SCOREBUDDY
PREPARE FOR THE PERFECT SCORE

PREVIOUS YEAR PAPER • FULLY SOLVED

IPMAT Indore 2025

The complete question paper with step-by-step solutions, topic and difficulty tagging for every question, official cut-offs and revision notes.

90	360	120	3
QUESTIONS	MARKS	MINUTES	SECTIONS

Reading it is step one. **Attempting it is what moves the score.**

Attempt this paper on the exam interface →

or create a free login and start practising →

HOW TO USE THIS PAPER

Don't read it. Attempt it.

A solved paper is only worth what you do with it. Here is the order that actually builds a score — and what is in this PDF to support each step.

1. **Attempt first, in one sitting.** 40 minutes per section, no pausing, no looking ahead. Mark every question you guessed.
2. **Then check, question by question.** Every question here carries its area, topic and a difficulty rating out of 10 — so a wrong answer points at a topic, not just a mistake.
3. **Read the solution even when you were right.** The step-by-step method matters more than the answer; a lucky guess at difficulty 7 is a gap you have not found yet.
4. **Convert the gaps into practice.** List the topics you lost marks in, then take a short timed test on each one until the accuracy holds.

90

Every question solved

Full working for all 90 questions, not just an answer key.

T

Topic tagged

Area, topic and sub-topic on every question, so gaps are nameable.

Difficulty rated

A 1–10 rating per question — know what was fair to skip.

Cut-offs & notes

Official sectional cut-offs plus end-of-paper revision notes.

BEFORE YOU TURN THE PAGE

Attempt this exact paper, scored and ranked

The same paper is live on Scorebuddy as three sectional tests and one full test, on the real exam interface — with instant scoring and a question-wise analysis once you submit.

Open the paper →

Create a free login

THE PAPER

Pattern & cut-offs

IIM Indore · 12 May 2025 · 90 questions · 360 marks · 120 minutes

Exam pattern

Section	Questions	Type	Correct	Wrong	Time
Quantitative Ability — Short Answer	15	TITA	+4	0	40 min
Quantitative Ability — MCQ	30	MCQ (incl. a 5-question DI set)	+4	−1	40 min
Verbal Ability	45	MCQ (+ 5 TITA para jumbles)	+4	−1 / 0	40 min
Total	**90**		**360 marks**		**120 min**

Sections are **separately timed** — 40 minutes each, and you cannot return to a section once its time is over.

Cut-offs, category-wise

Minimum sectional marks (IPM 2025–30 batch). Clear *all three* or the application is rejected however high the total.

Category	QA (SA) /60	QA (MCQ) /120	VARC /180
General	24	28	112
EWS	16	18	87
NC-OBC	12	15	78
SC	12	10	65
ST	8	6	48
PwD	8	5	47

Shortlist for interview — minimum Aggregate Test Score (ATS).

Category	Shortlisted	Minimum ATS
General	301	41.56
EWS	75	25.38
NC-OBC	245	19.83
SC	113	10.73
ST	51	2.30
PwD	33	5.18

Final selection — lowest Composite Score offered (ATS 65%, interview 35%)

Category	Offers	Lowest CS
General	69	60.40
EWS	15	45.49
NC-OBC	45	41.01
SC	29	28.39
ST	13	22.27
Gen-PwD	3	40.28

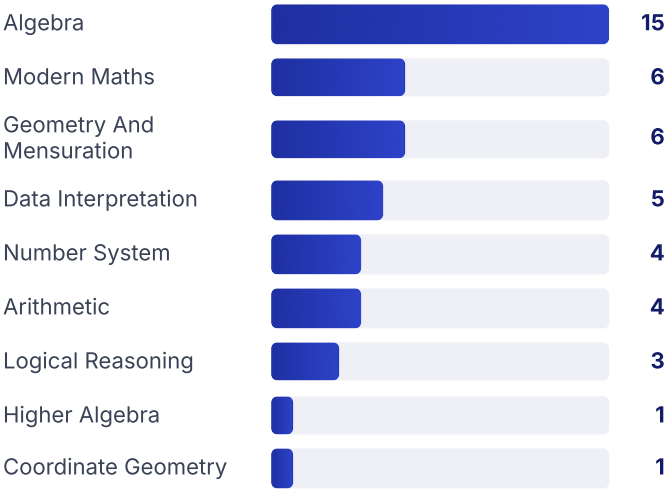
PAPER ANALYSIS

What IPMAT Indore 2025 actually asked

Every question in this PDF is tagged by area, topic and difficulty. Put together, the paper looks like this — and it is a fair map of what to prepare for.

40	5	45	5.6
QUANTITATIVE ABILITY	DATA INTERPRETATION	VERBAL & RC	AVERAGE DIFFICULTY / 10

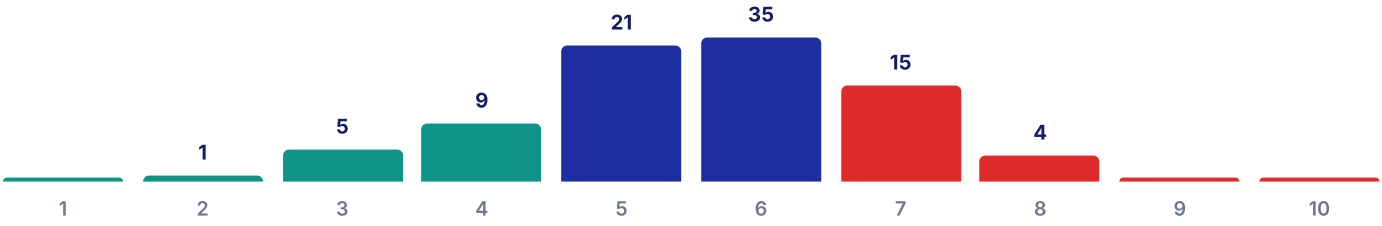
Quant & DI — where the marks sat



Verbal — where the marks sat



Difficulty spread across all 90 questions



Most of the paper sits at 5–7 out of 10. The paper is not won on the hardest questions — it is won by not dropping the ones rated 4 and below.

YOUR NEXT STEP

Turn this analysis into a study plan

Pick the topics that carry the most marks above, take a short timed test on each, and work down the list. Topic tests are built for exactly this.

Topic-wise tests →

Talk to a mentor

SECTION 1

QA-SA

Quantitative Ability — Short Answer

15	60	40 min	+4 / 0
QUESTIONS	MARKS	SECTIONAL LIMIT	MARKING

TITA

MOST ASKED HERE — Algebra **5** · Logical Reasoning **3** · Modern Maths **2** · Number System **2** · Higher Algebra **1**

1 QA · ALGEBRA · POLYNOMIALS AND HIGHER DEGREE EQUATIONS — 4 /10

If the polynomial $ax^2 + bx + 5$ leaves a remainder 3 when divided by $x - 1$, and a remainder 2 when divided by $x + 1$, then $2b - 4a$ equals

ANSWER 11

SOLUTION

Step 1 — recall the Remainder Theorem. When a polynomial $P(x)$ is divided by $(x - k)$, the remainder is simply $P(k)$.

Step 2 — apply it twice. Let $P(x) = ax^2 + bx + 5$.

Divided by $x - 1$, remainder $= P(1) = a + b + 5 = 3 \Rightarrow a + b = -2$

Divided by $x + 1$ (that is, $x - (-1)$), remainder $= P(-1) = a - b + 5 = 2 \Rightarrow a - b = -3$

Step 3 — solve the pair.

Adding: $2a = -5 \Rightarrow a = -\frac{5}{2}$

Subtracting: $2b = 1 \Rightarrow b = \frac{1}{2}$

Step 4 — evaluate what was asked.

$$2b - 4a = 2\left(\frac{1}{2}\right) - 4\left(-\frac{5}{2}\right) = 1 + 10 = \mathbf{11}$$

Answer: 11

Shortcut

Don't solve for a and b separately. $P(1) + P(-1) = 2a + 10$ and $P(1) - P(-1) = 2b$, so from 3 and 2: $2a + 10 = 5$ and $2b = 1$. Then $2b - 4a = 1 + 10 = 11$. **Two additions, no fractions carried through.**

The English and Math exams were conducted separately for a class of 120 students. The number of students who did not appear for the English exam is twice that of those who did not appear for the Math exam. The number of students who passed the Math exam is twice that of those who appeared but failed the English exam. If the number of students who passed the English exam is twice the number of students who appeared but failed the Math exam, then the number of students who appeared but failed the English exam is _____

ANSWER 40

SOLUTION

Step 1 — set up notation. Let

- x = students who did not appear for Maths, so $2x$ did not appear for English
- E_f = appeared for English but failed
- M_f = appeared for Maths but failed

For each subject, every one of the 120 students either did not appear, appeared and failed, or appeared and passed.

Step 2 — translate the two "twice" conditions.

$\text{passed Maths} = 2E_f, \qquad \text{passed English} = 2M_f$

Step 3 — write one equation per subject (they must each total 120).

Maths: $x + M_f + 2E_f = 120 \Rightarrow 2E_f + M_f = 120 - x$ ...(i)

English: $2x + E_f + 2M_f = 120 \Rightarrow E_f + 2M_f = 120 - 2x$ ...(ii)

Step 4 — the trick: add and subtract.

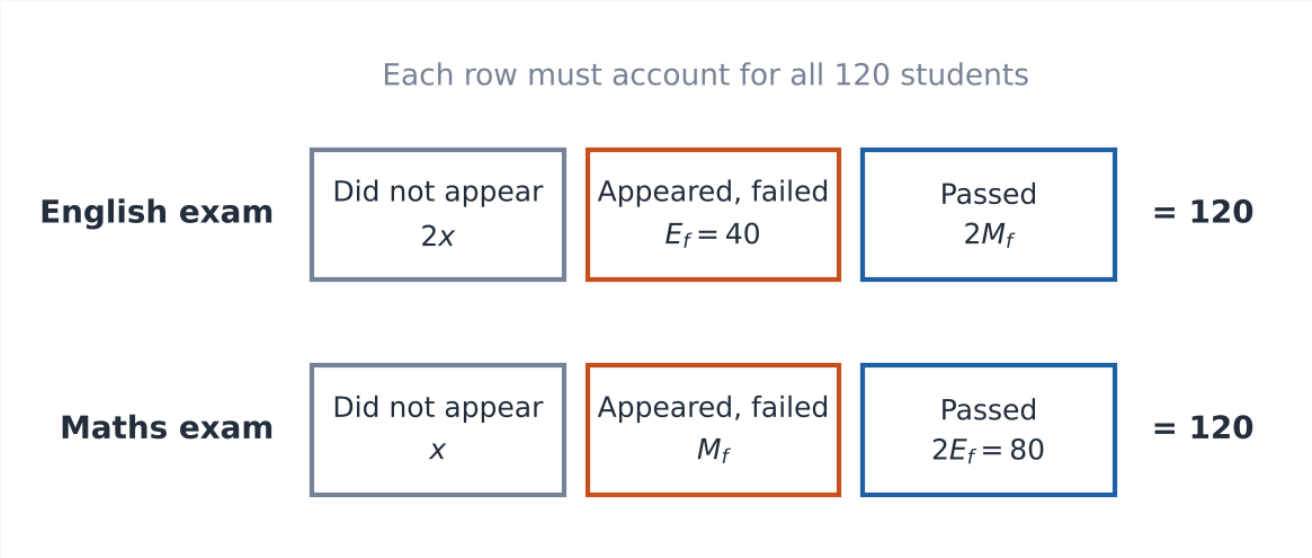
Subtracting (ii) from (i): $E_f - M_f = x$

Adding (i) and (ii): $3E_f + 3M_f = 240 - 3x \Rightarrow E_f + M_f = 80 - x$

Now add those two results — the x cancels:

$2E_f = 80 \Rightarrow E_f = 40$

Notice we never needed the value of x at all.



Answer: 40

Shortcut

Write one equation per subject, then **add and subtract them**. The subtraction gives $E_f - M_f = x$, the addition gives $E_f + M_f = 80 - x$; adding those two kills x and hands you $2E_f = 80$. The number who missed the exams is never needed — if you start hunting for x, you have already lost two minutes.

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3 QA NUMBER SYSTEM NUMBER OF FACTORS 3 /10

The number of factors of $3^5 \times 5^8 \times 7^2$ that are perfect squares is

ANSWER 30

SOLUTION

Step 1 — what a factor looks like. Every factor has the form

$3^a \times 5^b \times 7^c, \qquad 0 \le a \le 5,\ 0 \le b \le 8,\ 0 \le c \le 2$

Step 2 — what makes it a perfect square. A number is a perfect square exactly when **every** exponent in its prime factorisation is even. So we need a, b, c all even.

Step 3 — count the even choices for each exponent.

Prime	Exponent range	Even values allowed	Count
3	0–5	0, 2, 4	3
5	0–8	0, 2, 4, 6, 8	5
7	0–2	0, 2	2

Step 4 — multiply (the three choices are independent):

$3 \times 5 \times 2 = \mathbf{30}$

Answer: 30

Shortcut

For perfect-square factors, just take $\left\lfloor \frac{e}{2} \right\rfloor + 1$ for each prime exponent and multiply: $3, 5, 2 \to 30$. **One line.**

---

4 QA LOGICAL REASONING DEDUCTIVE REASONING 8 /10

The number of biologists in team E is____

ANSWER 4

SOLUTION

Step 1 — find the column totals. There are $5 \times 15 = 75$ members in all, split equally across three skill sets:

$$\text{biologists} = \text{geologists} = \text{explorers} = \frac{75}{3} = 25$$

Step 2 — the explorer row is tightly constrained. The explorer counts are distinct, decrease from A to E, each is at least 2, and they total 25. Write them as $e_A > e_B > e_C > e_D > e_E \ge 2$.

Step 3 — the decisive clue: Team A. Team A has 6 geologists, so

$b_A + e_A = 15 - 6 = 9$

Since every team needs at least 2 biologists, $b_A \geq 2$, which forces

$e_A \leq 7$

Step 4 — this pins the explorer row completely. The five explorer counts are strictly decreasing with a minimum of 2, so the smallest they can possibly be is $6, 5, 4, 3, 2$ (total 20). We need a total of 25 with $e_A \leq 7$. The only strictly decreasing five-tuple with largest value at most 7 and sum 25 is

$(e_A, e_B, e_C, e_D, e_E) = (7, 6, 5, 4, 3)$

(Any other arrangement would need $e_A \geq 8$ to reach 25.)

So $b_A = 9 - 7 = 2$.

Step 5 — Team B is squeezed from both sides. Team B has $e_B = 6$, and more biologists than explorers, so $b_B \geq 7$. But B also needs at least 2 geologists:

$b_B + g_B = 15 - 6 = 9, \quad g_B \geq 2 \Rightarrow b_B \leq 7$

Both together give $b_B = 7$ and $g_B = 2$.

Step 6 — Team E by subtraction. Biologists total 25, and we have $b_A = 2$, $b_B = 7$, $b_C = b_D = 6$:

$b_E = 25 - (2 + 7 + 6 + 6) = 4$

Check: $b_E = 4 > e_E = 3$ ✓

Step 7 — fill in the geologists (each row must total 15):

Team	Biologists	Geologists	Explorers	Total
A	2	6	7	15
B	7	2	6	15
C	6	4	5	15
D	6	5	4	15
E	4	8	3	15
Total	**25**	**25**	**25**	**75**

Every condition checks out: all entries are at least 2, all three column totals are 25, explorers decrease 7–6–5–4–3, and B, C, D, E each have more biologists than explorers.

Reading off the answer: Team E has **4** biologists.

Answer: 4

Shortcut

Attack Team A first. $g_A = 6$ forces $b_A + e_A = 9$, and $b_A \geq 2$ caps e_A at 7. Explorers are distinct and decreasing with a floor of 2, so the only way they reach 25 with the largest at most 7 is $7, 6, 5, 4, 3$. That single deduction unlocks the whole grid — build the table once and answer all three questions from it.

Refers to the LR set above.

5 QA LOGICAL REASONING DEDUCTIVE REASONING 8 /10

The number of teams having more geologists than biologists is _____

ANSWER 2

SOLUTION

Step 1 — find the column totals. There are $5 \times 15 = 75$ members in all, split equally across three skill sets:

$$\text{biologists} = \text{geologists} = \text{explorers} = \frac{75}{3} = 25$$

Step 2 — the explorer row is tightly constrained. The explorer counts are distinct, decrease from A to E, each is at least 2, and they total 25. Write them as $e_A > e_B > e_C > e_D > e_E \geq 2$.

Step 3 — the decisive clue: Team A. Team A has 6 geologists, so

$b_A + e_A = 15 - 6 = 9$

Since every team needs at least 2 biologists, $b_A \geq 2$, which forces

$e_A \leq 7$

Step 4 — this pins the explorer row completely. The five explorer counts are strictly decreasing with a minimum of 2, so the smallest they can possibly be is $6, 5, 4, 3, 2$ (total 20). We need a total of 25 with $e_A \leq 7$. The only strictly decreasing five-tuple with largest value at most 7 and sum 25 is

$(e_A, e_B, e_C, e_D, e_E) = (7, 6, 5, 4, 3)$

(Any other arrangement would need $e_A \geq 8$ to reach 25.)

So $b_A = 9 - 7 = 2$.

Step 5 — Team B is squeezed from both sides. Team B has $e_B = 6$, and more biologists than explorers, so $b_B \geq 7$. But B also needs at least 2 geologists:

$b_B + g_B = 15 - 6 = 9, \quad g_B \geq 2 \Rightarrow b_B \leq 7$

Both together give $b_B = 7$ and $g_B = 2$.

Step 6 — Team E by subtraction. Biologists total 25, and we have $b_A = 2$, $b_B = 7$, $b_C = b_D = 6$:

$b_E = 25 - (2 + 7 + 6 + 6) = 4$

Check: $b_E = 4 > e_E = 3$ ✓

Step 7 — fill in the geologists (each row must total 15):

Team	Biologists	Geologists	Explorers	Total
A	2	6	7	15
B	7	2	6	15
C	6	4	5	15
D	6	5	4	15
E	4	8	3	15
Total	**25**	**25**	**25**	**75**

Every condition checks out: all entries are at least 2, all three column totals are 25, explorers decrease 7–6–5–4–3, and B, C, D, E each have more biologists than explorers.

Reading off the answer: compare the two columns team by team.

Team	Geologists	Biologists	More geologists?
A	6	2	**Yes**
B	2	7	No
C	4	6	No
D	5	6	No
E	8	4	**Yes**

Two teams — A and E — qualify.

Answer: 2

Shortcut

Same grid as Q4. Scan the two columns: only A ($6 > 2$) and E ($8 > 4$) have more geologists than biologists.

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6 QA HIGHER ALGEBRA MATRICES AND DETERMINANTS ●●●●●●○○○○ 6 /10

If $A = \begin{bmatrix} 2 & n \\ 4 & 1 \end{bmatrix}$ such that $A^3 = 27\begin{bmatrix} 4 & q \\ p & r \end{bmatrix}$, then $p + q + r$ equals _____

ANSWER 12

SOLUTION

Step 1 — compute A^2.

$$A^2 = \begin{bmatrix} 2 & n \\ 4 & 1 \end{bmatrix}\begin{bmatrix} 2 & n \\ 4 & 1 \end{bmatrix} = \begin{bmatrix} 4+4n & 3n \\ 12 & 4n+1 \end{bmatrix}$$

Step 2 — multiply once more to get $A^3 = A^2 A$.

$$A^3 = \begin{bmatrix} 20n+8 & 4n^2+7n \\ 16n+28 & 16n+1 \end{bmatrix}$$

Step 3 — match the top-left entry first (it is the only one with no unknown letter on the right):

$20n + 8 = 27 \times 4 = 108 \Rightarrow n = 5$

Step 4 — substitute $n = 5$ and read off p, q, r.

$$A^3 = \begin{bmatrix} 108 & 135 \\ 108 & 81 \end{bmatrix} = 27\begin{bmatrix} 4 & 5 \\ 4 & 3 \end{bmatrix}$$

So $q = 5$, $p = 4$, $r = 3$ (watch the positions: p is bottom-left, q is top-right).

$p + q + r = 4 + 5 + 3 = \mathbf{12}$

Answer: 12

Shortcut

Only the top-left entry of A^3 contains no unknown letter, so match that first: $20n + 8 = 108 \Rightarrow n = 5$. Everything else is then a read-off. **Never expand all four entries symbolically before using the one clean equation.**

7 QA MODERN MATHS PERMUTATION AND COMBINATION 3 /10

Eight teams participate in a tournament where each team plays against every other team exactly once. In a particular year, one team got suspended after playing 3 matches, due to a disciplinary issue. The organisers decided to proceed, nonetheless, with the remaining matches. The total number of matches that were played in the tournament that year is

ANSWER 24

SOLUTION

Step 1 — the full schedule. Every pair of teams meets once, so the number of matches is the number of ways of choosing 2 teams out of 8:

$$\binom{8}{2} = \frac{8 \times 7}{2} = 28$$

Step 2 — what the suspension costs. The suspended team was supposed to play $8 - 1 = 7$ matches. It actually played 3, so

$7 - 3 = 4$ matches were never played.

Every other match in the schedule involves two surviving teams, so all of those still went ahead.

Step 3 — subtract.

$28 - 4 = 24$

Answer: 24

Shortcut

$\binom{8}{2} = 28$ total, and the suspended team skipped $7 - 3 = 4$. $28 - 4 = 24$. The only arithmetic is $7 - 3$.

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8 QA ARITHMETIC TIME AND WORK 5 /10

Arpita and Nikita, working together, can complete an assigned job in 12 days. If Arpita works initially to complete 40% of the job, and the remaining job is completed by Nikita alone, it takes 24 days to complete the job. The possible number of days that Nikita requires to complete the entire job, working alone, is

ANSWER 20|24

SOLUTION

Step 1 — name the unknown. Let Nikita alone need n days for the whole job. Then in one day Nikita does $\frac{1}{n}$ of the job.

Step 2 — use the "together" information. Together they finish in 12 days, so their one-day work adds up to $\frac{1}{12}$:

$$\text{Arpita's one-day work} = \frac{1}{12} - \frac{1}{n} = \frac{n - 12}{12n}$$

Step 3 — write the time for each stretch. Arpita alone does 40% of the job, so the time she takes is $\frac{0.4}{\text{her one-day work}}$, and Nikita alone does the other 60%:

$$\underbrace{\frac{0.4 \times 12n}{n - 12}}_{\text{Arpita's time}} + \underbrace{0.6\,n}_{\text{Nikita's time}} = 24$$

Step 4 — solve. Multiply through by $(n-12)$:

$4.8n + 0.6n(n-12) = 24(n-12)$

$0.6n^2 - 26.4n + 288 = 0 \Rightarrow n^2 - 44n + 480 = 0$

$(n-20)(n-24) = 0 \Rightarrow n = 20 \text{ or } n = 24$

Step 5 — check both. Both genuinely work, which is why the question says *possible*:

- $n = 20$: Arpita needs 30 days alone, so 40% takes her $0.4 \times 30 = 12$ days; Nikita's 60% takes $0.6 \times 20 = 12$ days. Total $= 24$. ✓
- $n = 24$: Arpita also needs 24 days alone, so 40% takes 9.6 days and Nikita's 60% takes 14.4 days. Total $= 24$. ✓

Answer: 20 (24 is equally defensible and is accepted here as an alternative).

Shortcut

Guess the symmetric split: if each stretch takes 12 days, Nikita's 60% in 12 days means 20 days for the whole job. That lands the answer in seconds. (The quadratic also gives 24, which is why the official key accepts both.)

Refers to the LR set above.

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9 QA LOGICAL REASONING DEDUCTIVE REASONING 8 /10

The median number of biologists across 5 teams is_____

ANSWER 6

SOLUTION

Step 1 — find the column totals. There are $5 \times 15 = 75$ members in all, split equally across three skill sets:

$$\text{biologists} = \text{geologists} = \text{explorers} = \frac{75}{3} = 25$$

Step 2 — the explorer row is tightly constrained. The explorer counts are distinct, decrease from A to E, each is at least 2, and they total 25. Write them as $e_A > e_B > e_C > e_D > e_E \geq 2$.

Step 3 — the decisive clue: Team A. Team A has 6 geologists, so

$b_A + e_A = 15 - 6 = 9$

Since every team needs at least 2 biologists, $b_A \geq 2$, which forces

$e_A \leq 7$

Step 4 — this pins the explorer row completely. The five explorer counts are strictly decreasing with a minimum of 2, so the smallest they can possibly be is $6, 5, 4, 3, 2$ (total 20). We need a total of 25 with $e_A \leq 7$. The only strictly decreasing five-tuple with largest value at most 7 and sum 25 is

$(e_A, e_B, e_C, e_D, e_E) = (7, 6, 5, 4, 3)$

(Any other arrangement would need $e_A \geq 8$ to reach 25.)

