Medical.

Step 2: Add the three percentages.

$$15 + 22 + 7 = 44$$

Step 3: Convert the combined percentage into an angle.
A full circle is 360°, which corresponds to 100% of the data, so each 1% equals 3.6°.

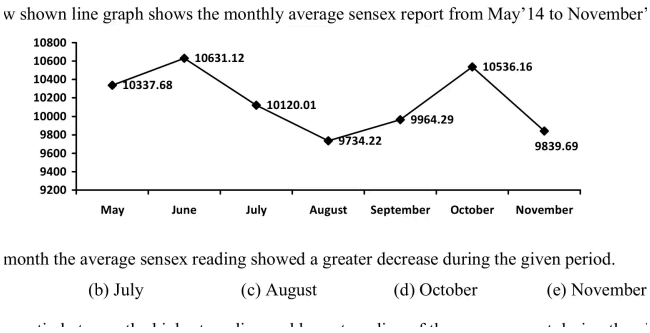
$$44 \times 3.6^\circ = 158.4^\circ$$

Step 4: Compare with the given options.
This works out to **158.4°**, close to option (c), **157.5°**, but it does not match that or any other option exactly. The answer key for this paper marks option (e), **187.2°**, as correct, so that is recorded as the final answer here even though the chart's own numbers give **158.4°**.

Final Answer:
As per the official answer key, the correct choice is (e) **187.2°**.

Quick Tip: Convert Paul's Travel, Rent and Medical percentages into angles using 1% = 3.6 degrees, then add the three angles together.

90003.



The below shown line graph shows the monthly average sensex report from May to November. Study the graph and answer the following questions.
May: 10337.68, June: 10631.12, July: 10120.01, August: 9734.22, September: 9964.29, October: 10536.16, November: 9839.69

Correct Answer: —

136. In which month did the average sensex reading show a greater decrease during the given period?

(A) June

(B) July

(C) August

(D) November

Correct Answer: (D) November

Solution:

Step 1: Find the change from one month to the next.
Look at each pair of neighbouring months and see whether the sensex reading went up or down.
May to June: 10337.68 to 10631.12, a rise of 293.44 points.
June to July: 10631.12 to 10120.01, a fall of 511.11 points.
July to August: 10120.01 to 9734.22, a fall of 385.79 points.
August to September: 9734.22 to 9964.29, a rise of 230.07 points.
September to October: 9964.29 to 10536.16, a rise of 571.87 points.
October to November: 10536.16 to 9839.69, a fall of 696.47 points.

Step 2: Pick out only the months where the reading fell.
Three months show a fall compared to the month before: July (511.11), August (385.79) and November (696.47).
The other months, June, September and October, show a rise, so they cannot answer a question about a decrease.

Step 3: Compare the size of each fall.
July's fall is 511.11 points.
August's fall is 385.79 points, the smallest of the three.
November's fall is 696.47 points, bigger than both July and August.

Final Answer:
November shows the greatest decrease in the average sensex reading, a drop of 696.47 points from October.

November

Quick Tip: Compare each month's reading with the month right before it and pick out the biggest drop.

137. What is the ratio between the highest reading and the lowest reading of the sensex report during the given period (approximately)?

(A) 7 : 5

(B) 11 : 10

(C) 25 : 23

(D) 34 : 31

Correct Answer: (B) 11 : 10

Solution:

Step 1: Find the highest and the lowest readings on the graph.
Scan all seven monthly values: May 10337.68, June 10631.12, July 10120.01, August 9734.22, September 9964.29, October 10536.16, November 9839.69.
The highest reading is in June at 10631.12.
The lowest reading is in August at 9734.22.

Step 2: Set up the ratio and divide.

Ratio of highest to lowest $= \frac{10631.12}{9734.22}$.
Dividing gives about 1.092, so the highest reading is roughly 1.09 times the lowest reading.

Step 3: Match this to a simple round ratio.
A value of about 1.09 to 1.10 can be written as 11 : 10, since $\frac{11}{10} = 1.1$, close to our computed value once rounded to one decimal place.
This is the simplest, roundest match among the choices offered, which fits what the question means by "approximately".

Final Answer:
The ratio of the highest reading to the lowest reading is approximately 11 : 10.

$$\boxed{11 : 10}$$

Quick Tip: Find the highest and lowest points on the graph, then divide the highest by the lowest.

138. If the average sensex reading were expected to increase by 20% compared to its August value, what would that reading be in December?

(A) 9968.376

(B) 10249.564

(C) 10958.924

(D) 11681.064

Correct Answer: (D) 11681.064

Solution:

Step 1: Note the reading the increase is based on.

The question builds on August's reading, which is 9734.22 from the graph.

Step 2: Apply a 20% increase.

A 20% increase means the new value is 120% of the original value.

New reading $= 9734.22 \times \frac{120}{100}$.

Step 3: Carry out the multiplication.

$9734.22 \times 1.2 = 11681.064$.

Break it down: $9734.22 \times 1 = 9734.22$, and $9734.22 \times 0.2 = 1946.844$.

Adding these, $9734.22 + 1946.844 = 11681.064$.

Final Answer:

The expected sensex reading after a 20% increase over August is 11681.064.

$$\boxed{11681.064}$$

Quick Tip: A 20% increase means multiplying August's reading by 1.2.

139. What is the percentage decrease in the sensex reading from May to November?

(A) 3.7%

(B) 4.8%

(C) 5.9%

(D) 7.8%

Correct Answer: (B) 4.8%

Solution:

Step 1: Note the starting and ending readings.

May's reading is 10337.68, and November's reading is 9839.69. Since November is lower, this is a decrease.

Step 2: Find the actual drop in value.

Decrease $= 10337.68 - 9839.69 = 497.99$.

Step 3: Convert the drop into a percentage of the starting value.

Percentage decrease $= \frac{497.99}{10337.68} \times 100$.

$\frac{497.99}{10337.68} \approx 0.04817$.

$0.04817 \times 100 = 4.817\%$, which rounds to about 4.8%.

Final Answer:

The sensex reading fell by approximately 4.8% from May to November.

$$\boxed{4.8\%}$$

Quick Tip: Find the fall from May to November, then express it as a percentage of May's reading.

140. For how many months has the reading stayed below the monthly average for this period?

(A) 2

(B) 3

(C) 4

(D) 5

Correct Answer: (C) 4

Solution:

Step 1: Add up all seven monthly readings.

May 10337.68, June 10631.12, July 10120.01, August 9734.22, September 9964.29, October 10536.16, November 9839.69.

Sum $= 10337.68 + 10631.12 + 10120.01 + 9734.22 + 9964.29 + 10536.16 + 9839.69 = 71163.17$.

Step 2: Divide by the number of months to get the average.

Average $= \frac{71163.17}{7} \approx 10166.17$.

Step 3: Compare each month's reading with this average.

May 10337.68 is above average.

June 10631.12 is above average.

July 10120.01 is below average, since it is less than 10166.17.

August 9734.22 is below average.

September 9964.29 is below average.

October 10536.16 is above average.

November 9839.69 is below average.

Step 4: Count the months that fell below the average.

The below-average months are July, August, September and

November, which makes 4 months in total.

Final Answer:

The sensex reading stayed below the monthly average in 4 of the 7 months.

$$\boxed{4}$$

Quick Tip: First find the average of all seven readings, then count how many months fall short of it.