So $b_A = 9 - 7 = 2$.

Step 5 — Team B is squeezed from both sides. Team B has $e_B = 6$, and more biologists than explorers, so $b_B \geq 7$. But B also needs at least 2 geologists:

$b_B + g_B = 15 - 6 = 9, \quad g_B \geq 2 \Rightarrow b_B \leq 7$

Both together give $b_B = 7$ and $g_B = 2$.

Step 6 — Team E by subtraction. Biologists total 25, and we have $b_A = 2$, $b_B = 7$, $b_C = b_D = 6$:

$b_E = 25 - (2+7+6+6) = 4$

Check: $b_E = 4 > e_E = 3$ ✓

Step 7 — fill in the geologists (each row must total 15):

Team	Biologists	Geologists	Explorers	Total
A	2	6	7	15
B	7	2	6	15
C	6	4	5	15
D	6	5	4	15
E	4	8	3	15
Total	**25**	**25**	**25**	**75**

Every condition checks out: all entries are at least 2, all three column totals are 25, explorers decrease 7–6–5–4–3, and B, C, D, E each have more biologists than explorers.

Reading off the answer: the biologist counts are $2,\ 7,\ 6,\ 6,\ 4$. Arrange them in order:

$2,\ 4,\ \mathbf{6},\ 6,\ 7$

With five values, the median is the 3rd one.

Answer: 6

Shortcut

Same grid as Q4. Biologists are $2, 7, 6, 6, 4$; sort to $2, 4, \mathbf{6}, 6, 7$ and take the middle.

Want this paper scored, ranked and analysed? Attempt it on the exam interface. Take the test

10 QA ALGEBRA LOGARITHMS ●●●●●○○○○○ 5 /10

If $\log_3(x^2-1)$, $\log_3(2x^2+1)$ and $\log_3(6x^2+3)$ are the first three terms of an arithmetic progression, then the sum of the next three terms of the progression is

ANSWER 15

SOLUTION

Step 1 — use the AP condition. If three numbers are in AP, the middle one is the average of the outer two, i.e. $2t_2 = t_1 + t_3$:

$2\log_3(2x^2+1) = \log_3(x^2-1) + \log_3(6x^2+3)$

Step 2 — collapse the logs. Using $2\log M = logM^2$ and $\log P + logQ = logPQ$:

$(2x^2+1)^2 = (x^2-1)(6x^2+3) = 3(x^2-1)(2x^2+1)$

Step 3 — cancel the common factor. Write $u = 2x^2+1$ (note $u \neq 0$):

$u^2 = 3(x^2-1)\ u \Rightarrow u = 3(x^2-1)$

$2x^2+1 = 3x^2-3 \Rightarrow x^2 = 4$

Step 4 — find the actual terms. With $x^2 = 4$:

$t_1 = \log_3 3 = 1, \qquad t_2 = \log_3 9 = 2, \qquad t_3 = \log_3 27 = 3$

So the AP is $1, 2, 3, \ldots$ with common difference 1.

Step 5 — the next three terms are 4, 5, 6:

$4 + 5 + 6 = \mathbf{15}$

Answer: 15

Shortcut

Spot that $6x^2 + 3 = 3\,(\,2x^2 + 1\,)$. The AP condition then collapses to $2x^2 + 1 = 3\,(\,x^2 - 1\,)$, giving $x^2 = 4$ — and the three terms turn out to be $\log_3 3,\ \log_3 9,\ \log_3 27 = 1, 2, 3$. Next three are $4, 5, 6$.

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11 QA NUMBER SYSTEM INTEGRAL SOLUTIONS ●●●●●○○○○○ 5 /10

If m and n are two positive integers such that $7m + 11n = 200$, then the minimum possible value of $m + n$ is

ANSWER **20**

SOLUTION

Step 1 — why we want n large. Since $11 > 7$, each unit of n "uses up" more of the 200 than a unit of m does. So to make $m + n$ small we want as much of the 200 as possible carried by n.

Step 2 — find which n are allowed. We need $7m = 200 - 11n$ to be a positive multiple of 7. Working modulo 7:

$200 \equiv 4\ (\,mod\,7\,), \qquad 11n \equiv 4n\ (\,mod\,7\,)$

$4 - 4n \equiv 0\ (\,mod\,7\,) \ \Rightarrow\ 4\,(\,1 - n\,) \equiv 0 \ \Rightarrow\ n \equiv 1\ (\,mod\,7\,)$

So $n = 1, 8, 15, 22, \ldots$

Step 3 — list the solutions (stopping when $11n$ exceeds 200):

n	$200 - 11n$	m	$m + n$
1	189	27	28
8	112	16	24
15	35	5	**20**
22	-42	—	not valid

Step 4 — read off the minimum. The largest usable n is 15, giving

$m + n = 5 + 15 = \mathbf{20}$

Answer: 20

Shortcut

Maximise the variable with the **bigger** coefficient. $n \equiv 1\ (\,mod\,7\,)$, so $n = 1, 8, 15$; take the largest, $n = 15$, giving $m = 5$. Checking $n = 1$ first wastes time.

12 QA ALGEBRA INEQUALITIES & MODULUS 4 /10

If a, b, c are three distinct natural numbers, all less than 100, such that $|a-b| + |b-c| = |c-a|$, then the maximum possible value of b is _____

ANSWER 98

SOLUTION

Step 1 — read the condition geometrically. On a number line, $|a-b|$ is the distance from a to b. The equation says

$$(\text{distance } a \to b) + (\text{distance } b \to c) = (\text{distance } a \to c)$$

Going from a to c *via* b costs exactly the same as going straight. That happens only when b **lies between** a **and** c. (If b were outside, the detour would be strictly longer — the triangle inequality.)

Step 2 — push b as high as possible. We need one of a, c to be **larger** than b. Natural numbers less than 100 go up to 99, and all three must be distinct.

- Could $b = 99$? Then we would need some a or c greater than 99, which is not allowed. ×
- Try $b = 98$: take $a = 99$ and $c = 97$. Check: $|99-98| + |98-97| = 1+1 = 2$, and $|97-99| = 2$. ✓

Answer: 98

Shortcut

The equation only says "b sits between a and c". So take the two biggest available numbers either side: $b = 98$ with 99 and 97. No algebra at all.

---

13 QA GEOMETRY AND MENSURATION CIRCLES 7 /10

A circle of radius 13 cm touches the adjacent sides AB and BC of a square ABCD at M and N, respectively. If AB = 18 cm and the circle intersects the other two sides CD and DA at P and Q, respectively, then the area, in sq. cm, of triangle PMD is

ANSWER 153

SOLUTION

Step 1 — put coordinates on the square. Let $B = (0,0)$, $C = (18,0)$, $D = (18,18)$, $A = (0,18)$. Then side AB is the line $x = 0$ and side BC is the line $y = 0$.

Step 2 — locate the centre. The circle *touches* both $x = 0$ and $y = 0$, so its centre is 13 away from each:

$O = (13, 13)$, $M = (0,13)$, $N = (13,0)$

Circle: $(x-13)^2 + (y-13)^2 = 169$.

Step 3 — find P on side CD ($x = 18$).

$(18-13)^2 + (y-13)^2 = 169 \Rightarrow (y-13)^2 = 144 \Rightarrow y = 25 \text{ or } 1$

Only $y = 1$ lies on the square, so $P = (18,1)$.

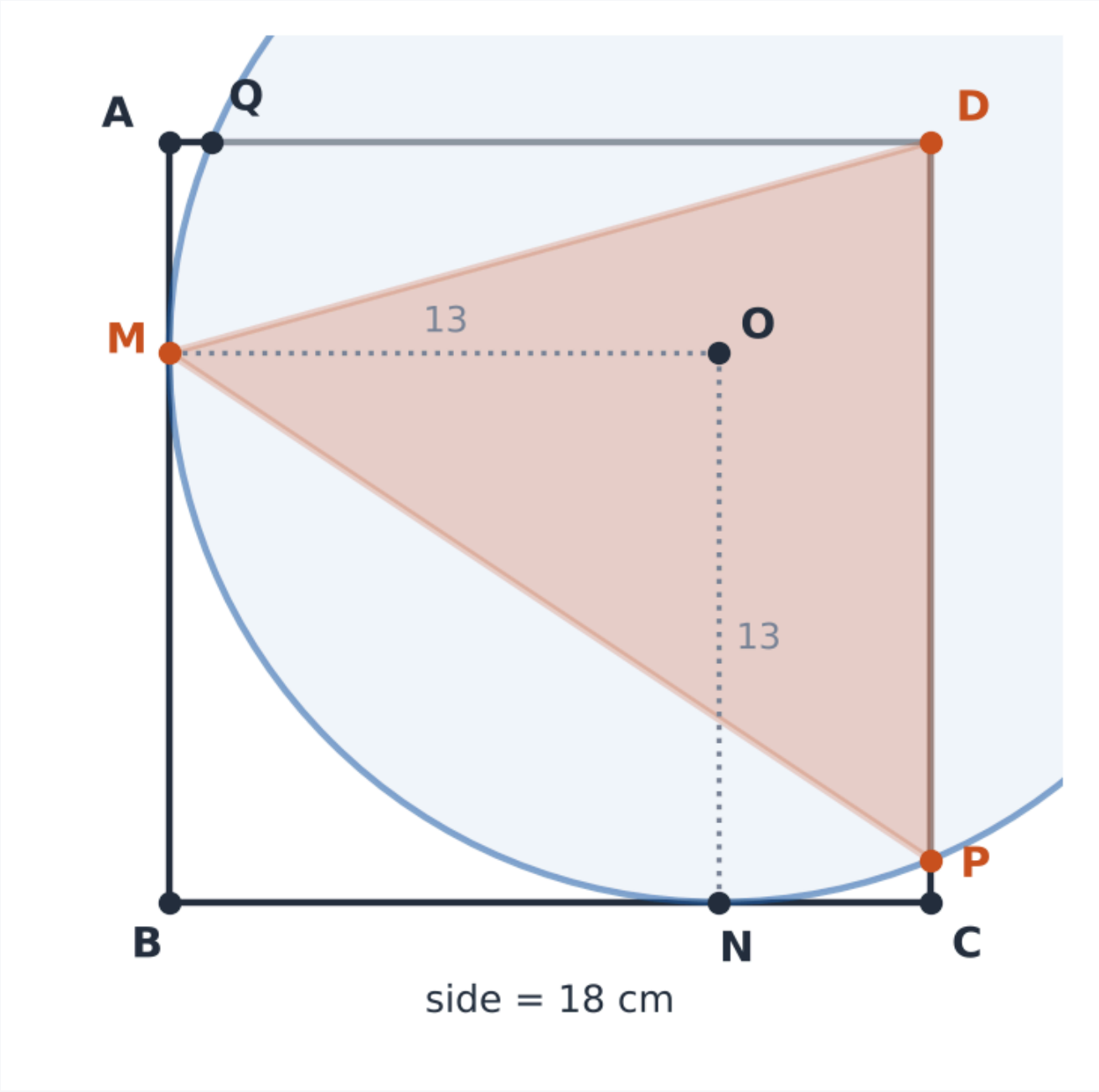
(Similarly $Q = (1,18)$ on side DA — not needed for this question.)

Step 4 — area of triangle PMD with $P(18,1)$, $M(0,13)$, $D(18,18)$. Use the coordinate formula

$$\text{Area} = \frac{1}{2}\left|x_1\left(y_2 - y_3\right) + x_2\left(y_3 - y_1\right) + x_3\left(y_1 - y_2\right)\right|$$

$$= \frac{1}{2}\left|18\left(13 - 18\right) + 0\left(18 - 1\right) + 18\left(1 - 13\right)\right| = \frac{1}{2}\left|-90 - 216\right| = \frac{306}{2} = 153$$

Shortcut: PD is vertical, of length $18 - 1 = 17$, and M is a horizontal distance 18 from it, so area $= \frac{1}{2} \times 17 \times 18 = 153$.



Answer: 153

Shortcut

Skip the coordinate formula. PD is vertical with length $18 - 1 = 17$, and M is a horizontal distance 18 away, so area $= \frac{1}{2} \times 17 \times 18 = 153$.

14 QA ALGEBRA SEQUENCES AND SERIES 6 /10

If the sum of the first 21 terms of the sequence $\ln \frac{a}{b}$, $\ln \frac{a}{b\sqrt{b}}$, $\ln \frac{a}{b^2}$, $\ln \frac{a}{b^2\sqrt{b}}$, ... is $\ln \frac{a^m}{b^n}$, then the value of $m+n$ is

ANSWER 147

SOLUTION

Step 1 — split each term with the log rule $\ln \frac{p}{q} = lnp - lnq$.

$$\ln a - lnb, \quad \ln a - \frac{3}{2}\ln b, \quad \ln a - 2\ln b, \quad \ln a - \frac{5}{2}\ln b, \ \ldots$$

(Here $b\sqrt{b} = b^{3/2}$ and $b^2\sqrt{b} = b^{5/2}$.)

Step 2 — spot the AP. The $\ln a$ part never changes. The coefficient of $\ln b$ goes $1, \frac{3}{2}, 2, \frac{5}{2}, \ldots$ — an AP with common difference $\frac{1}{2}$. So the sequence itself is an AP with

$$\text{first term } = lna - lnb, \qquad \text{common difference } d = -\frac{1}{2}\ln b$$

Step 3 — sum 21 terms using $S_k = k \cdot t_1 + \frac{k(k-1)}{2} d$:

$$S_{21} = 21\,(\ \ln a - lnb\ ) + \frac{21 \times 20}{2}\left(-\frac{1}{2}\ln b\right)$$

$$= 21\ln a - 21\ln b - 105\ln b = 21\ln a - 126\ln b$$

Step 4 — fold back into one logarithm.

$$S_{21} = ln\frac{a^{21}}{b^{126}} \ \Rightarrow\ m = 21,\ n = 126$$

$$m + n = 21 + 126 = \mathbf{147}$$

Answer: 147

Shortcut

Only the coefficients of $\ln b$ matter: they run $1, \frac{3}{2}, 2, \ldots$ up to 11. Their sum is $\frac{21}{2}(1+11) = 126$, and $m = 21$. So $m + n = 147$ without ever writing the series out.

---

15 QA ALGEBRA LINEAR EQUATIONS 2 /10

Monica, who is 18 years old, is one-third the age of her father. The age at which she will be half the age of her father is ___

ANSWER 36

SOLUTION

Step 1 — father's present age. Monica is one-third of her father's age, so

$$\text{Father} = 3 \times 18 = 54 \text{ years}$$

Step 2 — let t years pass. After t years Monica is $18 + t$ and her father is $54 + t$. We want Monica to be half her father's age:

$$18 + t = \frac{54 + t}{2}$$

Step 3 — solve.

$36 + 2t = 54 + t \Rightarrow t = 18$

Step 4 — answer what was asked. The question asks for *Monica's age*, not the number of years:

$18 + 18 = \mathbf{36}$

Quick check: father is then $54 + 18 = 72$, and 36 is indeed half of 72. ✓

Answer: 36

Shortcut

Standard age trick: when she is **half** his age, her age equals the age *gap*. The gap is $54 - 18 = 36$, so the answer is 36 directly — no equation needed.

COMMON DATA SET

Five expedition teams – biologists, geologists and explorers

Five teams — A, B, C, D, and E — each consisting of 15 members, are going on expeditions to five different locations. Each team includes members from three different skill sets: biologists, geologists, and explorers. However, the number of members from each skill set varies by team, and each member has only one speciality. The total number of biologists, geologists, and explorers is equal.

The following additional information is available:

- Every team has at least 2 members from each skill set.
- Teams C and D have 6 biologists each, and Team A has 6 geologists.
- Every team except A has more biologists than explorers.
- The number of explorers in each team is distinct and decreases in the order A, B, C, D, and E.

This set covers Q4, Q5, Q9.

ATTEMPT THIS SECTION

Type the answer, like the real thing

Short-answer questions give no options to work backwards from and carry no negative marking — the only way to build that reflex is to practise on the same interface. Attempt this paper section by section, timed, and get an instant score with a question-wise analysis.

Attempt QA (SA) →

Free login

SECTION 2

QA-MCQ

Quantitative Ability — MCQ

30	120	40 min	+4 / −1
QUESTIONS	MARKS	SECTIONAL LIMIT	MARKING

MCQ (incl. a 5-question DI set)

MOST ASKED HERE — Algebra **10** · Geometry And Mensuration **5** · Data Interpretation **5** · Modern Maths **4** · Arithmetic **3**

16 QA ARITHMETIC SIMPLE INTEREST AND COMPOUND INTEREST — 6 /10

Anindita invests a total of 1 lakh rupees distributed across three schemes, A, B and C, for a period of two years. These schemes offer an interest rate of 10%, 8% and 12% per annum, respectively, each compounded annually. If the initial investment amount in scheme A is 30000 rupees and the total interest earned from all three schemes during the first year is 10600 rupees, then the total interest earned, in rupees, from all three schemes for the second year is

(A) 11748
(B) 10308
(C) 19708
(D) 22348

ANSWER (a) 11748

SOLUTION

Step 1 — split the principal. A gets ₹30,000, so B and C share the rest:

$$B + C = 100000 - 30000 = 70000$$

Step 2 — use the first-year interest.

$$\underbrace{0.10 \times 30000}_{3000} + 0.08B + 0.12C = 10600 \;\Rightarrow\; 0.08B + 0.12C = 7600$$

Substituting $B = 70000 - C$:

$$0.08\,(\,70000 - C\,) + 0.12C = 7600$$
$$5600 + 0.04C = 7600 \;\Rightarrow\; C = 50000, \quad B = 20000$$

Step 3 — grow each principal by one year (this is what "compounded annually" means — year 2 earns interest on year 1's closing balance):

Scheme	Rate	Start	After year 1
A	10%	30,000	33,000
B	8%	20,000	21,600
C	12%	50,000	56,000

Step 4 — second-year interest.

$0.10\,(\,33000\,)\,+0.08\,(\,21600\,)\,+0.12\,(\,56000\,)$
$=3300+1728+6720=\mathbf{11748}$

Answer: (a) — ₹11,748

Shortcut

Year-2 interest $=$ each scheme's year-1 interest $\times\,(\,1+r\,)$. Year-1 interests are $3000, 1600, 6000$, so year 2 is $3300+1728+6720$. **No need to regrow the principals.**

---

17 QA ALGEBRA SEQUENCES AND SERIES ●●●●●●○○○○ 6 /10

Let $S_1=\{100,105,110,115,\ldots\}$ and $S_2=\{100,95,90,85,\ldots\}$ be two series in arithmetic progression. If a_k and b_k are the k^{th} terms of S_1 and S_2, respectively, then $\sum_{k=1}^{20} a_k b_k$ equals _____.

(A) 138250 (B) 137275
(C) 137225 (D) 135375

ANSWER (a) 138250

SOLUTION

Step 1 — write general terms.

$a_k=100+5\,(\,k-1\,)\,=95+5k,\qquad b_k=100-5\,(\,k-1\,)\,=105-5k$

Step 2 — multiply them out.

$a_k b_k=\,(\,95+5k\,)\,(\,105-5k\,)\,=9975-475k+525k-25k^2=9975+50k-25k^2$

Step 3 — sum term by term over $k=1$ to 20, using

$$\sum k=\frac{n\,(\,n+1\,)}{2}=210,\qquad \sum k^2=\frac{n\,(\,n+1\,)\,(\,2n+1\,)}{6}=\frac{20\cdot 21\cdot 41}{6}=2870$$

$$\sum_{k=1}^{20} a_k b_k=20\,(\,9975\,)\,+50\,(\,210\,)\,-25\,(\,2870\,)$$

Step 4 — evaluate.

$=199500+10500-71750=\mathbf{138250}$

Answer: (a) — 138250

Shortcut

Use the difference of squares: $a_k b_k=\,(\,100+d\,)\,(\,100-d\,)\,=100^2-25\,(\,k-1\,)^{\,2}$. Sum $=200000-25\,(\,2470\,)\,=138250$. Far faster than expanding the product.

18 QA ALGEBRA QUADRATIC EQUATIONS 7 /10

If $8x^2 - 2kx + k = 0$ is a quadratic equation in x, such that one of its roots is p times the other, and p, k are positive real numbers, then k equals

(A) $\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2$

(B) $2\left(p + \frac{1}{p}\right)$

(C) $\left(p + \frac{1}{p}\right)$

(D) $2\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2$

ANSWER **(d)** $2\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2$

SOLUTION

Step 1 — name the roots. Let them be α and $p\alpha$.

Step 2 — write Vieta's formulas for $8x^2 - 2kx + k = 0$:

Sum: $\alpha(1+p) = \frac{2k}{8} = \frac{k}{4}$ Product: $p\alpha^2 = \frac{k}{8}$

Step 3 — eliminate α. From the sum, $\alpha = \frac{k}{4(1+p)}$. Put that into the product:

$$p \cdot \frac{k^2}{16(1+p)^2} = \frac{k}{8}$$

Cancel one k (it is non-zero) and cross-multiply:

$$\frac{pk}{16(1+p)^2} = \frac{1}{8} \Rightarrow pk = 2(1+p)^2 \Rightarrow k = \frac{2(1+p)^2}{p}$$

Step 4 — match the option form. Notice that

$$\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2 = p + 2 + \frac{1}{p} = \frac{p^2 + 2p + 1}{p} = \frac{(1+p)^2}{p}$$

Therefore

$$k = 2\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2$$

Answer: (d)

Shortcut

Recognise the identity $\left(\sqrt{p} + \frac{1}{\sqrt{p}}\right)^2 = \frac{(1+p)^2}{p}$. Since Vieta gives $k = \frac{2(1+p)^2}{p}$, the answer is just twice that square.

19 QA ALGEBRA POLYNOMIALS AND HIGHER DEGREE EQUATIONS 7 /10

Let $P(x)$ be a quadratic polynomial such that $\begin{vmatrix} P(0) & P(1) \\ P(0) & P(2) \end{vmatrix} = 0$. Let $P(0) = 2$ and $P(1) + P(2) + P(3) = 14$. Then $P(4)$ equals

(A) -14
(B) 16
(C) 30
(D) **-6**

ANSWER (d) -6

SOLUTION

Step 1 — expand the determinant.

$P(0)\,P(2) - P(1)\,P(0) = 0 \Rightarrow P(0)\,[P(2) - P(1)] = 0$

Since $P(0) = 2 \neq 0$, we must have

$P(2) = P(1)$

Step 2 — write the polynomial. Let $P(x) = ax^2 + bx + c$. From $P(0) = 2$ we get $c = 2$.

$P(1) = a + b + 2, \qquad P(2) = 4a + 2b + 2$

Setting them equal:

$4a + 2b = a + b \Rightarrow 3a + b = 0 \Rightarrow b = -3a$

Step 3 — use the sum condition. With $P(3) = 9a + 3b + 2$:

$P(1) + P(2) + P(3) = (a + b + 2) + (4a + 2b + 2) + (9a + 3b + 2) = 14a + 6b + 6 = 14$

So $14a + 6b = 8$. Substituting $b = -3a$:

$14a - 18a = 8 \Rightarrow -4a = 8 \Rightarrow a = -2, \quad b = 6$

Step 4 — evaluate. $P(x) = -2x^2 + 6x + 2$, so

$P(4) = -32 + 24 + 2 = \mathbf{-6}$

Answer: (d) — -6

Shortcut

The determinant has a repeated first column, so it collapses instantly to $P(0)\,[P(2) - P(1)] = 0$, i.e. $P(1) = P(2)$ — the parabola is symmetric about $x = 1.5$, so $b = -3a$. That is the whole question.

---

20 QA ALGEBRA LOGARITHMS 5 /10

If $\log_{25}\left[5\log_3\left(1 + \log_3\left(1 + 2\log_2 x\right)\right)\right] = \frac{1}{2}$ then x is:

(A) 4
(B) 2
(C) 8
(D) **16**

ANSWER (d) 16

SOLUTION

Work from the outside in, peeling off one logarithm at a time.

Step 1 — undo the outer $\log_{25}$. If $\log_{25} T = \frac{1}{2}$, then $T = 25^{1/2} = 5$:

$5 \log_3 \left(1+\log_3 \left(1+2 \log_2 x\right)\right)=5$

Step 2 — divide by 5.

$\log_3 \left(1+\log_3 \left(1+2 \log_2 x\right)\right)=1$

Step 3 — undo that $\log_3$ (if $\log_3 T=1$ then $T=3$):

$1+\log_3 \left(1+2 \log_2 x\right)=3 \Rightarrow \log_3 \left(1+2 \log_2 x\right)=2$

Step 4 — undo the next $\log_3$ (now $T=3^2=9$):

$1+2 \log_2 x=9 \Rightarrow \log_2 x=4$

Step 5 — undo the last log.

$x=2^4=16$

Answer: (d) — 16

Shortcut

Peel from the outside in and never expand: $25^{1/2}=5 \rightarrow$ divide by 5 $\rightarrow 3^1 \rightarrow 3^2 \rightarrow 2^4$. Five mental steps.

---

21 QA GEOMETRY AND MENSURATION COORDINATE GEOMETRY (BASICS) 5 /10

The area of the triangle, formed by the straight lines $y=0$, $12x-5y=0$, and $3x+4y=7$ is

(A) $\frac{28}{9}$ (B) $\frac{35}{27}$

(C) $\frac{14}{9}$ (D) $\frac{35}{54}$

ANSWER (c) $\frac{14}{9}$

SOLUTION

Step 1 — find the three vertices by taking the lines two at a time.

$y=0$ *with* $12x-5y=0$*:* putting $y=0$ gives $12x=0$, so $V_1=(0,0)$

$y=0$ *with* $3x+4y=7$*:* putting $y=0$ gives $3x=7$, so $V_2=\left(\frac{7}{3},0\right)$

$12x-5y=0$ *with* $3x+4y=7$*:* from the first, $y=\frac{12x}{5}$. Substituting:

$3x+4\cdot\frac{12x}{5}=7 \Rightarrow \frac{15x+48x}{5}=7 \Rightarrow 63x=35 \Rightarrow x=\frac{5}{9},\ y=\frac{4}{3}$

$V_3=\left(\frac{5}{9},\frac{4}{3}\right)$

Step 2 — use the easy base. Two vertices lie on $y=0$, so take that as the base:

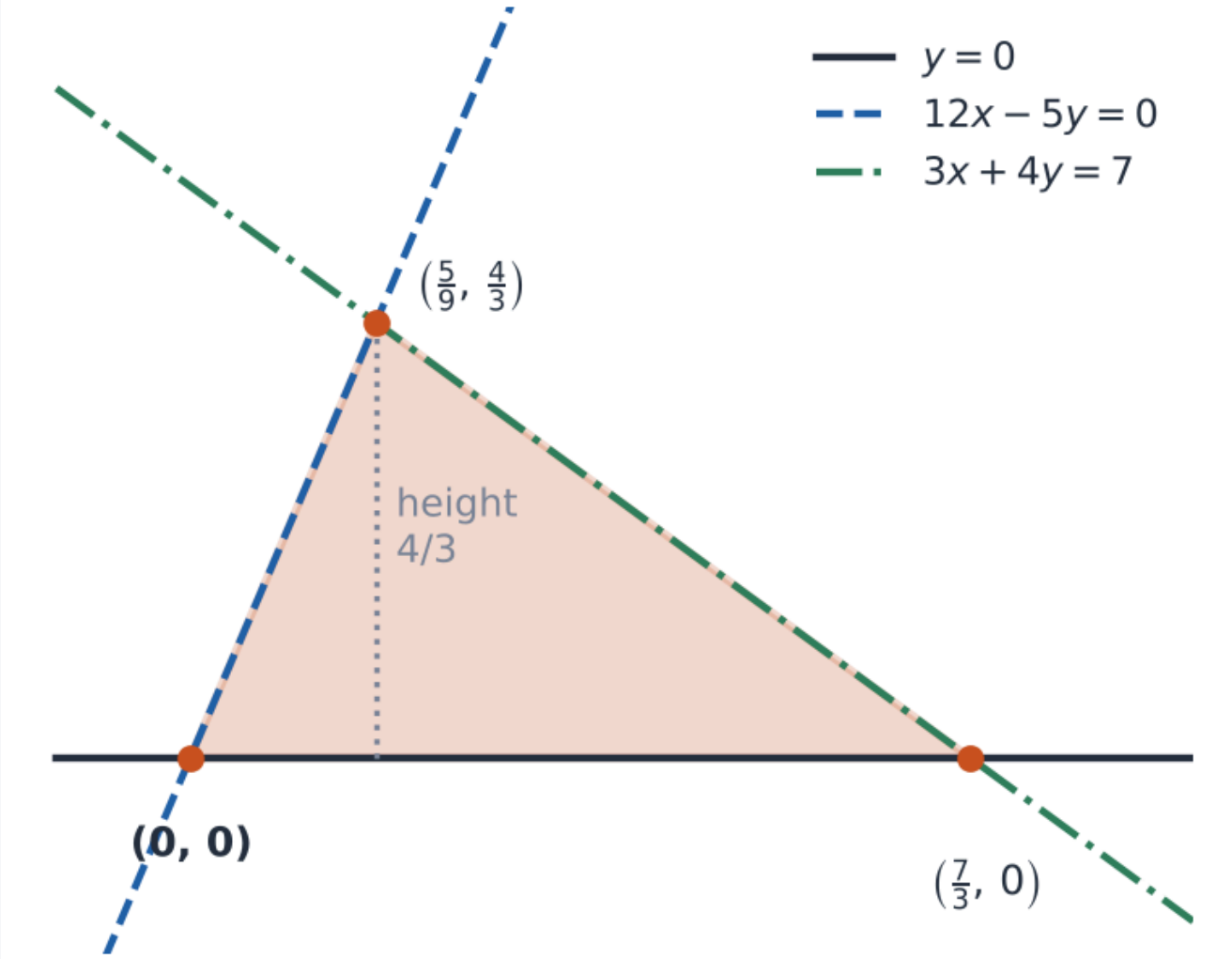
$\text{base}=\frac{7}{3}-0=\frac{7}{3}$

The height is just the y-coordinate of the third vertex:

$\text{height}=\frac{4}{3}$

Step 3 — area.

$\frac{1}{2}\times\frac{7}{3}\times\frac{4}{3}=\frac{28}{18}=\frac{14}{9}$



Answer: (c) — $\frac{14}{9}$

Shortcut

Two of the three lines meet at the origin and one side lies on $y = 0$, so base $= \frac{7}{3}$ and height is simply the y-coordinate of the third vertex, $\frac{4}{3}$. Area $= \frac{1}{2} \cdot \frac{7}{3} \cdot \frac{4}{3}$.

22 QA GEOMETRY AND MENSURATION MENSURATION 2D 6 /10

Consider a triangle with side lengths 4 meters, 6 meters, and 9 meters. A dog runs around the triangle in such a way that the shortest distance of the dog from the triangle is exactly 1 meter. The total distance covered (in meters) by the dog in one round is

(A) $22 - 2\pi$

(B) 22

(C) $22 + 2\pi$

(D) $19 + 2\pi$

ANSWER **(d) $19 + 2\pi$**

SOLUTION

Step 1 — picture the path. Staying exactly 1 m away from the triangle at all times traces an outline 1 m outside it. That outline has two kinds of pieces:

- three **straight** segments, each parallel to a side
- three **circular arcs**, one wrapping around each corner

Step 2 — the straight parts. A segment parallel to a side, offset outwards, has exactly the same length as that side. So the straights total

$4 + 6 + 9 = 19 \text{ m}$

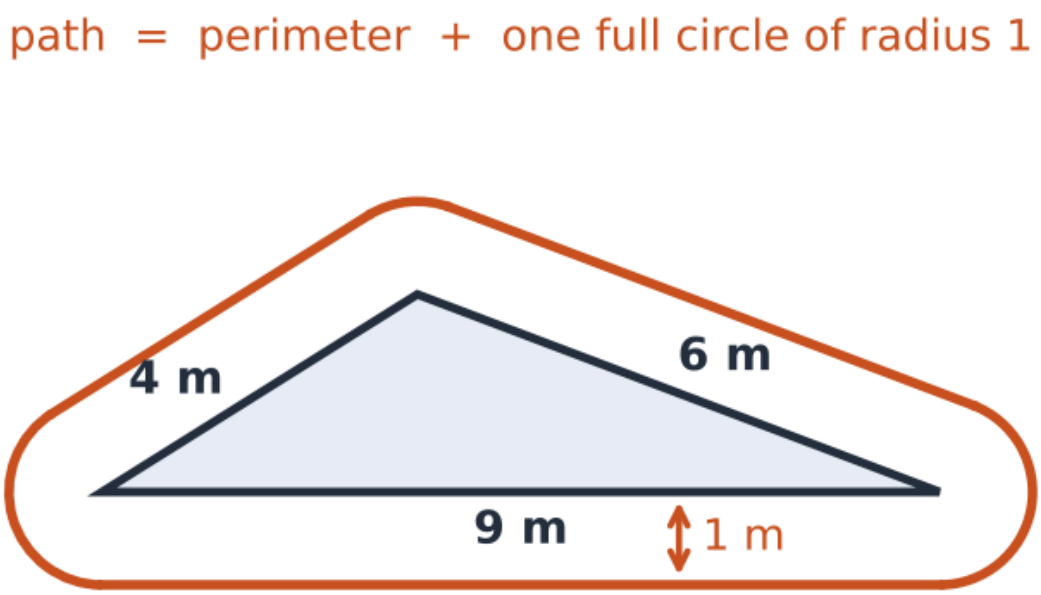
Step 3 — the corner arcs. This is the elegant bit. Each arc has radius 1, and the three arc angles are the triangle's *exterior* angles. The exterior angles of any polygon add up to 360° — so the three arcs together form **one complete circle** of radius 1:

$\text{arc total} = 2\pi\,(1) = 2\pi \text{ m}$

Step 4 — add.

$19 + 2\pi$

Note the side lengths 4, 6, 9 never actually matter beyond their sum.



Answer: (d) — $19 + 2\pi$

Shortcut

The three corner arcs always add to one **full** circle, for any convex shape. So the answer is perimeter $+ 2\pi r = 19 + 2\pi$. The side lengths matter only through their sum — and you can pick the option with 19 in it immediately.

23 QA ALGEBRA SEQUENCES AND SERIES 6 /10

Given that $1+\frac{1}{2^2}+\frac{1}{3^2}+\frac{1}{4^2}+\ldots=\frac{\pi^2}{6}$, the value of $1+\frac{1}{3^2}+\frac{1}{5^2}+\frac{1}{7^2}+\ldots$ is

(A) $\frac{\pi^2}{6}-1$ (B) $2\frac{\pi}{6}$

(C) $\frac{\pi^2}{8}$ (D) $\frac{\pi^2}{12}$

ANSWER (c) $\frac{\pi^2}{8}$

SOLUTION

Step 1 — split the given sum into odds and evens.

$$\underbrace{\frac{1}{1^2}+\frac{1}{2^2}+\frac{1}{3^2}+\cdots}_{\text{all}}=\underbrace{\left(\frac{1}{1^2}+\frac{1}{3^2}+\cdots\right)}_{\text{odd}}+\underbrace{\left(\frac{1}{2^2}+\frac{1}{4^2}+\cdots\right)}_{\text{even}}$$

Step 2 — the even part is a scaled copy of the whole thing. Every even number is $2k$, so

$$\sum_{k\geq 1}\frac{1}{(2k)^2}=\frac{1}{4}\sum_{k\geq 1}\frac{1}{k^2}=\frac{1}{4}\cdot\frac{\pi^2}{6}=\frac{\pi^2}{24}$$

This is the key move — the evens are just $\frac{1}{4}$ of the total.

Step 3 — subtract.

$$\text{odd sum}=\frac{\pi^2}{6}-\frac{\pi^2}{24}=\frac{4\pi^2-\pi^2}{24}=\frac{3\pi^2}{24}=\frac{\pi^2}{8}$$

Answer: (c) — $\frac{\pi^2}{8}$

Shortcut

The even terms are exactly $\frac{1}{4}$ of the whole sum, so the odd terms are $\frac{3}{4}\times\frac{\pi^2}{6}=\frac{\pi^2}{8}$. One multiplication.

---

24 QA ARITHMETIC TIME SPEED AND DISTANCE 7 /10

Two swimmers, Ankit and Bipul, start swimming from opposite ends of a swimming pool at the same time. Ankit can cover the length of the pool once in 10 minutes. Bipul can cover the length of the pool once in 15 minutes. They swim back and forth for 80 minutes without stopping. The number of times they meet each other is-

(A) 6 (B) 8

(C) 7 (D) 5

ANSWER (c) 7

SOLUTION

Step 1 — work in "pool lengths". Let the pool be 1 length long.

$$\text{Ankit's speed}=\frac{1}{10},\qquad \text{Bipul's speed}=\frac{1}{15}\quad(\text{lengths per minute})$$

Step 2 — the combined-distance idea. Because they start at **opposite** ends:

- they meet for the **first** time when their combined distance is 1 length
- after that, every **subsequent** meeting needs a further 2 lengths of combined distance

So meetings happen when the combined distance equals $1, 3, 5, 7, \ldots$ (odd numbers).

Step 3 — total combined distance in 80 minutes.

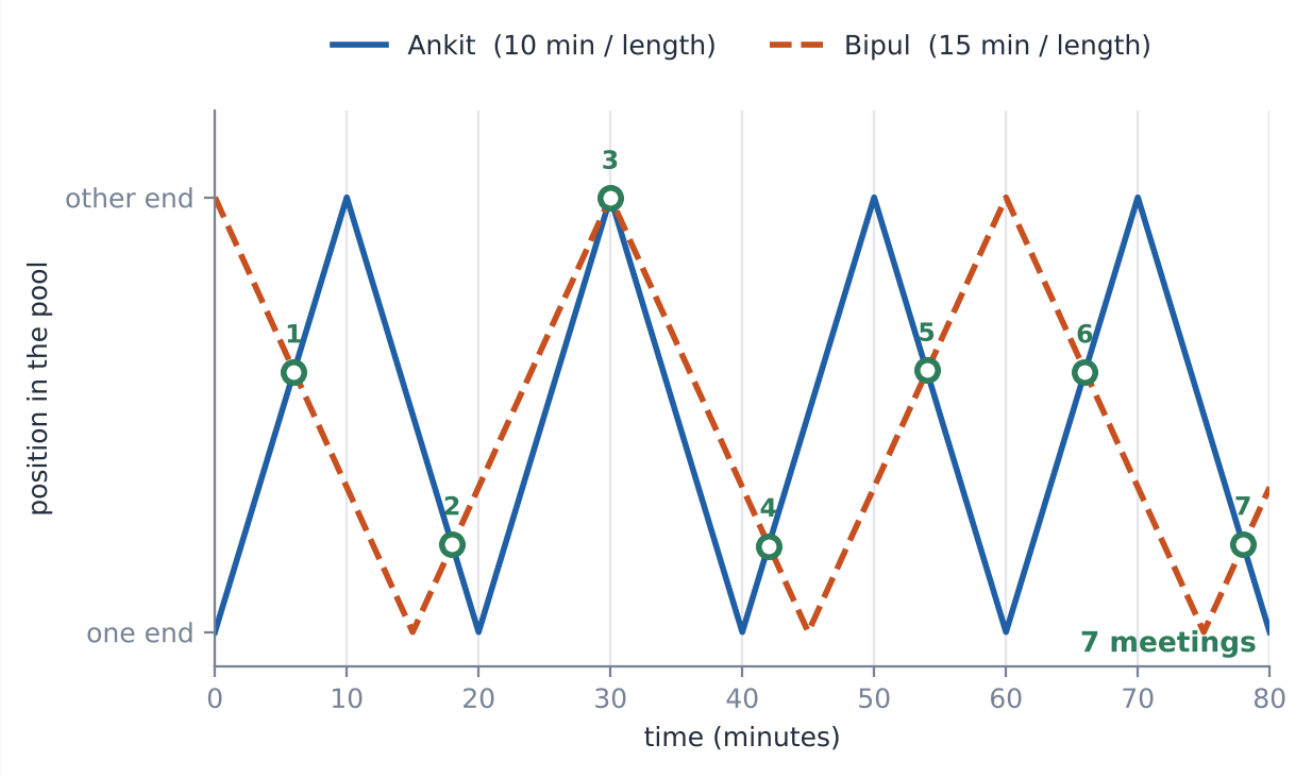
$$\left(\frac{1}{10}+\frac{1}{15}\right)\times 80=\frac{1}{6}\times 80=\frac{40}{3}\approx 13.33 \text{ lengths}$$

Step 4 — count the odd numbers up to 13.33.

$1,\ 3,\ 5,\ 7,\ 9,\ 11,\ 13\ \rightarrow\ 7$ meetings

(The next would need 15 lengths, which they do not reach.)

The graph below plots each swimmer's position against time; every crossing of the two lines is a meeting.



Answer: (c) — 7

Shortcut

Meetings happen when the **combined** distance hits $1, 3, 5, \ldots$ pool lengths. Combined distance $= \frac{80}{6} = 13.3$, and the odd numbers up to 13 are seven. Don't trace the lengths one by one.

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25 QA ALGEBRA POLYNOMIALS AND HIGHER DEGREE EQUATIONS 7 /10

If $a_1, a_2, ..., a_8$ are the roots of the equation $x^8 + x^7 + ... + x + 1 = 0$, then the value of $a_1^{2025} + a_2^{2025} + ... + a_8^{2025}$ is

(A) 0
(B) 2
(C) 8
(D) 4

ANSWER (c) 8

SOLUTION

Step 1 — recognise the polynomial. Multiply by $(x-1)$:

$$(x-1)\left(x^8 + x^7 + \cdots + x + 1\right) = x^9 - 1$$

So the roots of $x^8 + \cdots + 1 = 0$ are exactly the solutions of $x^9 = 1$ **except** $x = 1$. These are the eight non-real ninth roots of unity.

Step 2 — use $a_i^9 = 1$. For every root, $a_i^9 = 1$. Now look at the exponent 2025:

$$2025 = 9 \times 225$$

so 2025 is an exact multiple of 9. Therefore

$$a_i^{2025} = \left(a_i^9\right)^{225} = 1^{225} = 1$$

Step 3 — add up all eight.

$$a_1^{2025} + \cdots + a_8^{2025} = \underbrace{1 + 1 + \cdots + 1}_{8 \text{ times}} = 8$$

Answer: (c) — 8

Shortcut

The roots are the 9th roots of unity except 1, and $2025 = 9 \times 225$ is a multiple of 9. So every term is 1, and the sum is just the count: 8.

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26 QA NUMBER SYSTEM DIVISIBILITY RULES 6 /10

Which of the following numbers is divisible by $3^{10} + 2$

(A) $3^{20} + 4$
(B) $3^{20} + 8$
(C) $3^{30} + 2$
(D) $3^{30} + 8$

ANSWER (d) $3^{30} + 8$

SOLUTION

Step 1 — substitute to make it readable. Let

$$t = 3^{10}$$

Then the divisor is $t + 2$, and the options become $t^2 + 4$, $t^3 + 2$, $t^2 + 8$, $t^3 + 8$.

Step 2 — recall the standard factorisation.

$$t^3 + 8 = t^3 + 2^3 = (t+2)\left(t^2 - 2t + 4\right)$$

That is an exact factorisation, so $t + 2$ divides $t^3 + 8$ with no remainder.

Step 3 — check the others fail. Using the Remainder Theorem (substitute $t = -2$):

Expression	Value at $t = -2$	Divisible?
$t^2 + 4$	$4 + 4 = 8$	No
$t^3 + 2$	$-8 + 2 = -6$	No
$t^2 + 8$	$4 + 8 = 12$	No
$t^3 + 8$	$-8 + 8 = 0$	**Yes**

Since $3^{30} + 8 = t^3 + 8$, that is the answer.

Answer: (d) — $3^{30} + 8$

Shortcut

Substitute $t = 3^{10}$ and test $t = -2$ in each option (Remainder Theorem). Only $t^3 + 8$ gives zero. Recognising $t^3 + 2^3 = (t + 2)(t^2 - 2t + 4)$ gets you there even faster.

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27 QA COORDINATE GEOMETRY CIRCLES ●●●●●○○○○○ 5 /10

A circle touches the y-axis at $(0, 4)$ and passes through the point $(-2, 0)$. Then, the radius of the circle is

(A) 4
(B) 5
(C) 7
(D) 6

ANSWER (b) 5

SOLUTION

Step 1 — what "touches the y-axis at $(0, 4)$" tells us. At a point of tangency the radius is perpendicular to the line. The y-axis is vertical, so the radius to $(0, 4)$ is horizontal — meaning the centre sits at the **same height**:

$\text{Centre} = (h, 4)$

Also, the distance from the centre to the y-axis *is* the radius, so $r = |h|$.

Step 2 — use the second point. The circle passes through $(-2, 0)$, so its distance from the centre is also r:

$(-2 - h)^2 + (0 - 4)^2 = r^2 = h^2$

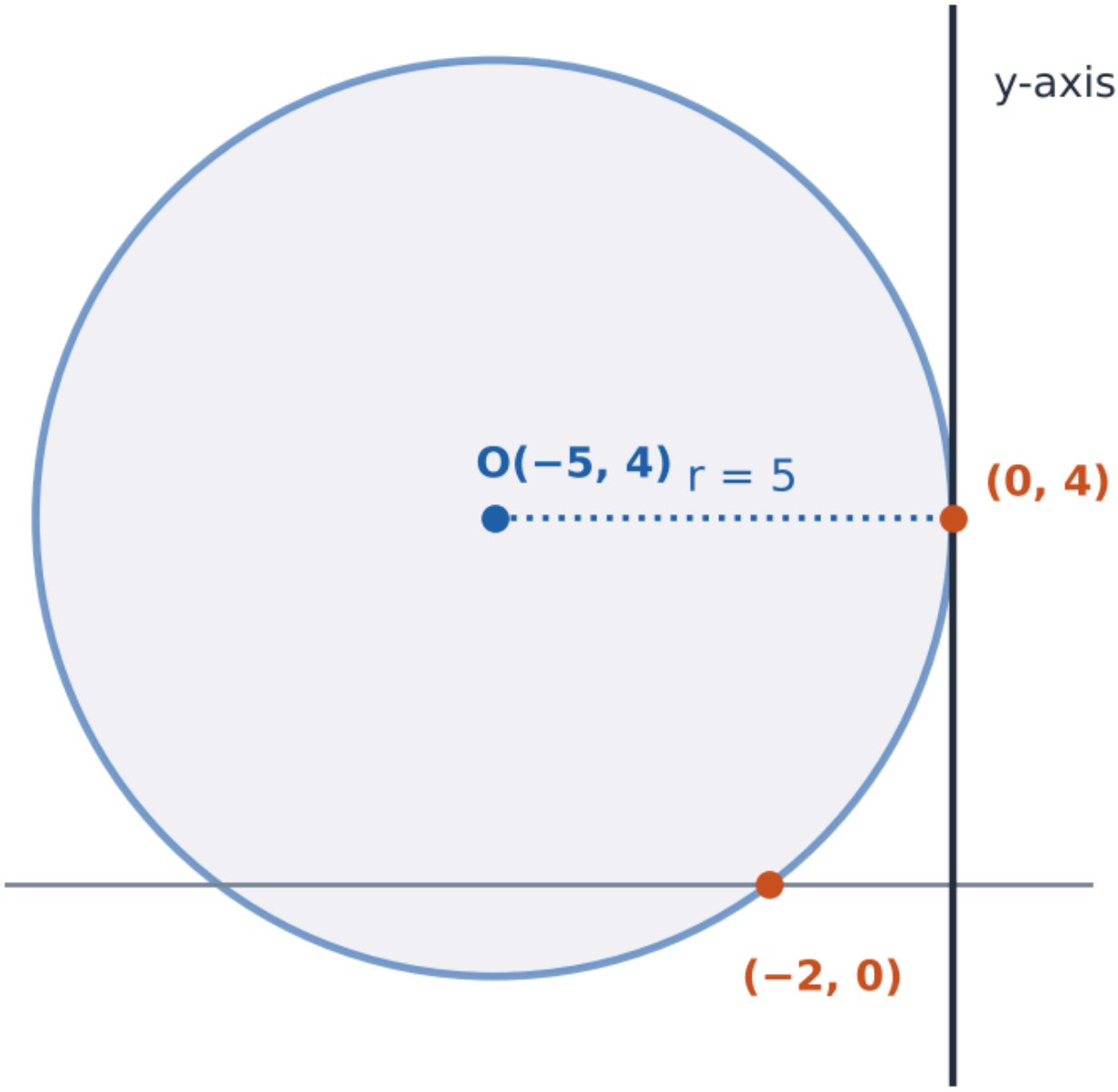
Step 3 — expand and solve.

$h^2 + 4h + 4 + 16 = h^2 \Rightarrow 4h + 20 = 0 \Rightarrow h = -5$

Step 4 — read off the radius.

$r = |h| = 5$

(The centre is $(-5, 4)$, to the left of the y-axis — which makes sense, since the circle must reach $(-2, 0)$.)



Answer: (b) — 5

Shortcut

Tangency at $(0,4)$ means the centre is $(-r,4)$. Then $(r-2)^2+16=r^2$ collapses to $4r=20$. Three lines.

28 QA ALGEBRA LOGARITHMS 6 /10

If $y = a + b \log_e x$, which of the following is true?

(A) $\log_e y$ is proportional to x

(B) $\frac{1}{y-a}$ is proportional to x^b

(C) $y - a$ is proportional to x^b

(D) **e^y is proportional to x^b**

ANSWER **(d) e^y is proportional to x^b**

SOLUTION

Step 1 — isolate the log term.

$y - a = b \log_e x$

Step 2 — exponentiate both sides. Raise e to the power of each side of the *original* equation:

$e^y = e^{a + b \log_e x} = e^a \cdot e^{b \log_e x}$

Step 3 — simplify the second factor. Using $b \log_e x = \log_e x^b$ and $e^{\log_e M} = M$:

$e^{b \log_e x} = x^b$

So

$e^y = \underbrace{e^a}_{\text{a constant}} \cdot x^b$

Since e^a is a fixed number, e^y is directly proportional to x^b.

Why the others fail: $y - a = b \log_e x$ is proportional to $\log_e x$, not to x^b — which rules out options 1 and 2. option (a) would require $\log_e y$ to be a constant multiple of x, which it is not.

Answer: (d) — e^y is proportional to x^b

Shortcut

Just exponentiate both sides: $e^y = e^{a + b \ln x} = e^a x^b$. Any option involving $y - a$ is proportional to $\log x$, not x^b, so those two go immediately.

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29 QA GEOMETRY AND MENSURATION COORDINATE GEOMETRY (BASICS) 6 /10

Let $A(1, 3)$ and $B(5, 1)$ be two points. If a line with slope m intersects AB at an angle of 45°, then the possible values of m are

(A) $5, -\frac{1}{5}$

(B) $7, \frac{1}{7}$

(C) $3, \frac{1}{3}$

(D) $-3, \frac{1}{3}$

ANSWER **(d) $-3, \frac{1}{3}$**

SOLUTION

Step 1 — slope of AB.

$m_1 = \frac{1-3}{5-1} = \frac{-2}{4} = -\frac{1}{2}$

Step 2 — the angle-between-two-lines formula.

$\tan\theta = \left| \frac{m - m_1}{1 + m\, m_1} \right|$

With $\theta = 45^\circ,\ \tan\theta = 1$, so

$$\left|\frac{m+\frac{1}{2}}{1-\frac{m}{2}}\right| = 1$$

Step 3 — drop the modulus into two cases.

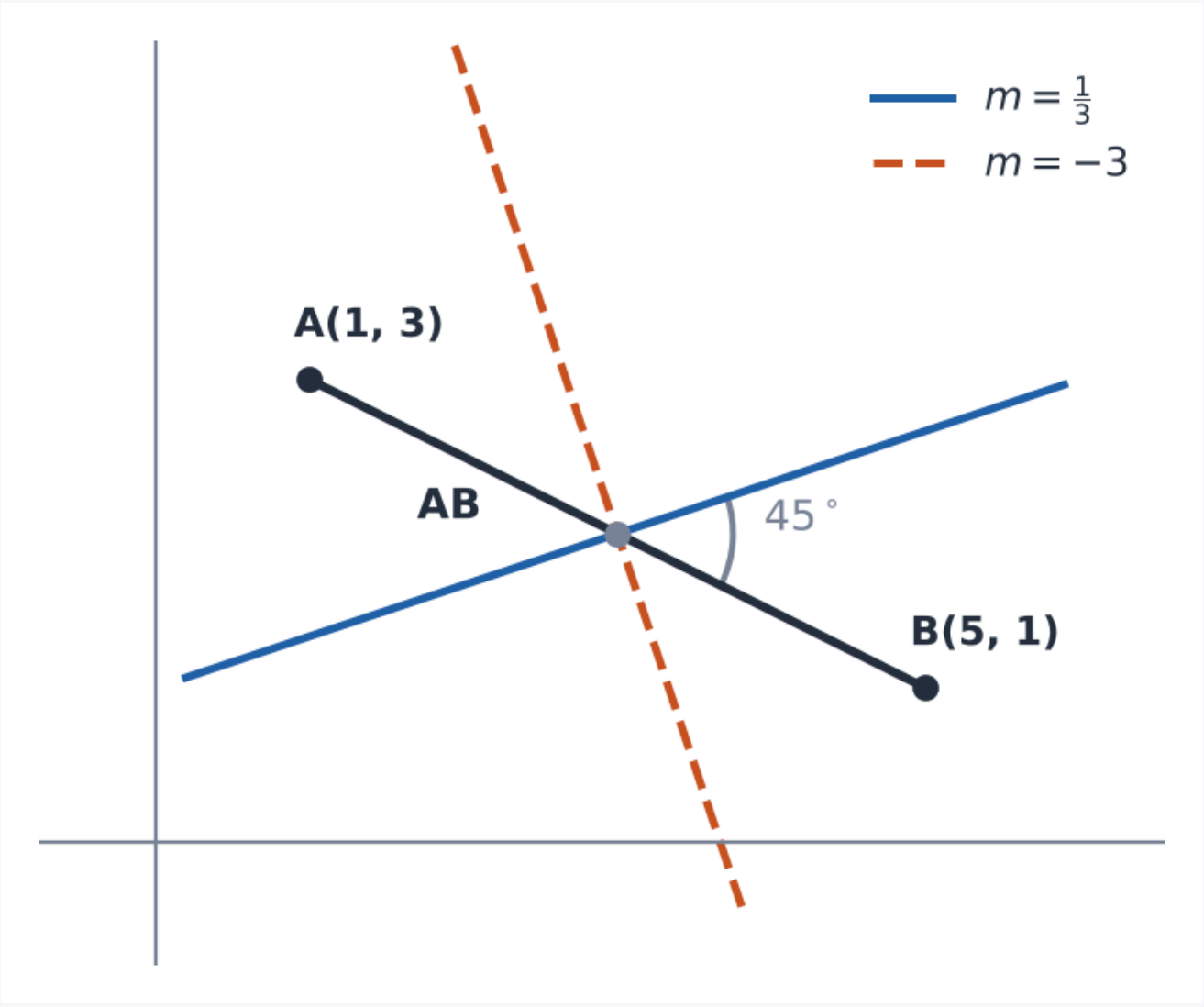
Case $+1$:

$$m+\frac{1}{2} = 1-\frac{m}{2} \ \Rightarrow\ \frac{3m}{2} = \frac{1}{2} \ \Rightarrow\ m = \frac{1}{3}$$

Case -1:

$$m+\frac{1}{2} = -1+\frac{m}{2} \ \Rightarrow\ \frac{m}{2} = -\frac{3}{2} \ \Rightarrow\ m = -3$$

Step 4 — sanity check. The two answers should be perpendicular to each other (the two 45° lines are at 90° to one another): $\frac{1}{3}\times(-3) = -1$. ✓



Answer: (d) — $-3,\ \frac{1}{3}$

Shortcut

The two answers are the lines 45° either side of AB, so they are **perpendicular to each other** — their product must be -1. That alone kills two options; then a quick check of $m = \frac{1}{3}$ settles it.

30 QA MODERN MATHS PERMUTATION AND COMBINATION 7 /10

The number of integers greater than 5000 and divisible by 5 that can be formed with the digits 1, 3, 5, 7, 8, 9 where no digit is repeated is

(A) 120
(B) 180
(C) 276
(D) 240

ANSWER (c) 276

SOLUTION

Step 1 — pin down the units digit. For divisibility by 5 the last digit must be 0 or 5. There is no 0 available, so

$$\text{units digit} = 5 \quad (\text{fixed})$$

That leaves $\{1, 3, 7, 8, 9\}$ for the other places.

Step 2 — which lengths are possible? With six available digits and no repetition, numbers can be 4, 5 or 6 digits long. (A 3-digit number is at most 987, below 5000.)

Case A — 4-digit numbers. To exceed 5000 the leading digit must be at least 5. The candidates are $5, 7, 8, 9$, but 5 is already used at the end, so the leading digit $\in \{7, 8, 9\}$ → 3 ways. The two middle places are filled from the 4 remaining digits:

$$3 \times 4 \times 3 = 36$$

Case B — 5-digit numbers. Every 5-digit number already exceeds 5000, so there is no restriction on the leading digit. Choose the first four places from the remaining 5 digits:

$$5 \times 4 \times 3 \times 2 = 120$$

Case C — 6-digit numbers. All five remaining digits are arranged in the first five places:

$$5! = 120$$

Step 3 — total.

$$36 + 120 + 120 = \mathbf{276}$$

Answer: (c) — 276

Shortcut

Units digit is forced to 5 (there is no 0). Then count lengths separately: $3 \cdot 4 \cdot 3 + 5 \cdot 4 \cdot 3 \cdot 2 + 5! = 36 + 120 + 120$. The only trap is forgetting that 5 is unavailable as the leading digit.

31 QA GEOMETRY AND MENSURATION POLYGONS 5 /10

Area of a regular octagon inscribed in a circle of radius 1 unit is:

A $2\sqrt{2}$

B $\frac{9}{2\sqrt{2}}$

C $\sqrt{10}$

D $2+\sqrt{2}$

ANSWER **(a)** $2\sqrt{2}$

SOLUTION

Step 1 — slice the octagon from the centre. Joining the centre to all 8 vertices cuts the octagon into **8 identical triangles**. Each has two sides equal to the radius, 1 and 1.

Step 2 — find the apex angle. The 8 angles at the centre fill a full turn:

$$\frac{360^\circ}{8} = 45^\circ$$

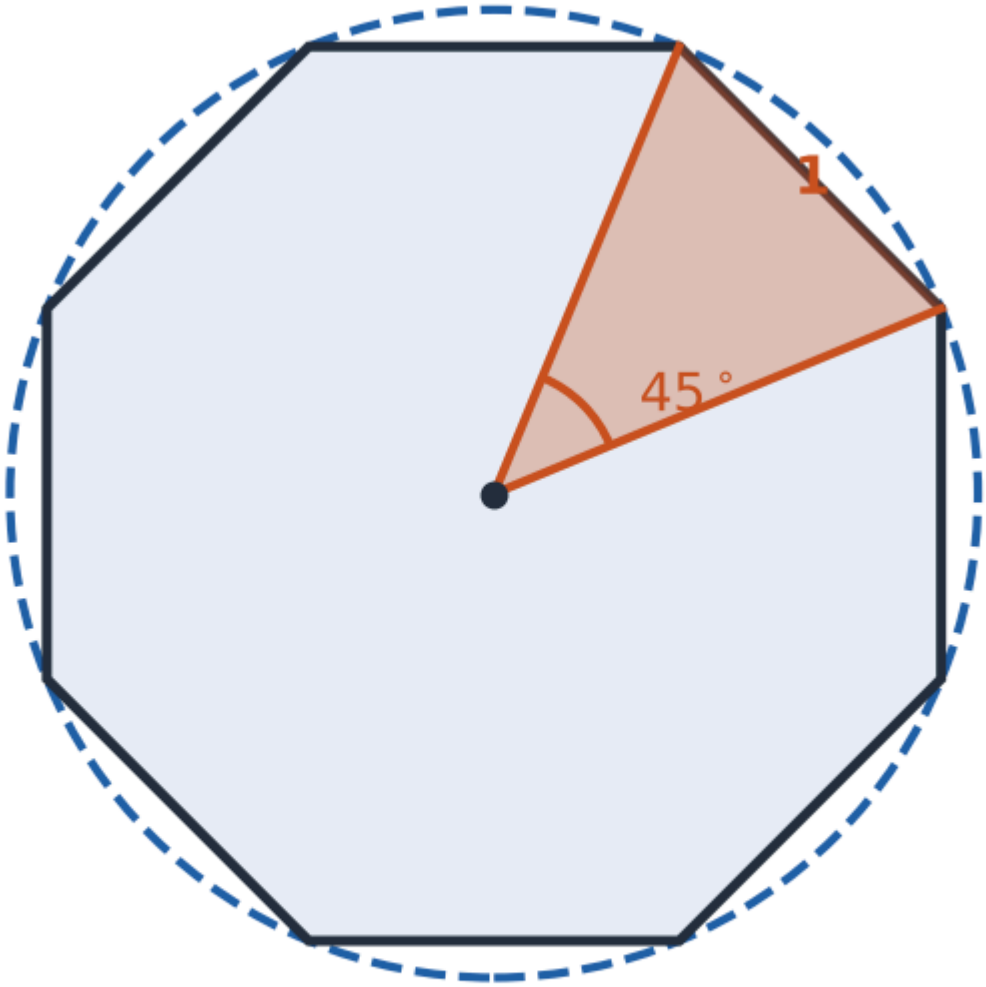
Step 3 — area of one triangle using $\frac{1}{2}ab\sin C$:

$$\frac{1}{2} \times 1 \times 1 \times sin45^\circ = \frac{1}{2} \cdot \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4}$$

Step 4 — multiply by 8.

$$8 \times \frac{\sqrt{2}}{4} = 2\sqrt{2}$$

General formula worth remembering: a regular n-gon in a circle of radius R has area $\frac{n}{2}R^2 \sin\frac{360^\circ}{n}$.



Answer: (a) — $2\sqrt{2}$

Shortcut

Memorise $\text{Area} = \frac{n}{2}R^2 \sin\frac{360^\circ}{n}$. Here $= \frac{8}{2}\sin 45^\circ = 2\sqrt{2}$. Works for any regular polygon in a circle.

32 QA ALGEBRA SEQUENCES AND SERIES 6 /10

The sum of the first 5 terms of a geometric progression is the same as the sum of the first 7 terms of the same progression. If the sum of the first 9 terms is 24, then the 4th term of the progression is

(A) -48
(B) **-24**
(C) 48
(D) 24

ANSWER (b) -24

SOLUTION

Step 1 — turn the equal-sums condition into something usable.

$S_7 = S_5 \Rightarrow S_7 - S_5 = 0 \Rightarrow t_6 + t_7 = 0$

Step 2 — write those terms and factor.

$ar^5 + ar^6 = 0 \Rightarrow ar^5 (1 + r) = 0$

Since $a \neq 0$ and $r \neq 0$ (otherwise there is no GP), we need

$r = -1$

Step 3 — what $r = -1$ does to the sums. The GP is $a, -a, a, -a, \ldots$ — consecutive terms cancel in pairs. So:

- $S_{\text{even}} = 0$
- $S_{\text{odd}} = a$

Step 4 — use $S_9 = 24$. Nine is odd, so $S_9 = a = 24$.

Step 5 — the 4th term.

$t_4 = ar^3 = 24 \times (-1)^3 = \mathbf{-24}$

Answer: (b) — -24

Shortcut

$S_7 = S_5$ means $t_6 + t_7 = 0$, so $r = -1$ at once. With $r = -1$ the terms cancel in pairs, so every **odd** partial sum equals a — giving $a = 24$ and $t_4 = -24$.

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33 QA NUMBER SYSTEM REMAINDER THEOREM 7 /10

The remainder when $11^{1011} + 1011^{11}$ is divided by 9 is

(A) **8**
(B) 7
(C) 0
(D) 9

ANSWER (a) 8

SOLUTION

Handle the two pieces separately, then add the remainders.

Step 1 — reduce the first term's base.

$11 \equiv 2 \pmod 9 \Rightarrow 11^{1011} \equiv 2^{1011} \pmod 9$

Step 2 — find the cycle of powers of 2 mod 9.

$2^1 \equiv 2,\ 2^2 \equiv 4,\ 2^3 \equiv 8,\ 2^4 \equiv 7,\ 2^5 \equiv 5,\ 2^6 \equiv 1\ (mod\ 9)$

The pattern repeats every **6** steps.

$1011 = 6 \times 168 + 3 \Rightarrow 2^{1011} \equiv 2^3 \equiv 8\ (mod\ 9)$

Step 3 — the second term. Use the digit-sum test for 9: $1 + 0 + 1 + 1 = 3$, so

$1011 \equiv 3\ (mod\ 9) \Rightarrow 1011^{11} \equiv 3^{11}\ (mod\ 9)$

But $3^2 = 9 \equiv 0$, and $11 \geq 2$, so 3^{11} is a multiple of 9:

$1011^{11} \equiv 0\ (mod\ 9)$

Step 4 — combine.

$11^{1011} + 1011^{11} \equiv 8 + 0 = \mathbf{8}\ (mod\ 9)$

Answer: (a) — 8

Shortcut

$11 \equiv 2$, and powers of 2 mod 9 cycle every 6; $1011 \equiv 3\ (mod\ 6)$ gives $2^3 = 8$. The second term dies instantly because 1011 has digit sum 3, so 3^{11} is a multiple of 9.

🎯 Not sure which topic is costing you marks? A topic-wise test tells you in 15 minutes. Find the gap

34 QA ALGEBRA INEQUALITIES & MODULUS ●●●●●●●●○○ 8 /10

The set of all values of x satisfying the inequality $\log_{\left(x+\frac{1}{x}\right)} \left[\log_2 \left(\frac{x-1}{x+2} \right) \right] > 0$ is

(A) Null set
(B) (2, 5)
(C) (5, ∞)
(D) (-5, -2)

ANSWER (a) Null set

SOLUTION

This one is won on the **domain**, not the algebra — check the base first.

Step 1 — the base must be valid. A logarithm's base must be positive and $\neq 1$. The base here is $x + \frac{1}{x}$.

- If $x > 0$: by AM–GM, $x + \frac{1}{x} \geq 2$. So the base is **greater than 1**. ✓
- If $x < 0$: $x + \frac{1}{x} \leq -2$, which is **negative** — not a legal base. ×

So we are restricted to $x > 0$ from the outset.

Step 2 — solve the inequality on that domain. Since the base exceeds 1, $\log_{\text{base}} T > 0$ means $T > 1$:

$$\log_2 \left(\frac{x-1}{x+2} \right) > 1 \Rightarrow \frac{x-1}{x+2} > 2$$

Step 3 — solve the rational inequality.

$$\frac{x-1}{x+2} - 2 > 0 \Rightarrow \frac{x-1-2x-4}{x+2} > 0 \Rightarrow \frac{-(x+5)}{x+2} > 0$$

$$\Rightarrow \frac{x+5}{x+2} < 0 \Rightarrow -5 < x < -2$$

Step 4 — compare with the domain. Step 3 demands x be negative; Step 1 demands $x > 0$. The two can never hold together.

Solution set $= \varnothing$

Answer: (a) — Null set

Shortcut

Check the **base** before touching the inequality: $x + \frac{1}{x} \geq 2$ needs $x > 0$, but the inequality itself forces $-5 < x < -2$. Contradiction, so null set. Students who solve the inequality first and never check the domain pick option (d).

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35 QA ALGEBRA MAXIMA AND MINIMA 3 /10

Let $f(x) = a^2x^2 + 2bx + c$ where, $a \neq 0$, b, c are real numbers and x is a real variable then

(A) f(x) has a maximum and a minimum

(B) f(x) has no minimum and no maximum

(C) **f(x) has a minimum and no maximum**

(D) f(x) has a maximum and no minimum

ANSWER **(c) f(x) has a minimum and no maximum**

SOLUTION

Step 1 — look at the leading coefficient. The coefficient of x^2 is a^2. Since $a \neq 0$ and a is real,

$a^2 > 0 \quad \text{always}$

This is the whole question — the square guarantees a positive leading coefficient whatever a is.

Step 2 — what a positive leading coefficient means. The graph is a parabola **opening upwards**. Such a parabola:

- has a lowest point at its vertex → a **minimum** exists
- rises without bound as $x \to \pm\infty$ → **no maximum**

Step 3 — the minimum value, for completeness, occurs at $x = -\frac{b}{a^2}$ and equals $c - \frac{b^2}{a^2}$.

Answer: (c) — $f(x)$ has a minimum and no maximum

Shortcut

The leading coefficient is a^2, which is positive for every real $a \neq 0$. Parabola opens upward $\Rightarrow$ minimum, no maximum. A five-second question — the a^2 is the entire point.

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36 QA MODERN MATHS PROBABILITY 6 /10

A natural number n lies between 100 and 400, and the sum of its digits is 10. The probability that n is divisible by 4, is

(A) $\frac{1}{4}$

(B) $\frac{7}{27}$

(C) $\frac{1}{3}$

(D) $\frac{2}{9}$

ANSWER (b) $\frac{7}{27}$

SOLUTION

Step 1 — count the sample space. n is a three-digit number with hundreds digit 1, 2 or 3, and digits summing to 10. For each hundreds digit h, the tens and units must satisfy $t + u = 10 - h$:

h	$t+u$	Number of digit pairs
1	9	10 (from $0+9$ to $9+0$)
2	8	9
3	7	8

$\text{Total} = 10 + 9 + 8 = 27$

Step 2 — the divisibility test. A number is divisible by 4 exactly when the number formed by its **last two digits** is divisible by 4.

Step 3 — hunt through each block.

- $h = 1$, $t + u = 9$: the two-digit endings are $09, 18, 27, 36, 45, 54, 63, 72, 81, 90$. Divisible by 4: 36, 72 → **136, 172** (2)
- $h = 2$, $t + u = 8$: endings $08, 17, 26, 35, 44, 53, 62, 71, 80$. Divisible by 4: 08, 44, 80 → **208, 244, 280** (3)
- $h = 3$, $t + u = 7$: endings $07, 16, 25, 34, 43, 52, 61, 70$. Divisible by 4: 16, 52 → **316, 352** (2)

$\text{Favourable} = 2 + 3 + 2 = 7$

Step 4 — the probability.

$$P = \frac{7}{27}$$

Answer: (b) — $\frac{7}{27}$

Shortcut

Count totals as $10 + 9 + 8 = 27$. For the numerator, run through each hundreds digit and test only the last two digits for divisibility by 4: $2 + 3 + 2 = 7$.

37 QA GEOMETRY AND MENSURATION TRIGONOMETRY 5 /10

In triangle ABC, $AB = AC = x$, $\angle ABC = \theta$ and the circumradius is equal to y. Then $\frac{x}{y}$ equals

(A) $2\cos\theta$

(B) $2\sin\theta$

(C) $\sin\theta$

(D) $\cos\theta$

ANSWER (b) $2\sin\theta$

SOLUTION

Step 1 — recall the extended Law of Sines. In any triangle with circumradius R,

$$\frac{\text{side}}{\sin\ (\text{angle opposite that side})} = 2R$$

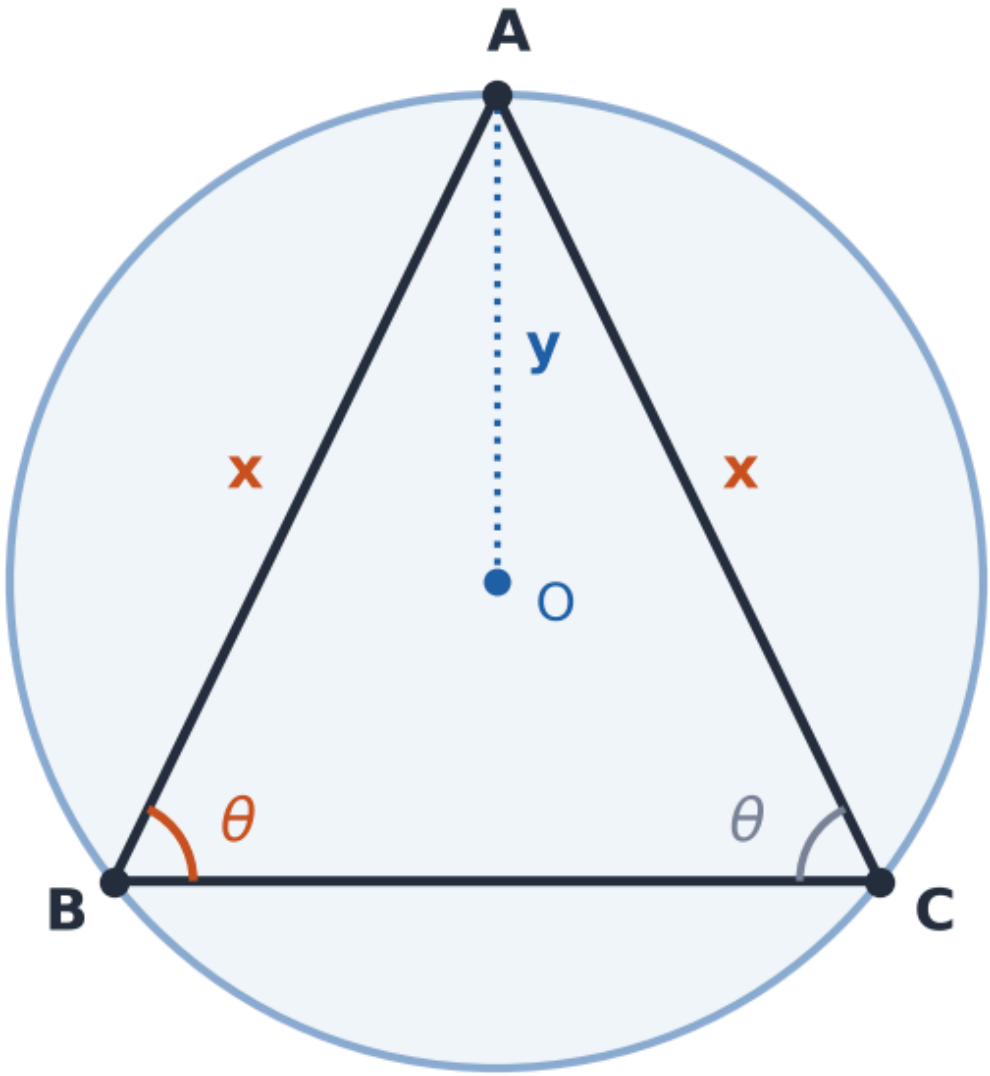
Step 2 — pick the right side-and-angle pair. We know the angle θ at vertex B. The side **opposite** B is AC, and we are told $AC = x$. The circumradius is y, so $R = y$:

$$\frac{AC}{\sin B} = 2R \Rightarrow \frac{x}{\sin\theta} = 2y$$

Step 3 — rearrange.

$$\frac{x}{y} = 2\sin\theta$$

Note the isosceles condition $AB = AC$ (which forces $\angle ACB = \theta$ as well) is not actually needed — it is there to make the figure consistent.



$AB = AC = x,\ \text{circumradius} = y$

Answer: (b) — $2 \sin \theta$

Shortcut

Sine rule on the side **opposite** the given angle: $\frac{x}{\sin \theta} = 2y$. The isosceles condition is decoration — don't go looking for it.

38 QA MODERN MATHS SET THEORY AND VENN DIAGRAMS 5 /10

Let A and B be two finite sets such that $n(A-B)$, $n(A\cap B)$, $n(B-A)$ are in an arithmetic progression. Here $n(X)$ denotes the number of elements in a finite set X. If $n(A\cup B)=18$, then $n(A)+n(B)$ is _____

(A) 30
(B) 27
(C) 36
(D) **24**

ANSWER (d) 24

SOLUTION

Step 1 — name the three regions of the Venn diagram. Since they are in AP, write them as

$n(A-B)=a-d, \quad n(A\cap B)=a, \quad n(B-A)=a+d$

Step 2 — the three regions make up the union.

$n(A\cup B)=(a-d)+a+(a+d)=3a=18 \Rightarrow a=6$

The d cancels, so we never need its value.

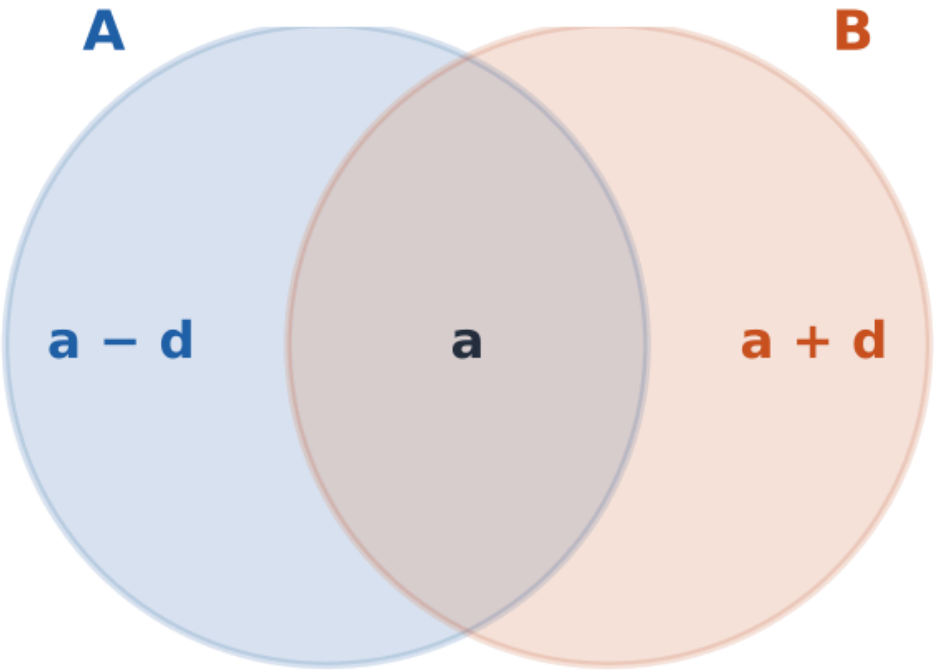
Step 3 — build $n(A)$ and $n(B)$. Each set is "its own part" plus "the overlap":

$n(A)=(a-d)+a, \quad n(B)=(a+d)+a$

Step 4 — add them.

$n(A)+n(B)=(a-d)+(a+d)+2a=4a=4\times 6=\mathbf{24}$

Alternative one-liner: $n(A)+n(B)=n(A\cup B)+n(A\cap B)=18+6=24$.



$$(a-d)+a+(a+d)=3a=n(A\cup B)=18 \Rightarrow a=6$$

Answer: (d) — 24

Shortcut

Use $n(A)+n(B)=n(A\cup B)+n(A\cap B)$. The AP makes the middle region $\frac{18}{3}=6$, so the answer is $18+6=24$. The common difference never appears.

39 QA ARITHMETIC AVERAGES MIXTURE AND ALLIGATION ●●●●○○○○○○ 4 /10

Suppose a, b and c are three real numbers such that $\text{Max}(a,b,c)+\text{Min}(a,b,c)=15$, and $\text{Median}(a,b,c)-\text{Mean}(a,b,c)=2$. Then the median of a, b and c is

(A) 11
(B) 10
(C) 10.5
(D) 9.5

ANSWER (c) 10.5

SOLUTION

Step 1 — write the mean in terms of max, min and median. For three numbers, the three values *are* the max, the median and the min. So

$$\text{Mean}=\frac{\text{Max}+\text{Median}+\text{Min}}{3}$$

Step 2 — substitute the first condition. We are told $\text{Max}+\text{Min}=15$. Writing M for the median:

$$\text{Mean}=\frac{15+M}{3}$$

Step 3 — use the second condition.

$$M-\frac{15+M}{3}=2$$

Multiply through by 3:

$$3M-(15+M)=6\Rightarrow 2M=21\Rightarrow M=10.5$$

Answer: (c) — 10.5

Shortcut

Mean $=\frac{15+M}{3}$ since max $+$ min is given. Then $M-\frac{15+M}{3}=2\Rightarrow 2M=21$. The individual values of a,b,c are irrelevant.

40 QA MODERN MATHS PROBABILITY 7 /10

A and B take part in a rifle shooting match. The probability of A hitting the target is 0.4, while the probability of B hitting the target is 0.6. If A has the first shot, post which both strike alternately, then the probability that A hits the target before B hits it is

(A) $\frac{9}{19}$
(B) $\frac{1}{2}$
(C) $\frac{2}{3}$
(D) $\frac{10}{19}$

ANSWER **(d) $\frac{10}{19}$**

SOLUTION

Step 1 — list the ways A can win. A wins on his 1st shot, or his 2nd, or his 3rd, ...

- **A wins on shot 1:** 0.4
- **A wins on shot 2:** A misses (0.6), B misses (0.4), A hits (0.4) → $0.6 \times 0.4 \times 0.4$
- **A wins on shot 3:** both miss twice, then A hits → $(0.6 \times 0.4)^2 \times 0.4$

Step 2 — spot the geometric series. Each extra round multiplies by the "both miss" factor

$r = 0.6 \times 0.4 = 0.24$

So

$P(A) = 0.4\left(1 + 0.24 + 0.24^2 + \cdots\right)$

Step 3 — sum the infinite GP with $\frac{1}{1-r}$:

$$P(A) = \frac{0.4}{1 - 0.24} = \frac{0.4}{0.76} = \frac{40}{76} = \frac{10}{19}$$

Sense check: $\frac{10}{19} \approx 0.53$ — just over half, which fits: A is the weaker shot but goes first.

Answer: (d) — $\frac{10}{19}$

Shortcut

Infinite GP in one line: $P = \frac{0.4}{1 - 0.6 \times 0.4} = \frac{0.4}{0.76} = \frac{10}{19}$. Sense check — A is the weaker shot but goes first, so the answer must be just over $\frac{1}{2}$.

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41 DILR DATA INTERPRETATION TABLES 6 /10

By what percentage the net sales for June increased as compared to May in the Footwear category?

(A) 18.97 percent
(B) **62.58 percent**
(C) 60.87 percent
(D) 7.21 percent

ANSWER **(b) 62.58 percent**

SOLUTION

Step 1 — recall the definition given in the set.

$\text{Net sales} = \text{Sales} - \text{Value returned} = \text{Sales} \times (1 - \text{return rate})$

Step 2 — May, Footwear. Sales 69, returns 6%:

$69 \times 0.94 = 64.86$

Step 3 — June, Footwear. Sales 111, returns 5%:

$$111 \times 0.95 = 105.45$$

Step 4 — percentage increase.

$$\frac{105.45 - 64.86}{64.86} \times 100 = \frac{40.59}{64.86} \times 100 \approx 62.58\%$$

Watch the trap: option 4 (60.87%) is the rise in *gross* sales alone ($\frac{111-69}{69}$). The question asks about **net** sales, so the return rates must be applied first.

Answer: (b) — 62.58 percent

Shortcut

Net sales $=$ sales $\times$ $(1 - \text{rate})$. Estimate rather than compute: $\frac{111 \times 0.95}{69 \times 0.94} \approx \frac{105}{65} \approx 1.63$, so about 62–63%. Option (c), 60.87%, is the trap — that is the rise in *gross* sales.

Refers to the DI set above.

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42 DILR DATA INTERPRETATION TABLES ●●●●●●○○○○ 6 /10

Among the following four months, for which month the value of the Footwear returned (in lakhs of rupees) was the highest?

A September
B July
C June
D March

ANSWER (b) July

SOLUTION

Step 1 — convert the percentage into a rupee value. The table gives returns as a *percentage*; the question asks for the *value in lakhs*:

$$\text{value returned} = \text{Sales} \times \text{return } \%$$

Step 2 — compute for the four months offered.

Month	Footwear sales	Return rate	Value returned
September	118	9%	10.62
July	**119**	**9%**	10.71
June	111	5%	5.55
March	121	7%	8.47

Step 3 — compare. July and September share the same 9% rate, so the higher sales figure decides it: $119 > 118$. March has the highest sales of the four (121) but a lower rate, and June's 5% rate makes it the smallest.

Answer: (b) — July

Shortcut

July and September share the same 9% rate, so the bigger sales figure wins: $119 > 118$. No multiplication needed for those two.

Refers to the DI set above.

📖 Reading comprehension improves with daily practice, not last-minute revision. Start Daily Reads

43 DILR DATA INTERPRETATION TABLES ●●●●●●○○○○ 6 /10

Which month had highest percentage decline in monthly sales as compared to previous month for the Apparel category?

(A) October (B) March

(C) December (D) June

ANSWER (a) October

SOLUTION

Step 1 — only check the months where Apparel sales actually fell. Reading down the Apparel column: 262, 279, 236, 258, 249, 230, 244, 252, 288, 222, 228, 221.

Declines happen in March, May, June, October and December.

Step 2 — compute the percentage decline for each option.

$$\%\text{decline} = \frac{\text{previous} - \text{current}}{\text{previous}} \times 100$$

Month	Previous	Current	Decline
March	279	236	$\frac{43}{279} = 15.41\%$
June	249	230	$\frac{19}{249} = 7.63\%$
October	**288**	**222**	$\frac{66}{288} = 22.92\%$
December	228	221	$\frac{7}{228} = 3.07\%$

Step 3 — October is clearly the largest. It follows September, the year's peak month (288), and drops to the year's near-low (222) — the biggest fall in both absolute and percentage terms.

Answer: (a) — October

Shortcut

Only four months are offered, and October follows September, the year's peak (288), dropping to 222. Largest fall in both absolute and percentage terms — eyeball it.

Refers to the DI set above.

44 DILR DATA INTERPRETATION TABLES 6 /10

For which categories the value of the products returned (as a percentage of sales) increased for three consecutive months?

(A) Only Electronics
(B) **Both Apparel and Footwear**
(C) Only Apparel
(D) Only Footwear

ANSWER **(b) Both Apparel and Footwear**

SOLUTION

Step 1 — read this straight off the percentage columns (no calculation needed — the table already gives returns *as a percentage of sales*).

Apparel: 13, 16, 20, 16, 12, 19, 17, 16, 10, 15, 14, 18

$\text{Jan } 13 \to \text{Feb } 16 \to \text{Mar } 20$

Three consecutive months rising. ✓

Footwear: 7, 9, 7, 8, 6, 5, 9, 6, 9, 8, 9, 10

$\text{Oct } 8 \to \text{Nov } 9 \to \text{Dec } 10$

Three consecutive months rising. ✓

Electronics: 2, 3, 2, 1, 4, 3, 4, 2, 5, 2, 4, 1

The longest rise anywhere is a single step (e.g. Jan→Feb, Apr→May). Never three in a row. ×

Step 2 — conclude. Apparel and Footwear both show a three-month climb; Electronics does not.

Answer: (b) — Both Apparel and Footwear

Shortcut

Read the percentage columns straight off; the table already gives returns as a percentage of sales. Look for three rising values in a row: Apparel Jan–Mar and Footwear Oct–Dec.

Refers to the DI set above.

---

45 DILR DATA INTERPRETATION TABLES 6 /10

Among the following four months, for which month the contribution of the Apparel category in the total monthly sales was the highest?

(A) August
(B) January
(C) **April**
(D) December

ANSWER **(c) April**

SOLUTION

Step 1 — contribution means Apparel's share of that month's three-category total.

$$\text{share} = \frac{\text{Apparel}}{\text{Apparel} + \text{Footwear} + \text{Electronics}}$$

Step 2 — compute for the four months offered.

Month	Apparel	Footwear	Electronics	Total	Share
January	262	104	289	655	40.00%
April	**258**	**58**	**325**	**641**	40.25%
December	221	86	268	575	38.43%
August	252	60	336	648	38.89%

Step 3 — note why April wins. Its Apparel figure is not the highest of the four, but April has the year's lowest Footwear number (58), which shrinks the denominator and lifts Apparel's share just past January's.

Answer: (c) — April

Shortcut

April has the year's lowest Footwear figure (58), which shrinks the denominator. Only January is close — compare just those two.

COMMON DATA SET

E-commerce monthly sales and returns, 2024

The table given below provides the details of monthly sales (in lakhs of rupees) and the value of products returned by the customers (as a percentage of sales) of an e-commerce company for three product categories for the year 2024. Net sales (in lakhs of rupees) is defined as the difference between sales (in lakhs of rupees) and the value of products returned (in lakhs of rupees).

Month	Sales: Apparel	Sales: Footwear	Sales: Electronics	Returned %: Apparel	Returned %: Footwear	Returned %: Electronics
January	262	104	289	13%	7%	2%
February	279	113	387	16%	9%	3%
March	236	121	283	20%	7%	2%
April	258	58	325	16%	8%	1%
May	249	69	359	12%	6%	4%
June	230	111	321	19%	5%	3%
July	244	119	341	17%	9%	4%
August	252	60	336	16%	6%	2%
September	288	118	355	10%	9%	5%
October	222	108	383	15%	8%	2%
November	228	93	282	14%	9%	4%
December	221	86	268	18%	10%	1%

FIX THE WEAK AREA

One weak topic at a time

Algebra alone carries the largest share of the quant in this paper. Instead of re-attempting whole mocks, pick a single topic, take a short timed test on it, and watch the accuracy move.

Topic-wise tests →

All IPMAT practice

SECTION 3

VARC

Verbal Ability and Reading Comprehension

45	180	40 min	+4 / −1 / 0
QUESTIONS	MARKS	SECTIONAL LIMIT	MARKING

MCQ (+ 5 TITA para jumbles)

MOST ASKED HERE: Reading Comprehension - Question Types **18** · Verbal Ability **16** · Vocabulary **6** · Grammar **5**

46 VARC · READING COMPREHENSION - QUESTION TYPES · RC INFERENCE QUESTIONS · 6 /10

The writer implies that

(A) social media can never be discarded by its users.

(B) **older forms of media will regain users because of its controls.**

(C) social media's innate strength is the user's inability to fact check.

(D) uncensored content will always have more appeal than controlled content.

ANSWER **(b) older forms of media will regain users because of its controls.**

SOLUTION

Line in the passage

> *Para 3, sentence 2 — unfiltered content can push users away from social media towards legacy forms, which have better moderation systems in place.*

How to reach it, step by step

Step 1. Spot the question type. The word 'implies' tells you the answer is not stated in so many words; it is one short inference away from a stated line.

Step 2. Locate the only sentence in the passage that talks about users moving between platforms. It is in the final paragraph, where dropping moderation is said to be able to drive users towards legacy media.

Step 3. Unpack that sentence into its two halves: (i) social media loosens moderation, (ii) users may shift to older media which moderate better. Half (ii) is exactly 'older media gains users because of its controls'.

Step 4. Match it to the options. Option (b) is that sentence restated with no addition of your own. Lock it.

Why the other three fall

- (a) 'Can never be discarded' is an absolute. The passage says the opposite — users can move away towards legacy media.
- (c) The writer's point is that informed choice is social media's weak spot (its Achilles' Heel), not its strength. This option flips the passage.
- (d) 'Always' again overstates. The passage suggests uncensored content can actually repel users, so uncensored content is not shown to have more appeal.

Teaching point: *In 'implies' questions, the winner is the option that is one small step from a line in the text. Options with never / always / only are almost always planted as traps, because a 450-word editorial rarely earns an absolute.*

Shortcut

"Implies" means *not stated outright*. Scan for the consequence the writer leaves hanging; here it is the migration back to media that still employ editors.

Refers to the RC set above.

---

47 VARC | READING COMPREHENSION - QUESTION TYPES | RC DETAIL AND FACT BASED QUESTIONS

6 /10

The writer argues that social media

(A) **has become the preferred way to access entertainment.**

(B) is in a difficult position because it cannot adapt to new policies.

(C) remains unaffected by global debates amongst lawmakers on misinformation.

(D) flourishes because it can publish any material.

ANSWER **(a) has become the preferred way to access entertainment.**

SOLUTION

Line in the passage

> *Para 2 — social media is the connective tissue for mass consumption of entertainment, and alternative platforms are reworking their engagement with it.*

How to reach it, step by step

Step 1. Scan the four options and mark the topic of each: entertainment, adaptability, lawmakers, publishing freedom. Then hunt for each topic in the passage.

Step 2. Entertainment appears once, in paragraph 2, where social media is called the connective tissue through which entertainment reaches the masses, and other platforms are said to be adjusting themselves to it.

Step 3. 'Connective tissue for mass consumption' = the route most people now take to entertainment = the preferred way. The supporting clause, that rival platforms are reshaping themselves around it, confirms the dominance.

Step 4. Verify the other three topics are either absent or contradicted (see below), then confirm (a).

Why the other three fall

- (b) The closing argument is that media must adapt and that moderation is the adaptation mechanism — the passage does not say social media cannot adapt.
- (c) Directly contradicted: lawmakers worldwide are said to be unlikely to give social media a free run, and protections already exist across jurisdictions.

(d) The passage never credits its success to being able to publish anything; in fact unfiltered content is shown as a risk to it.

Shortcut

Each option points at a different paragraph. Locate the paragraph first, then read only that one. Here it is the second: entertainment reaching audiences *through* the platforms.

Refers to the RC set above.

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48 VARC READING COMPREHENSION - QUESTION TYPES

RC DETAIL AND FACT BASED QUESTIONS

6 /10

Technologies are enabling social media to

(A) accept the current trends as emphasised by algorithms.

(B) readjust its interaction with competitors.

(C) understand that algorithms cannot control its content.

(D) **enlarge its sphere of influence and persuasion.**

ANSWER **(d) enlarge its sphere of influence and persuasion.**

SOLUTION

Line in the passage

> *Para 2 — technologies are shaping up to drive 'this advantage' further through synthetic content targeted precisely at its intended audience.*

How to reach it, step by step

Step 1. Find the sentence that actually contains the word 'Technologies'. It is the second-last sentence of paragraph 2.

Step 2. Notice the pronoun phrase 'this advantage'. A pronoun question is really a backward-reading question — you must go up one sentence to see what the advantage is.

Step 3. The preceding lines say social media controls other media and uses that control to broaden its reach. So 'this advantage' = reach.

Step 4. Now add what technology contributes: synthetic content precisely targeted at its audience. Reach + precise targeting = a wider sphere of influence and greater power to persuade. That is option (d).

Why the other three fall

- (a) Algorithms playing up politics is a separate point about Meta, and it describes what the platform does, not what technology enables it to achieve.

- (b) It is the alternative platforms that are reworking their engagement with social media, not social media reworking its interaction with competitors. The direction is reversed.
- (c) Nothing suggests algorithms cannot control content — the passage says algorithms will amplify politics, i.e. they do shape content.

Teaching point: *Train students to treat 'this', 'that', 'such' as a red flag to read the previous sentence. Roughly one RC question per passage is built on a pronoun reference.*

Shortcut

The question says "technologies", so go to the sentence containing them. Both halves of the correct option — reach and persuasion — sit in that one sentence.

Refers to the RC set above.

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49 VARC | READING COMPREHENSION - QUESTION TYPES | RC DETAIL AND FACT BASED QUESTIONS

6 /10

Social media has succeeded in

(A) **controlling other media that depend on it.**
(B) finding alternative means for fact-checking.
(C) becoming independent of other media.
(D) ignoring technology and artificial content.

ANSWER **(a) controlling other media that depend on it.**

SOLUTION

Line in the passage

> *Para 2, opening — social media now has enough control over all other forms of media to broaden its reach; alternative platforms are reworking their engagement with it.*

How to reach it, step by step

> **Step 1.** Read the stem as 'what has it actually achieved?' — so look for a line of achievement, not of risk or prediction.
>
> **Step 2.** Paragraph 2 opens with exactly that: it now holds enough control over every other form of media to widen its own reach.
>
> **Step 3.** The next line adds that other platforms are redesigning their engagement with it — that is the dependence half of option (a).
>
> **Step 4.** Control + dependence of other media = option (a), word for word in sense.

Why the other three fall

- (b) The passage says community review is not a significant improvement over fact-checking, i.e. no real alternative has been found.
- (c) The opposite of (a). If other media depend on social media, the two are interlocked, not independent. Also the passage says social media is the connective tissue — tissue connects, it does not stand apart.
- (d) Technology and synthetic content are presented as tools social media is embracing, not ignoring.

Answer: (a)

Shortcut

Watch the verb “succeeded”. Community notes are described as no improvement, so anything about fact-checking is out before you read further.

Refers to the RC set above.

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50 VARC READING COMPREHENSION - QUESTION TYPES RC MAIN IDEA AND CENTRAL THEME ●●●●●●○○○○ 6 /10

The writer’s conclusion is that the information available on social media is linked to

(A) **the policies of the governments in power.**
(B) the need for deregulation.
(C) the global legal systems’ support of free speech.
(D) the individual’s right to free speech.

ANSWER **(a) the policies of the governments in power.**

SOLUTION

Line in the passage

> *Para 1 opening read with para 3 — Meta recalibrates content as the political tide turns in Washington; lawmakers across jurisdictions have already put misinformation protections in place.*

How to reach it, step by step

Step 1. The stem says 'conclusion', so you need the thread that runs through the whole piece, not one stray line.

Step 2. Trace the thread. Opening: Meta changes its content policy because the political tide in Washington has turned. Middle: Meta's algorithm will now foreground politics because politics is the flavour of the season. Close: lawmakers across the world will not give social media a free run, and existing legal protections will be hard to dismantle.

Step 3. All three points are the same claim at different stages — what appears on social media rises and falls with who is in power and what they legislate.

Step 4. That is option (a). The link is to government policy, not to any principle.

Why the other three fall

- (b) Deregulation is what Meta wants, not what the writer concludes is needed. The writer ends by backing content moderation.
- (c) The passage shows legal systems constraining platforms over misinformation, not supporting unfettered free speech.
- (d) The writer explicitly separates the two in the last two lines: the adaptation mechanism is content moderation, not free speech.

Teaching point: *Conclusion questions reward the first and last paragraphs. Make students read the opening sentence and the closing two sentences together before touching the options.*

Shortcut

A “conclusion” question wants the thread running through the whole piece, not the last line. Politics frames both the opening and the closing paragraph.

Refers to the RC set above.

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51 VARC | READING COMPREHENSION - QUESTION TYPES | RC INFERENCE QUESTIONS ●●●●●●○○○○ 6 /10

The inherent downside associated with social media is that it

(A) **creates and spreads much innate and acquired prejudice.**

(B) does not address the problem of the digital divide.

(C) results in unremitting expansion of freedom of expression.

(D) reinforces existing objectivity among the users.

ANSWER **(a) creates and spreads much innate and acquired prejudice.**

SOLUTION

Line in the passage

> *Para 1, last sentence — that is the nature of the social media beast, designed to amplify bias.*

How to reach it, step by step

> **Step 1.** The key word is 'inherent' — built into the thing itself. Look for a line about what social media is by design, not about what it is currently doing.
>
> **Step 2.** Paragraph 1 closes with precisely that: by design, the medium amplifies bias.
>
> **Step 3.** Translate 'bias' into the option language. Bias = prejudice. 'Innate and acquired' covers both the prejudice a user already holds and the prejudice the feed builds in them. 'Amplify' covers both creating and spreading.
>
> **Step 4.** Option (a) is that sentence in other words. Select it.

Why the other three fall

- (b) The digital divide is never raised anywhere in the passage. Out of scope.
- (c) The passage shows freedom of expression being fought over and curbed by lawmakers, not expanding without a break.
- (d) A one-word trap. The passage says bias is amplified; this option says objectivity is reinforced — the exact opposite.

Teaching point: *Flag option (d) in class. It is a classic single-word reversal: swap 'bias' for 'objectivity' and students who are matching by sentence shape rather than meaning will fall for it.*

Shortcut

The word **inherent** is the key — look for “structural”, “designed”, “engineered”. The sentence about amplifying bias answers it, and its two halves map onto “innate” and “acquired”.

READING PASSAGE

Passage 1 – Social media, moderation and misinformation

Read the passage and answer the questions that follow.

> Meta is recalibrating content on its social media platforms as the political tide has turned in Washington, with Mark Zuckerberg announcing last week that his company plans to fire its US fact-checkers. Fact-checking evolved in response to allegations of misinformation and is being watered down in response to accusations of censorship. Social media does not have solutions to either. Community review — introduced by Elon Musk at X and planned by Zuckerberg for Facebook and Instagram — is not a significant improvement over fact-checking. Having Washington lean on foreign governments over content moderation does not benefit free speech. Yet, that is the nature of the social media beast, designed to amplify bias.
>
> Information and misinformation continue to jostle on social media at the mercy of user discretion. Social media now has enough control over all other forms of media to broaden its reach. It is the connective tissue for mass consumption of entertainment, and alternative platforms are reworking their engagement with social media. Technologies are shaping up to drive this advantage further through synthetic content targeted precisely at its intended audience. Meta's algorithm will now play up politics because it is the flavour of the season.

The Achilles' Heel of social media is informed choice which could turn against misinformation. Its move away from content moderation is driven by the need to be more inclusive, yet unfiltered content can push users away from social media towards legacy forms that have better moderation systems in place. Lawmakers across the world are unlikely to give social media a free run, even if Donald Trump is working on their case. Protections have already been put in place across jurisdictions over misinformation. These may be difficult to dismantle, even if the Republicans pull US-owned social media companies further to the right. Media consumption is, in essence, evidence-based judgement that mediums must adapt to. Content moderation, not free speech, is the adaptation mechanism. Musk and Zuckerberg are not exempt.

52 VARC READING COMPREHENSION - QUESTION TYPES RC INFERENCE QUESTIONS 7 /10

What is Baudrillard's position on consumption?

(A) **It is an irrational process.**
(B) It is a positive process.
(C) It is a utilitarian process.
(D) It is an egalitarian process.

ANSWER **(a) It is an irrational process.**

SOLUTION

Line in the passage

> *Whole passage — sham objects, waiting for happiness to alight, blaming the commodity instead of one's own expectations, and experiencing consumption as a miracle rather than as the result of production.*

How to reach it, step by step

> **Step 1.** Separate two things the passage carefully separates: commodities (the objects) and consumption (what consumers do with them and believe about them).
>
> **Step 2.** On commodities, line 1 says they are not inherently negative. On consumption, every description given is of belief without basis: sham objects set out like decoys, happiness awaited as though it will land on its own, the purchase blamed when the let-down comes, the whole thing felt as a miracle rather than as the output of work and production.
>
> **Step 3.** Belief held in the face of repeated disconfirmation, with the wrong thing blamed each time, is the definition of an irrational process.
>
> **Step 4.** The cargo-myth analogy seals it: he compares the modern consumer to people performing a ritual in the belief it will summon aeroplanes. That comparison only makes sense if his verdict on consumption is 'irrational'. Choose (a).

Why the other three fall

- (b) The planted trap. Line 1 says commodities are not inherently negative — and 'not negative' is not the same as 'positive'. It is also about commodities, not about consumption. Baudrillard's whole point is a critique of how people consume (see Q43), so 'positive' cannot be his verdict on the process.
- (c) Utilitarian means valued for usefulness. The passage says the opposite — consumers chase signs of happiness, not the use of the object.
- (d) Egalitarian is never suggested. If anything the cargo myth is built on inequality: aeroplanes came down for one group and not the other.

Teaching point: *This is the hardest question in the set and worth a full board discussion. Teach the 'scope swap' trap: the option borrows the subject of line 1 (commodities) but the question asks about something else (consumption), and it upgrades a negative-cancelling phrase ('not inherently negative') into a positive claim ('positive'). Two separate illegitimate moves in six words.*

Shortcut

Ask what the passage is *doing*: it compares shoppers to cargo-cult islanders and calls their dealings with goods unreasoning. Critical tone rules out "positive" and "egalitarian" instantly.

Refers to the RC set above.

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53 VARC | READING COMPREHENSION - QUESTION TYPES | RC DETAIL AND FACT BASED QUESTIONS

7 /10

Which of the following is an argument made by Baudrillard?

(A) Production and consumption are magical processes.

(B) Television commercials are at the heart of unhappiness experienced by consumers.

(C) Melanesian people coped with the inequality of colonialism by creating myths.

(D) **Consumers value signs more than the real.**

ANSWER **(d) Consumers value signs more than the real.**

SOLUTION

Line in the passage

> *Para 4 — Baudrillard argues that consumers have replaced 'real' happiness with 'signs' of happiness.*

How to reach it, step by step

> **Step 1.** The stem asks what Baudrillard argues, so you need his claim, not the Melanesians' belief and not the passage's background detail.
>
> **Step 2.** Find the sentence where the author uses the word 'argues'. It sits in paragraph 4: real happiness has been swapped for signs of happiness.
>
> **Step 3.** A swap of the real for the sign means the sign is now what people pursue — they value it more. That is option (d) exactly.
>
> **Step 4.** Cross-check against the earlier line about an array of sham objects, characteristic signs of happiness. Same claim, stated twice. Confirmed.

Why the other three fall

- (a) Near-miss. The passage says consumption is experienced as a miracle, i.e. it feels magical. Baudrillard does not argue that it is magical — the gap between feeling and being is his entire critique.
- (b) Television commercials are offered as one illustration of objects being presented as miracles. An example is not the heart of the argument; the heightened expectations of the consumer are.

(c) Colonialism and coping are the reader's own inference. The passage uses the cargo myth only as an analogy and never explains it as a coping strategy.

Shortcut

Three options overstate the passage (magical *production*, commercials as *the* cause, colonialism). The one that merely restates it — signs over the real — is the answer. In RC, the least dramatic option usually wins.

Refers to the RC set above.

---

54 VARC READING COMPREHENSION - QUESTION TYPES PURPOSE & STRUCTURE 7 /10

How does Baudrillard engage with the cargo myth?

(A) He uses it to describe the suffering of Indigenous people.

(B) He uses it to show that consumers should consume more serious objects.

(C) He uses it to show that consumption is a blessing.

(D) **He uses it as a metaphor to critique modern consumption.**

ANSWER **(d) He uses it as a metaphor to critique modern consumption.**

SOLUTION

Line in the passage

> *Para 2, last sentence — the cargo myth holds an important analogy for the ways in which consumers engage with objects of consumption.*

How to reach it, step by step

Step 1. The stem asks about use, not about content. So skip the retelling of the myth in paragraphs 1 and 2 and find the line where the author states its purpose.

Step 2. That line closes paragraph 2: the myth is an analogy for how consumers relate to objects of consumption.

Step 3. 'Analogy' in the passage and 'metaphor' in the option are being used in the same sense — a comparison carried over to a second subject.

Step 4. Then ask what the comparison achieves. It likens a modern consumer to someone waiting for cargo through ritual. That is unflattering, therefore a critique. Option (d) captures both halves: metaphor + critique.

Why the other three fall

- (a) Melanesian suffering is never described. They are described as observing, concluding and imitating, not suffering.
- (b) 'More serious objects' is nowhere in the passage. Baudrillard's quarrel is with expectations, not with the seriousness of the goods.

(c) A lifted phrase used wrongly. 'Blessings of consumption' appears in the passage, but inside a line saying those blessings are merely experienced as a miracle — the passage is reporting a feeling, not endorsing it.

Shortcut

A "how does the author use X" question is about structure, not content. The cargo myth is flagged as an analogy in paragraph 1 and applied in paragraph 3, so it is a device for critique.

Refers to the RC set above.

✏ Para jumbles and para summary sets, timed or untimed, with full explanations. RC Practice

55 VARC READING COMPREHENSION - QUESTION TYPES

RC DETAIL AND FACT BASED QUESTIONS

7 /10

What is Baudrillard's position on total happiness?

(A) It results from ethical consumption.

(B) **It is perpetually delayed.**

(C) It prioritises production overconsumption.

(D) It comes with patience and waiting.

ANSWER **(b) It is perpetually delayed.**

SOLUTION

Line in the passage

> *End of para 4 — this results in the endless deferment of the arrival of total happiness.*

How to reach it, step by step

> **Step 1.** The phrase 'total happiness' appears exactly once in the passage. Go straight there instead of reasoning from memory.
>
> **Step 2.** It appears in a sentence saying the arrival of total happiness is endlessly deferred.
>
> **Step 3.** 'Endless deferment' and 'perpetually delayed' are the same statement in different vocabulary. Deferred = pushed to a later date; endless = it never stops being pushed.
>
> **Step 4.** Trace the mechanism in the previous lines so students see why it never arrives: the buyer is let down, decides the next version is the one that will satisfy, buys that, is let down again. The loop has no exit. Option (b).

Why the other three fall

- (a) Ethical consumption is never mentioned anywhere in the passage.
- (c) It confuses this question with Q45. Production versus consumption belongs to the final paragraph's point about commodities being cut off from how they are made.

(d) The direct reversal trap. Patience and waiting are exactly what fails — the consumer waits for happiness to alight and it does not.

Shortcut

Pick the option with the strongest textual anchor: "endless deferment" and "a date that never comes" both point at perpetual delay.

Refers to the RC set above.

56 VARC READING COMPREHENSION - QUESTION TYPES RC INFERENCE QUESTIONS 7 /10

How can consumption be made more satisfying?

(A) By rejecting colonialism and all other forms of economic oppression.

(B) By banning television commercials that promise real happiness.

(C) By recognising that commodities produce miraculous change.

(D) **By understanding the connection between production and consumption.**

ANSWER **(d) By understanding the connection between production and consumption.**

SOLUTION

Line in the passage

> *Final two sentences — commodities appear distanced from the social processes which lead to their production, so objects of consumption are divorced from the reality which produces them.*

How to reach it, step by step

> **Step 1.** Note that the stem asks for a remedy, but the passage never states one outright. So you must find the diagnosis and reverse it.
>
> **Step 2.** The diagnosis is in the closing lines: consumption is experienced as a miracle rather than as the result of work and a production process, so goods end up divorced from the reality that produces them.
>
> **Step 3.** Reverse it. If the fault is that the link to production is hidden, the repair is seeing that link — stop treating the object as something that fell from the sky and recognise it as something made by labour.
>
> **Step 4.** That reversal is option (d), the only option that names production at all.

Why the other three fall

- (a) Too wide and not in the text. Colonialism and economic oppression are the reader's extrapolation from the Melanesian example.
- (b) A banning remedy is never proposed, and the passage's complaint is that the commercials promise a miracle, not real happiness.
- (c) The reversal trap. Believing commodities work miracles is the disease the passage describes, so it cannot be the cure.
- **Teaching point:** *A useful rule to give the batch: when the stem asks 'how can X be improved' and the passage offers no solution sentence, locate the cause and flip it. The flipped cause is the answer roughly every time.*

Answer: (d)

Shortcut

The final sentence states the remedy outright — reconnect the object with the labour behind it. That is production and consumption, restated.

Refers to the RC set above.

57 VARC READING COMPREHENSION - QUESTION TYPES CAUSE & EXPLANATION 7 /10

Why are consumers unhappy with commodities that they have just bought?

(A) Because television commercials do not create enough hype about commodities.

(B) Because they focus on improved functionality of commodities.

(C) **Because they have exaggerated expectations of commodities.**

(D) Because the Law of Diminishing Marginal Commodities comes into play.

ANSWER **(c) Because they have exaggerated expectations of commodities.**

SOLUTION

Line in the passage

> *Para 3, last sentence — consumers should ideally be blaming their heightened expectations for their lack of happiness, but they blame the commodity instead.*

How to reach it, step by step

Step 1. The stem asks for a cause, so find the sentence in the passage that assigns blame.

Step 2. It is the closing line of paragraph 3, and it draws a sharp line between the real cause (heightened expectations) and the misplaced one (the commodity).

Step 3. 'Heightened expectations' and 'exaggerated expectations' are the same idea. Option (c).

Step 4. Confirm with the following lines: the buyer decides the version purchased was inferior and the next one would have delivered. That reaction only makes sense if the expectation was pitched too high to begin with.

Why the other three fall

- (a) The passage shows commercials creating too much hype, not too little.
- (b) Improved functionality is never discussed. The chase is for the sign of happiness, not for better features.
- (d) There is no such law. The Law of Diminishing Marginal Utility exists; 'Diminishing Marginal Commodities' is invented, and nothing from economics is applied in the passage.

Teaching point: *Option (d) is an authority trap — an official-sounding term that students accept because it looks technical. Tell them: if a named law or theory appears in an option but never appears in the passage, it is decoration, not evidence.*

Shortcut

The passage explicitly contrasts what consumers *should* blame (their expectations) with what they *do* blame (the product). The question asks for the real cause, so take the first.

58 VARC VOCABULARY COMMONLY CONFUSED WORDS ●●●●●○○○○○ 5 /10

The labourers who were fired broke into the office building and destroyed some of the machinery. Rather than finding a solution to their problems, they _____

(A) extenuated the circumstance
(B) **exacerbated the situation**
(C) exaggerated their hardships
(D) extended their troubles

ANSWER **(b) exacerbated the situation**

SOLUTION

What the sentence needs. "Rather than finding a solution" sets up a contrast: their violent action made things **worse**.

The word. *Exacerbate* = to make a bad situation worse. ✓

Why the others fail:

- **extended their troubles** — *extend* means to prolong in time. Breaking in and destroying machinery does not merely lengthen the problem; it intensifies it. Weaker and less precise.
- **exaggerated their hardships** — *exaggerate* means to overstate in description. They acted; they did not describe.
- **extenuated the circumstance** — *extenuate* means to make an offence seem **less** serious (as in "extenuating circumstances"). This is the exact opposite of the required sense.

Answer: (b) — exacerbated the situation

Shortcut

"Rather than finding a solution" signals *made worse*. Only one word means that; *extenuate* means the opposite, and is the trap for anyone matching on the "ex-" prefix.

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59 VARC VOCABULARY IDIOMS AND PHRASES ●●●●○○○○○○ 4 /10

We hope that the government's new policies will _____ a period of economic growth.

(A) set in
(B) **usher in**
(C) turn up
(D) set forth

ANSWER **(b) usher in**

SOLUTION

What the sentence needs. A verb meaning **to bring about or inaugurate** something new — the policies will cause a period of growth to begin.

The phrasal verb. *Usher in* = to mark or cause the start of a new period. It is transitive, so it takes "a period of economic growth" as its object. ✓

Why the others fail:

- **set in** — means to begin and persist, but it is *intransitive* and used of unpleasant things ("the rot set in", "winter set in"). It cannot take an object, so "set in a period" is ungrammatical.

- **turn up** — to appear unexpectedly, or to increase volume. Wrong sense.
- **set forth** — to set out on a journey, or to state something formally ("set forth the terms"). Does not mean to begin a period.

Answer: (b) — usher in

Shortcut

Set in cannot take an object, so it is out on grammar alone before you weigh meaning. Only *usher in* is transitive and means to begin a period.

---

60 VARC VOCABULARY COMMONLY CONFUSED WORDS 5 /10

Everyone wondered how the travel vlogger could go around the world all through the year and _____.

(A) manage his itinerary life style
(B) **manage his itinerant life style**
(C) manage his iterative life style
(D) manage his itinerary in his life style

ANSWER **(b) manage his itinerant life style**

SOLUTION

What the sentence needs. An adjective describing a lifestyle of **constant travelling**.

The word set.

Word	Part of speech	Meaning
itinerant	adjective	travelling from place to place ✓
itinerary	**noun**	a planned route or schedule of a journey
iterative	adjective	involving repetition of a process

Why the others fail:

- *itinerary life style* — *itinerary* is a noun and cannot modify "life style" this way.
- *iterative life style* — means repetitive, which describes routine, the opposite of what is meant.
- *manage his itinerary in his life style* — grammatically clumsy and changes the meaning to managing a schedule.

Answer: (b) — manage his itinerant life style

Shortcut

Decide the part of speech first: the blank modifies "life style", so it must be an adjective. *Itinerary* is a noun — gone. That leaves *itinerant* against *iterative*, and only one means travelling.

61 VARC VOCABULARY IDIOMS AND PHRASES 3 /10

Deepak is an unpleasant person, but we all _____ because his sister is a close friend of ours.

(A) put him down
(B) **put up with him**
(C) put him aside
(D) put along with him

ANSWER (b) put up with him

SOLUTION

What the sentence needs. The "but" signals a contrast: he is unpleasant, *yet* we keep company with him anyway. We need a phrase meaning **to tolerate something unpleasant**.

The phrasal verb. *Put up with* = endure or tolerate without complaining. It fits exactly.

Why the others fail:

Option	Meaning	Problem
put him down	to belittle or criticise	reverses the sense — we would be insulting him
put him aside	to set something apart for later	used of objects or issues, not of tolerating people
put along with him	—	not an English idiom at all; a blend of *put up with* and *get along with*

Answer: (b) — put up with him

Shortcut

Phrasal-verb question: the contrast word "but" tells you he is tolerated, not insulted. *Put up with* is the only standard idiom of the four — *put along with* does not exist.

62 VARC VOCABULARY IDIOMS AND PHRASES 4 /10

Without a doubt, the widespread use of renewable energy is a key solution to climate change. However, it is not a _____, as efforts in conservation are equally crucial.

(A) silver lining
(B) red herring
(C) **silver bullet**
(D) dead ringer

ANSWER (c) silver bullet

SOLUTION

What the sentence needs. The "However... as efforts in conservation are equally crucial" tells us renewables are *not the single complete solution*. We need an idiom meaning **a simple, complete cure-all**.

The idiom. *Silver bullet* = a single, simple solution that solves a complex problem entirely. Saying renewables are "not a silver bullet" means they alone will not fix climate change. ✓

Why the others fail:

Idiom	Meaning	Why it fails
dead ringer	an exact look-alike	about resemblance, not solutions
silver lining	a consolation within a misfortune	the trap option — same word "silver", wrong idiom
red herring	a deliberate distraction from the real issue	would imply renewables are a diversion, contradicting "a key solution"

Answer: (c) — silver bullet

Shortcut

"However... equally crucial" means *not the complete answer*. **Silver lining** is the decoy sharing a word; the idiom for a single total cure is **silver bullet**.

---

63 VARC VOCABULARY COMMONLY CONFUSED WORDS ●●●●●○○○○○ 5 /10

When she inherited some jewellery from a distant relative, she had no idea of its worth and decided _____.

(A) to have it apprised
(B) to get an approval
(C) **to have it appraised**
(D) to get it appreciated

ANSWER **(c) to have it appraised**

SOLUTION

What the sentence needs. She does not know what the jewellery is **worth**, so she decides to have its value professionally assessed.

The word set. This question turns on four near-identical words:

Word	Meaning
appraise	to assess the value of something ✓
apprise	to inform someone ("apprise her of the facts")
appreciate	to value or enjoy; also to rise in value
approval	consent or permission

Why the others fail:

- *apprised* means informed — you apprise a **person**, not an object.
- *appreciated* in the "rise in value" sense is something jewellery does by itself; you cannot "get it appreciated" on demand.
- *approval* is about permission, irrelevant to worth.

Note also the grammar: *have something appraised* is the correct causative construction.

Answer: (c) — to have it appraised

Shortcut

She doesn't know its **worth**, so it is being valued. *Apprise* takes a person, not an object — that one word choice settles it.

Which colleges, what cut-offs, which deadlines? The UG guide maps the whole route. Open the guide

64 VARC VERBAL ABILITY FILL IN THE BLANKS 4 /10

There are so many instances of one or more deer crossing the road, or just standing in the middle of the road, or else _____; it is like the deer cannot hear the noise of the engines or see the headlights.

(A) staggering with the road
(B) **bounding across the road**
(C) foraging beneath the road
(D) jumping under the road

ANSWER **(b) bounding across the road**

SOLUTION

What the sentence needs. The blank is the third item in a list of things deer do **on or around the road**: *crossing it*, *standing in the middle of it*, or else ____. It must be a plausible deer movement, and the preposition must make physical sense.

The answer. *Bounding across the road* — to bound is to move in leaps, which is exactly how deer travel, and *across* matches a road. ✓

Why the others fail:

- **jumping under the road** — nothing can jump *under* a road; the preposition is impossible.
- **foraging beneath the road** — foraging means searching for food, and *beneath* a road is not a place deer go.
- **staggering with the road** — *with* is the wrong preposition, and staggering (walking unsteadily) does not fit healthy deer.

Answer: (b) — bounding across the road

Shortcut

Check the preposition before the verb. "Under the road" and "beneath the road" are physically impossible for deer, which removes half the options at a glance.

65 VARC GRAMMAR CONDITIONAL SENTENCE 6 /10

Choose the option that best improves the underlined portion of the sentence.

If the President knew that his allies would let him down so suddenly, he would have handled them with the greatest care.

(A) If the President could know beforehand that his allies would let him down

(B) **Had the President known that his allies would let him down**

(C) Had the President knowledge that his allies would let him down

(D) If the President knew that his allies can let him down

ANSWER **(b) Had the President known that his allies would let him down**

SOLUTION

Spot the mismatch. The main clause is *"he **would have handled**"* — a *would have + past participle* form. That is the signature of the **third conditional**, used for unreal situations in the **past**.

The rule.

$$\text{If} + \underbrace{\text{past perfect}}_{\text{had known}}, \quad \underbrace{\text{would have}}_{\text{would have handled}} + \text{past participle}$$

The original uses *knew* (simple past), which belongs to the **second** conditional (unreal present). Mixing the two is the error.

The inverted form. *Had the President known...* is a standard, slightly formal inversion of *If the President had known...* — both are correct, and only the inverted version appears among the options.

Why the others fail:

- **option (c)** — "Had the President knowledge" uses *have* as a main verb meaning *possess*, which breaks the conditional structure.
- **option (a)** — "could know" is not a past perfect form.
- **option (d)** — keeps *knew*, and adds *can* (present) alongside a past-tense main clause.

Answer: (b)

Shortcut

Spot "would have handled" in the main clause — that is the third conditional, which demands a past perfect. "Had the President known" is just the inverted form of "If the President had known".

66 VARC GRAMMAR SENTENCE IMPROVEMENT 5 /10

Choose the option that best improves the underlined portion of the sentence.

Among scientists, the discovery of the double helix structure of DNA and the genetic code it incorporates is widely **regarded to be one of the most significant scientific discovery** of the twentieth century.

(A) **regarded as one of the most significant scientific discoveries**

(B) regarded like one of the most significant scientific discovery

(C) regarded being one of the most significant scientific discoveries

(D) regarded for being one of the most significant scientific discoveries

ANSWER **(a) regarded as one of the most significant scientific discoveries**

SOLUTION

Two separate errors must both be fixed.

Error 1 — the idiom. The correct construction is *regard* ***as***, never *regard to be*, *regard for being* or *regard like*.

Error 2 — the plural. The phrase *one of the most significant…* must be followed by a **plural** noun, because you are picking one item out of a group:

one of the most significant scientific **discoveries**

Testing each option against both rules:

Option	*regard as*?	plural noun?
1 — regarded for being	×	✓
2 — regarded as … discoveries	✓	✓
3 — regarded like … discovery	×	×
4 — regarded being	×	✓

Only option 2 satisfies both.

Answer: (a)

Shortcut

Two errors to fix at once: the idiom is *regard* ***as*** (never *to be*), and "one of the most…" must take a **plural** noun. Only one option fixes both.

67 VARC GRAMMAR SENTENCE IMPROVEMENT 4 /10

Choose the option that best improves the underlined portion of the sentence.

Thank goodness, the damage to the car **was neglectful**.

(A) was neglectable
(B) **was negligible**
(C) was neglecting
(D) was negligent

ANSWER **(b) was negligible**

SOLUTION

What the sentence needs. "Thank goodness" signals relief, so the damage must have been **very small**.

The word set — all four look alike but mean different things:

Word	Meaning
negligible	so small as to be not worth considering ✓
negligent	careless; failing in one's duty
neglectful	same as negligent — careless
neglectable	not a standard English word

Why the original is wrong. *Neglectful* describes a **person** who fails to take care. Damage cannot be neglectful.

Why the others fail: *negligent* has the same problem as the original; *neglecting* is a participle that needs an object; *neglectable* is not standard usage.

Answer: (b) — was negligible

Shortcut

Damage cannot be careless. *Neglectful* and *negligent* both describe people, so both go immediately, leaving only *negligible*.

---

68 VARC GRAMMAR SENTENCE IMPROVEMENT 6 /10

Choose the option that best improves the underlined portion of the sentence.

When I had to leave town due to office work, I **had my brother to give food to my dog** twice a day.

(A) **had my brother feed my dog**
(B) had my brother giving food to my dog
(C) had my brother who fed my dog
(D) had my brother to feed my dog

ANSWER **(a) had my brother feed my dog**

SOLUTION

The error is in the causative construction. When *have* means "arrange for someone to do something", the pattern is:

$$\text{have} + \text{person} + \text{bare infinitive}$$

So: *have my brother **feed*** — no *to*, no *-ing*.

Compare the standard examples: *I had the mechanic **repair** the car*, *She had her assistant **book** the tickets*.

Why the others fail:

- **option (b)** — *giving* is a present participle; the causative takes a bare infinitive. (*Have someone doing something* exists but means keeping them continuously occupied, which is not the sense here.)
- **option (c)** — *had my brother who fed my dog* turns it into a relative clause, changing the meaning to possessing a brother.
- **option (d)** — keeps the incorrect *to*. This is the trap option: it fixes the wordy "give food to" but leaves the actual grammatical error in place.

option (a) fixes both the *to* and the wordiness.

Answer: (a) — had my brother feed my dog

Shortcut

Causative *have* takes a **bare infinitive**: have someone **feed**, not *to feed*. The trap option tidies the wording but leaves the "to" in place.

---

69 VARC GRAMMAR SENTENCE IMPROVEMENT ●●●●●○○○○○ 5 /10

Choose the option that best improves the underlined portion of the sentence.

Although the new policy aims to **increase efficiency, reducing costs, and enhancing employee satisfaction**, some employees feel that the changes are too abrupt and poorly communicated.

(A) **increase efficiency, reduce costs, and enhance employee satisfaction**

(B) increasing efficiency, reducing of costs, and enhancing of employee satisfaction

(C) increase efficiency, reducing the costs and enhanced employee satisfaction

(D) increase the efficiency, reduce the costs and enhancing employee satisfaction

ANSWER **(a) increase efficiency, reduce costs, and enhance employee satisfaction**

SOLUTION

The error is faulty parallelism. Items in a list joined by *and* must take the same grammatical form.

The sentence runs *"aims to..."*, so every item must be a **bare infinitive** following that single *to*:

aims to increase ✓ efficiency, reduce ✓ costs, and enhance ✓ employee satisfaction

The original mixes an infinitive (*increase*) with two gerunds (*reducing*, *enhancing*).

Testing the options:

- **option (c)** — increase / reducing / enhanced: three different forms. ×
- **option (b)** — all gerunds, which is internally consistent but cannot follow *aims to*; "reducing of costs" is also wrong. ×
- **option (d)** — increase / reduce / **enhancing**: the third item breaks the pattern. ×
- **option (a)** — increase / reduce / enhance: all bare infinitives. ✓

Answer: (a)

Shortcut

Parallelism: everything after "aims to" must be a bare infinitive. Read just the three verb forms and pick the option where all three match.

---

70 VARC VERBAL ABILITY SENTENCE COMPLETION AND INSERTION ●●●●●○○○○○ 5 /10

Choose the sentence that best fills the blank in the passage.

A report published in Lancet Diabetes and Endocrinology has called for an overhaul of our understanding of obesity. An over-reliance on using Body Mass Index [BMI] as a metric has the peculiar effect of leading to both underdiagnosis and overdiagnosis of the condition. _____. BMI does not give accurate information about how fat is distributed in an individual's body. It frequently fails to capture the true state of health of an individual. A person's BMI may indicate they are "obese", but their organs and bodily functions may be absolutely normal. Every individual is a unique constellation — not only of genes and other biological variables, but also socio-economic conditions and habits.

(A) BMI reading can help the doctor to accurately prescribe the appropriate dosage to reduce fat.

(B) **This is because BMI does not provide a reliable picture of health, nor any direct measure of fat.**

(C) Further, much of the information on diabetes, obesity or BMI available on social media is misleading.

(D) Obesity is the end result of multiple factors, and BMI can pinpoint the cause of the problem.

ANSWER **(b) This is because BMI does not provide a reliable picture of health, nor any direct measure of fat.**

SOLUTION

Work out what the blank has to do. The sentence before it states a *problem* (BMI causes both under- and overdiagnosis). The sentences after it *elaborate*: BMI says nothing about fat distribution, and it misses true health status.

So the blank must **explain why** the problem occurs, and introduce the two threads that follow.

Why option 4 works. *"This is because BMI does not provide a reliable picture of health, nor any direct measure of fat."*

- *"This is because"* explicitly answers the preceding sentence ✓
- *"no direct measure of fat"* → picked up by "how fat is distributed" ✓
- *"reliable picture of health"* → picked up by "fails to capture the true state of health" ✓

The two halves of the inserted sentence are expanded, in order, by the two sentences that follow. That is a decisive structural match.

Why the others fail:

- **option (d)** says BMI *can* pinpoint the cause — directly contradicted by everything that follows.
- **option (c)** introduces social media, a topic that appears nowhere else in the paragraph.
- **option (a)** praises BMI's clinical usefulness, again contradicting the criticism around it.

Answer: (b)

Shortcut

Insertion questions are solved by the sentences *around* the blank. The two clauses of the right answer — no reliable picture of health, no direct measure of fat — are expanded, in order, by the next two sentences.

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71 VARC VERBAL ABILITY SENTENCE COMPLETION AND INSERTION ●●●●●●○○○○ 6 /10

Choose the sentence that best fills the blank in the passage.

As globalization held sway over the world, communities, which used to live in relative isolation, sought access to the wider world, and in the process, they parted with their own language and adopted a new lingua franca. The loss of language, however, does not merely mean the loss of a mode of communication or the loss of a few thousand words. _____. So, when a language dies, a way of thinking dies with it.

A **Languages exist not only for the purposes of practical communication; they convey a linguistic community's entire mindset and its culture**

B A potentially endangered language can sometimes appear to be thriving, or on the other hand, it can show signs of declining

C A certain school of thought regrets the demise of local languages but in recent times revival movements have emerged across the world, especially in India

D Since evolution and change in languages is a part of history, most of the languages spoken today would be scarcely recognizable from what they were a few thousand or maybe even a few hundred years ago

ANSWER **(a) Languages exist not only for the purposes of practical communication; they convey a linguistic community's entire mindset and its culture**

SOLUTION

The blank is tightly bracketed — use both neighbours.

Before: losing a language is **not merely** losing a means of communication or some vocabulary. *After:* "***So**, when a language dies, a way of thinking dies with it."*

The "not merely… **so**…" frame demands a sentence that supplies the *something more* — and that something must be about **thought and culture**, because that is what the conclusion draws on.

Why option 3 works. *"Languages exist not only for the purposes of practical communication; they convey a linguistic community's entire mindset and its culture."*

- *"not only for practical communication"* mirrors the preceding "not merely a mode of communication" ✓
- *"entire mindset"* is exactly what licenses the following "a way of thinking dies with it" ✓

Why the others fail: options 1, 2 and 4 are all *about* languages but none mentions thought or culture, so none makes the word "So" in the next sentence earn its place. option (c) adds revival movements, option 2 adds diagnosis of endangerment, option 4 adds historical change — all irrelevant to the conclusion drawn.

Answer: (a)

Shortcut

Look at the word after the blank: "**So**, when a language dies, a way of thinking dies with it." Only an option about thought or culture earns that "So".

---

72 VARC VERBAL ABILITY SENTENCE COMPLETION AND INSERTION 5 /10

Choose the sentence that best completes the passage.

An island in Japan boasts of numerous dairy farms that own nearly one million cows, and supplies 70% of the milk sold in the country. These dairy farms have now begun to use cow manure to produce hydrogen. The methane from cow manure mingles with steam in a high-temperature environment to produce hydrogen, which is used to electrify the local zoo. _____.

(A) It is a case study of a certain animal that is useful in providing energy for several other animals

(B) The Indian government too, should replicate this, and use such technology to produce hydrogen

(C) **This is an exemplary way of creating a sustainable source of energy using innovative technology**

(D) This shows how Japan has always used technology to help animals

ANSWER **(c) This is an exemplary way of creating a sustainable source of energy using innovative technology**

SOLUTION

What a closing sentence must do. It should generalise from the specific example just described — here, turning a waste product into electricity — without adding new topics.

Why option 3 works. *"This is an exemplary way of creating a sustainable source of energy using innovative technology."* It names precisely what the example illustrates: waste → energy (sustainable), via a described chemical process (innovative technology). It closes the paragraph on the right level of generality.

Why the others fail:

- **option (b)** introduces India and a policy recommendation. The passage is purely descriptive; a sudden prescription for a different country is out of scope.
- **option (a)** is the clever distractor — it is factually derivable (cows power a zoo) but trivialises the point into an animals-helping-animals curiosity, missing the energy and sustainability theme entirely.
- **option (d)** claims Japan "has **always**" done this. An unsupported sweeping generalisation from a single current example, and "to help animals" misstates the purpose.

Answer: (c)

Shortcut

A closing sentence should generalise the example, not jump country or add a recommendation. Anything introducing India or a policy is out of scope.

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73 VARC VERBAL ABILITY SENTENCE COMPLETION AND INSERTION 5 /10

Choose the sentence that best fills the blank in the passage.

On the first day of January 2025, the Indian Meteorological Department [IMD] announced that 2024 was the hottest year on record. A study by the Council on Energy, Environment and Water shows that nearly eight out of ten Indians live in districts that are at risk of either a flood, a cyclone, or a drought. Nearly twenty-three States in India are heatwave-prone. _____. In the summer of 2024, India recorded more than 44,000 cases of heatstroke and over 300 heat-related mortalities, as per the bulletin of the Ministry of Health and Family Welfare. Water reservoirs and the energy demand that keeps India powered are impacted too.

(A) However, the people of these districts are given sufficient compensation for loss of life and property

(B) **The increasing heat stress remains a major challenge, affecting public health and economic productivity**

(C) According to the Council, more than 20% of the population is not affected by climate change

(D) The record-breaking heat of the summer of 2024 resulted in an unpredictable and delayed monsoon

ANSWER **(b) The increasing heat stress remains a major challenge, affecting public health and economic productivity**

SOLUTION

Identify the structure. The blank sits between a statement about heatwave-prone States and two sentences of evidence: heatstroke cases and deaths (**public health**), then reservoirs and energy demand (**economic productivity**).

The blank must be a **topic sentence** that both halves of the evidence then support.

Why option 4 works. *"The increasing heat stress remains a major challenge, affecting public health and economic productivity."*

- *public health* → the 44,000 heatstroke cases and 300 deaths ✓
- *economic productivity* → water reservoirs and energy demand ✓

The two named consequences are taken up, in order, by the two sentences that follow.

Why the others fail:

- **option (c)** twists the statistic. "Eight out of ten at risk" does not mean the other 20% are unaffected by climate change — and this adds nothing the following sentences develop.
- **option (d)** introduces the monsoon, which is never mentioned again.
- **option (a)** says people are adequately compensated — a contradiction of the paragraph's alarmed tone, and "However" signals a contrast the passage does not make.

Answer: (b)

Shortcut

The blank is a topic sentence: the two things it names must be what the following two sentences describe — here, health (heatstroke) and the economy (reservoirs, power).

74 VARC VERBAL ABILITY CLOZE TEST 7 /10

The notion of personhood is _____ on something more than a particular type of genetic material within human beings: it arises only with the larger-scale structural _____ of that material, which permits capacities like _____, thought, and moral agency.

(A) **premised; organisation; consciousness**
(B) interdependent; division; differentiation
(C) built; distribution; calibration
(D) dependent; disorganisation; deconstruction

ANSWER **(a) premised; organisation; consciousness**

SOLUTION

Blank 3 is the easiest — start there. The list reads *"___, thought, and moral agency"*. These are all high-level mental capacities, so the blank must be one too. **Consciousness** fits perfectly; *deconstruction*, *differentiation* and *calibration* are processes, not capacities, and sit oddly beside "moral agency".

Blank 1 — the idiom is **premised on** (= based on). *Dependent on* is also idiomatic but weaker; *built on* would need "upon" to read naturally here; *interdependent on* is not standard English.

Blank 2 — the phrase is *"larger-scale structural ___ of that material"*, and the sentence says personhood **arises** from it. **Organisation** is right: structure emerging from arrangement.

Note that option 1's *disorganisation* reverses the sense entirely — personhood does not arise from material falling apart.

Why the others fail: each breaks down at blank 3, and options 1 and 2 also fail at blank 2.

Answer: (a) — premised; organisation; consciousness

Shortcut

Find the blank with the tightest constraint and eliminate on that one alone. Here it is the third: only *consciousness* belongs in a list with "thought and moral agency".

---

75 VARC VERBAL ABILITY CLOZE TEST 4 /10

While Curcumin, which is an _____ found in turmeric helps to reduce _____, extremely high doses of it can _____ headache and nausea.

(A) alkali; infection; promote
(B) **ingredient; inflammation; induce**
(C) alchemy; injury; cause
(D) enzyme; abrasion; infuse

ANSWER **(b) ingredient; inflammation; induce**

SOLUTION

Blank by blank.

Blank 1 — curcumin is a *component* of turmeric. **Ingredient** works. (*Enzyme* is a specific protein type — curcumin is not one; *alkali* is a chemical class that does not apply; *alchemy* is a medieval practice, not a substance at all.)

Blank 2 — the well-known property of curcumin is reducing **inflammation**. ✓

Blank 3 — high doses **induce** headache and nausea. *Induce* = bring about, and is the standard medical collocation for causing a symptom.

Why the others fail:

- **option (d)** — "infuse headache" is not English.
- **option (a)** — "alkali" is simply wrong chemistry, and *promote* headache is odd phrasing.
- **option (c)** — *cause* would be acceptable in blank 3, but **alchemy** in blank 1 is decisive: curcumin cannot be an alchemy. A single impossible word rules out the whole option.

This is the key cloze technique: one clearly impossible word eliminates an option no matter how well its other blanks fit.

Answer: (b) — ingredient; inflammation; induce

Shortcut

One impossible word kills a whole option. Curcumin cannot be an "alchemy" — strike that option entirely, however well its other blanks read.

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76 VARC VERBAL ABILITY CLOZE TEST ●●●○○○○○○○ 3 /10

Art can be _____ because it encourages individuals to express their emotions through a creative outlet, allowing them to process complex feelings, reduce stress, and _____ self-awareness.

(A) therapeutic; enhance
(B) acceptable; disturb
(C) avoidable; mitigate
(D) pleasing; decrease

ANSWER (a) therapeutic; enhance

SOLUTION

Read the logic before the vocabulary. The sentence lists three benefits: *process complex feelings*, *reduce stress*, and ___ *self-awareness*. All three are positive outcomes, so the second blank must be a **positive** verb, and the first blank must name the quality that produces healing.

Blank 1 — "therapeutic" = having a healing effect. Exactly matches "process complex feelings, reduce stress". ✓

Blank 2 — "enhance" = increase or improve. Self-awareness going up is the natural third benefit. ✓

Why the others fail:

Option	Problem
pleasing; **decrease**	decreasing self-awareness is not a benefit
acceptable; **disturb**	"acceptable" is far too weak, and disturbing self-awareness is negative
avoidable; mitigate	"avoidable" is nonsensical here, and you mitigate problems, not self-awareness

Note how the second blank alone eliminates three options — always scan a cloze for the blank with the clearest logical constraint.

Answer: (a) — therapeutic; enhance

Shortcut

Check polarity. The sentence lists benefits, so the second blank must be positive; *decrease* and *disturb* go at once.

---

77 VARC VERBAL ABILITY CLOZE TEST ●●●●●○○○○○ 5 /10

Psychologists urge users to remember that social media rarely reflects the full complexity of real life. Influencers often _____ a carefully curated online persona, which can _____ unrealistic standards and occasionally _____ negative self-comparisons amongst their followers.

(A) endorse; foster; provoke
(B) advocate; perpetuate; stimulate
(C) **maintain; generate; trigger**
(D) profess; inspire; release

ANSWER **(c) maintain; generate; trigger**

SOLUTION

Blank 1 is decisive. What does an influencer do with *a persona*? You **maintain** a persona — keep it up over time. You do not *endorse*, *advocate* or *profess* a persona:

- *endorse* = publicly approve something external (a product, a candidate)
- *advocate* = argue in favour of a cause
- *profess* = claim or declare openly, often insincerely, and it takes beliefs or feelings, not personas

Blank 2 — the persona **generates** unrealistic standards. (*Foster* and *perpetuate* are defensible, but *perpetuate* implies the standards already existed, and *inspire* in option 4 is positively loaded, which clashes with "unrealistic".)

Blank 3 — **trigger** negative self-comparisons. Standard psychological collocation. (*Release* in option 4 is wrong — you do not release a comparison.)

option (c) is the only one natural in all three slots, and the only one whose first blank collocates correctly with "persona".

Answer: (c) — maintain; generate; trigger

Shortcut

Test the first blank for collocation: you **maintain** a persona. You do not endorse, advocate or profess one. That single word decides it.

---

78 VARC VERBAL ABILITY CLOZE TEST 5 /10

Since chronic stress can _____ the immune system, making individuals more susceptible to illness and _____ their overall well-being, healthcare practitioners often recommend mindfulness practices and proper sleep to_____ these negative effects.

(A) undermine; elevate; impede
(B) **compromise; impair; counter**
(C) paralyse; improve; diminish
(D) endanger; preserve; decrease

ANSWER **(b) compromise; impair; counter**

SOLUTION

Track the polarity of each blank.

Blank 1 — what stress does to the immune system: something **negative**. *Compromise* (= weaken the effectiveness of) is the precise medical collocation. ✓

Blank 2 — joined by *and* to "making individuals more susceptible to illness", so it must also be **negative**. *Impair* their well-being. ✓

Blank 3 — what mindfulness and sleep do to "these negative effects": they must **oppose** them. *Counter* = act against. ✓

Why the others fail — check the polarity of blank 2:

Option	Blank 2	Problem
1	**elevate** well-being	positive — contradicts the sentence
3	**improve** well-being	positive — same error
4	**preserve** well-being	positive — same error

All three break at the same point. option (a) also fails at blank 3, since you *impede* a process, not an effect.

Answer: (b) — compromise; impair; counter

Shortcut

The second blank must be **negative** — it is joined by "and" to "more susceptible to illness". Three options put a positive word there and can be struck without reading the rest.

79 VARC VERBAL ABILITY CLOZE TEST 4 /10

Astronauts who stayed for an _____ period of time at the International Space Station displayed a remarkable level of _____ endurance and mental _____.

(A) extensive; dysfunctional; agility
(B) expanded; stern; acuity
(C) explicit; stoic; integrity
(D) **extended; physical; resilience**

ANSWER **(d) extended; physical; resilience**

SOLUTION

Work blank by blank.

Blank 1 — describes a *period of time*. The standard collocation is **extended period**. (*Extensive* describes range or area, not duration; *expanded* implies something was made bigger; *explicit* means clearly stated and makes no sense with "period".)

Blank 2 — pairs with *endurance*, and is contrasted with *mental* in the third slot. The natural opposite pairing is **physical** endurance vs **mental** something. ✓

Blank 3 — mental **resilience** = the capacity to recover from difficulty. Perfect for astronauts enduring long missions.

Why the others fail:

- **option (a)** — *dysfunctional* endurance is self-contradictory, and the sentence is praising them ("remarkable").
- **option (c)** — *stoic endurance* is idiomatic, but *explicit period* is not English, and *mental integrity* is not a standard phrase.
- **option (b)** — *stern* describes manner, not endurance; *mental acuity* is real but means sharpness, which is less apt than resilience for enduring a long stay.

Only option 4 is natural in all three slots.

Answer: (d) — extended; physical; resilience

Shortcut

"Extended period" is the fixed collocation for duration; *extensive* is about range, *expanded* about size. Then "physical endurance" pairs naturally against "mental".

READING PASSAGE

Passage 2 – Baudrillard on consumption and the cargo myth

Read the passage and answer the questions that follow.

> According to the French philosopher Jean Baudrillard, commodities available for consumption are not inherently negative things. Baudrillard tried to interpret consumption in modern societies by engaging with the 'cargo myth' prevalent among the indigenous Melanesian people living in the South Pacific. The Melanesians did not know what aeroplanes were. However, they saw that these winged entities descended from the air for white people and appeared to make them happy. They also noted that aeroplanes never descended for the Melanesian people.
>
> The Melanesian natives noted that the white people had placed objects similar to the aeroplane on the ground. They concluded that these objects were attracting the aeroplanes in the air and bringing them to the ground. Through a magical process, the aeroplanes were bringing plenty to the white people and making them happy. The Melanesian people concluded that they would need to place objects that simulated the aeroplane on the ground and attract them from the air. Baudrillard believes that the cargo myth holds an important analogy for the ways in which consumers engage with objects of consumption.
>
> According to Baudrillard, the modern consumer "sets in place a whole array of sham objects, of characteristic signs of happiness, and then waits for happiness to alight". For instance, modern consumers believe that they will get happiness if they buy the latest available version of a mobile phone or automobile. However, consumption does not usually lead to happiness. While consumers should ideally be blaming their heightened expectations for their lack of happiness, they blame the commodity instead.
>
> They feel that they should have waited for the next version of a mobile phone or automobile before buying the one they did. The version they bought is somehow inferior and therefore cannot make them happy. Baudrillard argues that consumers have replaced 'real' happiness with 'signs' of happiness. This results in the endless deferment of the arrival of total happiness.

In Baudrillard's words, "in everyday practice, the blessings of consumption are not experienced as resulting from work or from a production process; they are experienced as a miracle". Modern consumers view consumption in the same magical way as the Melanesian people viewed the aeroplanes in the cargo myth. Television commercials also present objects of consumption as miracles. As a result, commodities appear to be distanced from the social processes which lead to their production. In effect, objects of consumption are divorced from the reality which produces them.

Structure of the passage. Paras 1 and 2 retell the cargo myth: the Melanesians saw aeroplanes descend for white people and not for them, concluded that the aeroplane-like objects on the ground were drawing them down, and set out imitations of their own. Para 2 closes by saying this is an analogy for consumption. Para 3 applies it — the consumer lays out signs of happiness and waits, is let down, and blames the product rather than his own expectations. Para 4 names the swap of real happiness for signs,

and the endless deferral that follows. Para 5 closes the loop: consumption is felt as a miracle rather than as the result of production, so goods are cut off from the reality that made them.

The one line to hold on to. The analogy is doing all the work. Everything the Melanesians do in the myth has a counterpart in the modern consumer: the imitation aeroplanes are the sham objects, the expected cargo is happiness, and the ritual is the purchase. Students who map the two columns side by side answer all six questions off one diagram.

80 VARC READING COMPREHENSION - QUESTION TYPES RC MAIN IDEA AND CENTRAL THEME ●●●●●●○○○○ 6 /10

Which of the following best and correctly summarises the main idea of the conversation?

(A) The global economy is shifting back towards traditional industries, as they offer more stable returns.

(B) Traditional industries are consistently more profitable than newer, "wizard-ish" industries.

(C) The terms "wizard" and "muggle" are used to describe the magical elements of business success.

(D) **Newer, dynamic industries, termed "wizards," are experiencing significantly greater growth and profit compared to traditional industries.**

ANSWER **(d) Newer, dynamic industries, termed "wizards," are experiencing significantly greater growth and profit compared to traditional industries.**

SOLUTION

Line in the passage

> *Across the transcript — nine in ten of 2005's top companies were replaced by firms eight times bigger; wizards are about ten per cent of industries but hog 45 per cent of market-cap growth; economic profit and R&D sit with them.*

How to reach it, step by step

Step 1. A main-idea answer must cover the whole transcript, not one exchange. So list what each exchange establishes before reading the options.

Step 2. Exchange 1: the 2005 top ten were replaced, and the replacements are far larger. Exchange 2: wizards are defined by growth and dynamism, and a tenth of industries capture around 45 per cent of market-cap growth. Exchange 3: economic profit and R&D intensity also sit with the wizards.

Step 3. The common thread across all three is one comparison — new dynamic industries are outperforming traditional ones on growth and on profit.

Step 4. Option (d) is that thread stated plainly, and it is the only option that mentions both growth and profit. Select it.

Why the other three fall

- (a) A straight reversal. Value is flowing towards the new arenas, not back to traditional industries.
- (b) Also reversed. Economic profit is explicitly located in the wizard industries.
- (c) A literal-reading trap. Wizard and muggle are borrowed as a nickname for two sets of economic rules; nothing magical is being claimed about business success.

Teaching point: *For main-idea questions, make students eliminate first on direction (does the option point the same way as the passage?) and only then on detail. Options (a) and (b) die on direction alone, which halves the work.***Shortcut**

Main-idea questions reward the option covering the **whole** conversation. Two options reverse the finding and one fixes on the wizard/muggle nickname — a vivid detail, not the point.

Refers to the RC set above.

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81 VARC READING COMPREHENSION - QUESTION TYPES RC VOCABULARY IN CONTEXT ●●●●●●○○○○ 6 /10

In the context of the conversation, the term “arenas of competition” refers to

(A) government regulations that control business competition.

(B) specific companies that are considered to be powerful competitors.

(C) **broad categories of industries where companies engage in competitive activities.**

(D) physical locations where businesses compete.

ANSWER **(c) broad categories of industries where companies engage in competitive activities.**

SOLUTION

Line in the passage

> *Opening question — the industries that will matter most in the global business landscape, which the guest describes as arenas of competition; later, 'arena industries' and 'a set of industries' playing by different rules.*

How to reach it, step by step

> **Step 1.** This is a definition-in-context question, so take the definition from the speakers, not from the everyday meaning of 'arena'.
>
> **Step 2.** The host's opening line does the defining for you: she is talking about the industries that will matter most, and says the guest calls these arenas of competition. Industries, then — that is the equation.
>
> **Step 3.** Confirm with later usage. The guest says 'arena industries', and refers to a set of industries that play by a different set of economic rules. The word is attached to industries every time it appears.
>
> **Step 4.** Option (c) says industries. Select it.

Why the other three fall

- (a) Government regulation never comes up in the transcript.
- (b) Companies are named as what sits inside the arenas (the top ten, the replacements). The arena is the category, not the competitor.
- (d) The literal-meaning trap, reading 'arena' as a physical venue. The transcript is about sectors, not places.

Shortcut

The speaker defines the term himself and rules out two distractors in the same breath: “not an individual company, and not a place”. Read the definition sentence and you are done.

Refers to the RC set above.

Vocabulary sticks when it is drilled in short bursts, not memorised in lists. Word Lab

82 VARC | READING COMPREHENSION - QUESTION TYPES | RC DETAIL AND FACT BASED QUESTIONS

6 /10

"Wizard" industries are characterized by

(A) **a higher concentration of economic profit and research and development.**

(B) a reliance on traditional economic rules and practices.

(C) a slower rate of market capitalization growth.

(D) lower research and development spending.

ANSWER **(a) a higher concentration of economic profit and research and development.**

SOLUTION

Line in the passage

> *Final exchange — economic profit, the profit you make minus the cost for the capital you employ, is in the wizard industries, and they are two times more R&D intensive.*

How to reach it, step by step

> **Step 1.** Options (a) and (d) are about R&D and (b) and (c) about rules and growth, so find the R&D line first; it will settle half the options immediately.
>
> **Step 2.** The last answer in the transcript carries both facts: economic profit sits with the wizards, and they are two times more R&D intensive.
>
> **Step 3.** 'Two times more R&D intensive' is a higher concentration of R&D; 'economic profit is in the wizard industries' is a higher concentration of profit. Both halves of option (a) are supported.
>
> **Step 4.** No other option has both facts, and no other option has either fact correctly. Select (a).

Why the other three fall

- (b) Traditional rules are what defines muggles, not wizards.
- (c) Reversed. Wizards are roughly a tenth of industries yet take about 45 per cent of market-cap growth — the fastest growth, not the slowest.

(d) Reversed. Their R&D intensity is double, not lower.

Shortcut

Every wrong option is the exact reverse of something stated: slower growth, traditional rules, lower R&D. Find the two consecutive sentences on economic profit and R&D and all four options resolve at once.

Refers to the RC set above.

83 VARC READING COMPREHENSION - QUESTION TYPES RC VOCABULARY IN CONTEXT 6 /10

In the context of the conversation, “dynamism” most closely refers to

(A) the stability and predictability of traditional industries.

(B) the never-changing reliance on established and unchanging business practices.

(C) the slow, gradual growth and morphing of established companies.

(D) **the rapid and frequent changes in leadership and market position within an industry.**

ANSWER **(d) the rapid and frequent changes in leadership and market position within an industry.**

SOLUTION

Line in the passage

> *Middle exchange — dynamism is the second axis after growth, measured by a new metric called the shuffle rate: how much does the bottom move to the top?*

How to reach it, step by step

Step 1. Find where the word is introduced. The guest names two axes: growth, and then dynamism, which he immediately says is measured by the shuffle rate.

Step 2. He then glosses the shuffle rate in plain words: how much the bottom moves to the top.

Step 3. Bottom moving to top means the ranking order inside an industry keeps changing — today's leader is displaced by today's laggard. That is churn in leadership and market position.

Step 4. He adds that this rate is far higher in the arenas, which supplies the 'rapid and frequent' part. Option (d).

Why the other three fall

- (a) Stability and predictability describe the traditional industries, the opposite pole.
- (b) 'Never-changing' is the exact antonym of dynamism.
- (c) 'Slow, gradual' contradicts the high shuffle rate the guest reports for these industries.

Teaching point: *Three of four options here are built from the same trick — words meaning 'unchanging' or 'slow' offered for a term that means change. Once students notice the pattern, the question takes ten seconds.*

Shortcut

The speaker defines the term in his very next breath — dynamism is measured by the shuffle rate, “how readily leadership changes hands”. Any option describing stability or slow change is the opposite of what is asked.

Refers to the RC set above.

84 VARC READING COMPREHENSION - QUESTION TYPES

RC DETAIL AND FACT BASED QUESTIONS

6 /10

"Muggles" refers to industries that

(A) **operate under traditional economic principles.**

(B) exhibit high levels of market capitalization growth.

(C) are characterized by rapid and frequent changes.

(D) are primarily focused on technological innovation.

ANSWER **(a) operate under traditional economic principles.**

SOLUTION

Line in the passage

> *Second exchange — the rest, the muggles, even though they run, finance and energize the world, play by a more traditional set of economic rules.*

How to reach it, step by step

Step 1. The word is defined once, in the Harry Potter aside. Go to that sentence.

Step 2. The structure there is a contrast: arena industries are wizard-ish and play by a very different set of economic rules, while the rest, the muggles, play by a more traditional set.

Step 3. The defining feature of a muggle, therefore, is the traditional rule set — the bracketed praise about running and financing the world is concession, not definition.

Step 4. Option (a) states exactly that. Select it.

Why the other three fall

- (b) High market-cap growth belongs to the wizards, who take about 45 per cent of it.
- (c) Rapid and frequent change is the high shuffle rate, again a wizard trait.
- (d) R&D intensity is doubled in the wizard industries; muggles are not described as innovation-focused.

> **Teaching point:** *Pair this with Q55 in class. Once one of the two categories is pinned down, the other is simply its mirror, and students should be solving the second question by contrast rather than by re-reading.*

Shortcut

Muggles are defined by one phrase — "the ordinary rules everyone learned in textbooks". Match that to "traditional economic principles".

Refers to the RC set above.

85 VARC READING COMPREHENSION - QUESTION TYPES RC EXCEPT AND NOT QUESTIONS 6 /10

Which one of the following does “shuffle rate” not measure?

(A) Volatility of market leadership.
(B) Relative change within an industry.
(C) **Overall profitability of traditional industries.**
(D) Churn within the arena of competition.

ANSWER **(c) Overall profitability of traditional industries.**

SOLUTION

Line in the passage

> *Middle exchange — the shuffle rate is the measure of dynamism, defined as how much the bottom moves to the top; profitability is handled separately, through economic profit, in the final exchange.*

How to reach it, step by step

Step 1. Notice the 'not' in the stem. The task has flipped: three options will be true of the shuffle rate and you are hunting the one that is not.

Step 2. Fix the definition first — the shuffle rate is the measure of dynamism, that is, how far the bottom of an industry rises to the top. It is a movement metric.

Step 3. Test each option against 'movement'. Volatility of leadership, relative change within an industry and churn within the arena are three different names for that same movement, so all three are measured.

Step 4. Profitability is a different metric entirely — the transcript handles it through economic profit, profit minus the cost of capital, in a separate answer. And 'traditional industries' makes it worse, since the shuffle rate is being discussed with reference to the arenas. Option (c) is the odd one out.

Why the other three fall

- (a) Volatility of market leadership is exactly what bottom-to-top movement captures, so it is measured.
- (b) Relative change within an industry is the shuffle rate stated in neutral language, so it is measured.
- (d) Churn within the arena of competition is again the same idea, and the guest applies the metric to the arenas by name, so it is measured.

> **Teaching point:** *Make the batch underline NOT, EXCEPT and LEAST in the stem before they read the options. In a timed paper, the commonest single cause of lost marks in RC is solving a negative stem as a positive one.*

Shortcut

A NOT question — three options will be supported, one won’t. All three supported ones come from a single sentence; profitability is measured by *economic profit*, a different metric entirely.

86 VARC VERBAL ABILITY PARA JUMBLES 5 /10

The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the most logical order and enter the sequence of numbers in the space provided.

1. Among its major urban centres, Harappa and Mohenjo-Daro stand out as prime examples of this architectural prowess, revealing large public structures, residential areas, and sophisticated water management systems indicative of a complex societal structure.
2. Showing remarkable sophistication for its time, this ancient culture developed meticulously planned cities, complete with advanced sanitation systems and intricate grid layouts that underscore its profound understanding of urban design and engineering.
3. Economically, the civilisation thrived on a foundation of extensive trade networks, connecting them with distant lands, alongside a robust agricultural system that sustained its large populations and facilitated surplus production.
4. Despite its impressive achievements and longevity, the reasons behind the eventual decline of this remarkable civilisation remain largely enigmatic, prompting ongoing research and speculation among historians and archaeologists.
5. The Indus Valley Civilisation, flourishing in the Bronze Age, represents one of humanity's earliest urban societies, evidenced by archaeological discoveries dating back thousands of years.

ANSWER 52134

SOLUTION

Step 1 — find the opener. Sentence **5** is the only one that names the subject in full — *"The Indus Valley Civilisation"*. Every other sentence refers back with a pronoun or demonstrative (*this ancient culture*, *its major urban centres*, *the civilisation*), so none can start the paragraph.

Step 2 — follow the reference chain.

- **5 → 2**: sentence 2 begins *"this ancient culture"*, pointing straight back to the civilisation just introduced. It makes the general claim: planned cities, sanitation, grid layouts.
- **2 → 1**: sentence 1 says *"Among its major urban centres… prime examples of **this architectural prowess**"*. "This architectural prowess" has no antecedent unless sentence 2 (urban design and engineering) comes immediately before. This is the tightest link in the set.

Step 3 — place the remaining two.

- **1 → 3**: sentence 3 opens with *"Economically,"* — a discourse marker signalling a shift to a new aspect. It must follow the architectural discussion, not precede it.
- **3 → 4**: sentence 4 begins *"Despite its impressive achievements and longevity"*, which summarises everything listed before it, and ends on the decline — the natural closing note.

Step 4 — the sequence.

$5 \to 2 \to 1 \to 3 \to 4$

Answer: 52134

Shortcut

Find the sentence that names the subject in full — only 5 says "The Indus Valley Civilisation". Then follow the references: "this architectural prowess" in 1 has no meaning unless 2 precedes it.

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87 VARC VERBAL ABILITY PARA JUMBLES ●●●●●○○○○○ 5 /10

The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the most logical order and enter the sequence of numbers in the space provided.

1. When we take time to notice these moments, we discover hidden beauty that sparks our creative thoughts because creativity isn't just about rare, amazing events—it's also about finding the special in the ordinary.
2. Creativity is often seen as the ability to look at the world in a new way—to turn everyday sights, sounds, and experiences into art or ideas.
3. In fact, inspiration can come from small details of daily life: the gentle warmth of morning sunlight on a kitchen counter, the steady sound of traffic outside, or the brief smile of a stranger on a busy street.
4. Many people wrongly think that true creativity only comes from big ideas or exciting adventures.

ANSWER 2431

SOLUTION

Step 1 — find the opener. Sentence **2** defines the topic — *"Creativity is often seen as..."*. A definition of the subject is the natural starting point, and no other sentence can precede a definition.

Step 2 — introduce the misconception. Sentence **4** says *"Many people **wrongly** think..."*. Flagging an error sets up a correction, so it must come before that correction.

Step 3 — deliver the correction. Sentence **3** opens with *"**In fact**,"* — the standard marker for contradicting a misconception. It corrects sentence 4 by listing small everyday details. The 4 → 3 pair is the strongest link in the set.

Step 4 — conclude. Sentence **1** refers to *"**these moments**"*, which can only be the small details itemised in sentence 3. It also closes by restating the paragraph's thesis — *"finding the special in the ordinary"* — which is classic concluding behaviour.

Step 5 — the sequence.

$2 \rightarrow 4 \rightarrow 3 \rightarrow 1$

Answer: 2431

Shortcut

Look for the mandatory pair first. "Many people **wrongly** think" (4) must be followed by the correction "**In fact**" (3). Lock that pair, and only one arrangement survives.

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88 VARC VERBAL ABILITY PARA JUMBLES 6 /10

The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the most logical order and enter the sequence of numbers in the space provided.

1. Seven of the ten worst-affected countries (including India) are low- and middle-income countries.
2. Between 1993 and 2022, India was the sixth worst-affected country in terms of fatalities and damage sustained from extreme weather events wrought by the climate crisis.
3. High-income nations, whose economies are founded in the industrial era use of fossil fuels, meanwhile, insist that growing economies, especially India and China, shoulder greater responsibility.
4. This reinforces the developing world's contention that it has had to bear a disproportionate burden of climate afflictions despite having contributed little to the crisis.

ANSWER 2143

SOLUTION

Step 1 — find the opener. Sentence **2** is the only one that introduces its subject independently, with a full time frame ("*Between 1993 and 2022*") and India's rank. The others all depend on information established elsewhere.

Step 2 — widen the frame. Sentence **1** generalises from India to the broader group: "*Seven of the ten worst-affected countries (**including India**)*". The parenthesis ties it directly to sentence 2, and the phrase "the ten worst-affected countries" needs sentence 2's ranking idea to make sense.

Step 3 — draw the inference. Sentence **4** begins "***This** reinforces…*". The demonstrative needs an antecedent, and what it reinforces is the fact just established — that the worst-hit countries are mostly poor ones. So 4 follows 1.

Step 4 — introduce the counter-view. Sentence **3** contains "*meanwhile*" and presents the opposing position of high-income nations. A contrast must come *after* the position it contrasts with, which sentence 4 supplies (the developing world's contention).

Step 5 — the sequence.

$2 \to 1 \to 4 \to 3$

Answer: 2143

Shortcut

Start with the sentence that needs no antecedent — 2 gives the full time frame. Then "**This** reinforces" (4) must follow the fact it reinforces, and "meanwhile" (3) must follow the view it contrasts with.

89 VARC VERBAL ABILITY PARA JUMBLES 6 /10

The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the most logical order and enter the sequence of numbers in the space provided.

1. Using the wonders of Artificial Intelligence (AI), they quickly improved upon those skills to become far more dexterous.
2. Inside a robotics laboratory of the Toyota Research Institute, a group of robots is busy cooking. There is nothing special about that; robotic chefs have been around for a while.
3. Despite their extraordinary culinary capabilities, these robots are not destined for a career in catering.
4. But these robots are more proficient than most: flipping pancakes, slicing vegetables, and making pizzas with ease.
5. The difference is that instead of being laboriously programmed to carry out their tasks, the Toyota robots have been taught only a basic set of skills.

ANSWER 24513

SOLUTION

Step 1 — find the opener. Sentence **2** sets the scene and introduces the robots for the first time. It also plants a deliberate hook: *"There is nothing special about that."*

Step 2 — answer the hook. Sentence **4** begins with *"But"* and reverses it: *"these robots are more proficient than most."* The *nothing special → but* pairing is the strongest link in the set.

Step 3 — explain the proficiency. Sentence **5** opens *"The difference is that..."* — it tells us *why* they are more proficient: they were taught a basic skill set rather than programmed.

Step 4 — complete the explanation. Sentence **1** says *"they quickly improved upon **those skills**"*. "Those skills" refers to the *"basic set of skills"* in sentence 5, so 1 must follow 5 directly.

Step 5 — close. Sentence **3** begins *"Despite their extraordinary culinary capabilities..."* — it can only come after those capabilities have been established, and it delivers the closing twist (they are not destined for catering).

Step 6 — the sequence.

$2 \to 4 \to 5 \to 1 \to 3$

Answer: 24513

Shortcut

Scene first (2, which also plants "nothing special"), then the "But" that answers it (4). After that, "those skills" in 1 must follow the "basic set of skills" in 5.

90 VARC VERBAL ABILITY PARA JUMBLES

6 /10

The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the most logical order and enter the sequence of numbers in the space provided.

1. In drought conditions, water often depletes in the topsoil and remains accessible only in the deeper subsoil layers.
2. A new study gives new insights into how the acid changes root growth angles to enable plants to reach out deeper subsoils in search of water.
3. Plants rely on their root systems, the primary organs for interacting with soil, to actively seek water.
4. Abscisic acid plays an important role in helping plants adapt to these challenging conditions.

ANSWER 3142

SOLUTION

Step 1 — find the opener. Sentence **3** is the only self-contained general statement: plants use roots to seek water. It introduces both *plants* and *roots*, the terms every other sentence relies on.

Step 2 — introduce the problem. Sentence **1** specifies the difficult situation — in drought, water sits only in deep subsoil. This gives the paragraph something to solve.

Step 3 — introduce the solution. Sentence **4** refers to *"**these** challenging conditions"*. The demonstrative points back to the drought conditions described in sentence 1, so 4 must follow 1 directly.

Step 4 — elaborate. Sentence **2** begins *"A new study... how **the acid** changes root growth angles"*. The definite article in "the acid" requires abscisic acid to have been named already — which happens in sentence 4. So 2 comes last.

Notice how neatly 2 closes the loop: it ties the acid (sentence 4) back to roots (sentence 3) and deep subsoil water (sentence 1).

Step 5 — the sequence.

$3 \to 1 \to 4 \to 2$

Answer: 3142

Shortcut

Chain the demonstratives: "these challenging conditions" (4) needs the drought in 1, and "**the** acid" (2) needs abscisic acid to have been named in 4. That fixes 1-4-2, and only 3 can open.

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READING PASSAGE

Passage 3 – Conversation analysis: arenas of competition

CONVERSATION ANALYSIS: Read the following transcript and choose the answer that is closest to each of the questions that are based on the transcript.

> **Lucia Rahilly (Global Editorial Director, The McKinsey Podcast):** Today we're talking about the next big arenas of competition, about the industries that will matter most in the global business landscape, which you describe as arenas of competition. What do we mean when we use this term?
>
> **Chris Bradley (Director, McKinsey Global Institute):** If I go back and look at the top ten companies in 2005, they were in traditional industries such as oil and gas, retail, industrials, and pharmaceuticals. The average company was worth about $250 billion. If I advance the clock forward to 2020, nine in ten of those companies have been replaced, and by companies that are eight times bigger than the old guards.
>
> And this new batch of companies comes from these new arenas or competitive sectors. In fact, they're so different that we have a nickname for them. If you're a fan of Harry Potter, it's wizards versus muggles. Arena industries are wizard-ish; we found that there's a set of industries that play by very different set of economic rules and get very different results, while the rest, the muggles (even though they run the world, finance the world, and energize the world), play by a more traditional set of economic rules.
>
> **Lucia Rahilly:** Could we put a finer point on what is novel or different about the lens that you applied to determine what's a wizard and what's a muggle?
>
> **Chris Bradley:** Wizards are defined by growth and dynamism. We looked at where value is flowing and the places where value is moving. And where is the value flowing?
>
> What we see is that this set of wizards, which represent about ten percent of industries, hog 45 percent of the growth in market cap. But there's another dimension or axis too, which is dynamism. That is measured by a new metric we've come up with called the "shuffle rate." How much does the bottom move to the top?
>
> It turns out that in this set of wizard-ish industries, or arenas, the shuffle rate is much higher than it is in the traditional industry.
>
> **Lucia Rahilly:** So, where are we seeing the most profit?

Chris Bradley: The economic profit, which is the profit you make minus the cost for the capital you employ is in the wizard industries. It's where R&D happens; they're two times more R&D intensive. They're big stars, the nebulae, where new business is born.

Structure of the transcript. Exchange 1 sets the scene with the numbers: the 2005 top ten were oil and gas, retail, industrials and pharma, averaging about $250 billion; by 2020 nine of the ten had been replaced by firms eight times larger, drawn from new sectors. Exchange 2 gives the nickname and the two defining axes — growth (a tenth of industries taking about 45 per cent of market-cap growth) and

dynamism (measured by the shuffle rate, how much the bottom moves to the top). Exchange 3 adds the third fact: economic profit and double R&D intensity both sit with the wizards.

How to crack this set quickly. Draw a two-column table on the rough sheet — WIZARD on the left, MUGGLE on the right — and drop each fact into a column as you read. Growth, shuffle rate, economic profit and R&D all go left; traditional economic rules go right. Five of the six questions are then answered straight off the table without re-reading the transcript.

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APPENDIX

Topic notes

The concepts this paper leaned on, pulled out of the solutions and written as revision notes. Read them after you have attempted the paper, not before.

Arithmetic

Time and work *(Q8)* — Work with **rates**, never times. If A alone takes a days, A's one-day work is $\frac{1}{a}$, and rates add: $\frac{1}{a}+\frac{1}{b}=\frac{1}{\text{together}}$. When one person does a fraction f of the job alone, the time is $\frac{f}{\text{their rate}}$.

Compound interest *(Q16)* — $A=P(1+r)^{n}$. The one fact that saves time: the interest in year $k+1$ equals the interest in year k multiplied by $(1+r)$, because the principal itself has grown by that factor.

Time, speed and distance — meetings *(Q24)* — Two bodies starting from **opposite** ends of a track of length L meet when their **combined** distance is L, then every $2L$ after that. So count the odd multiples of L up to the total combined distance. (Starting from the *same* end, it is $2L$ for the first meeting too.)

Averages and median *(Q39)* — For three numbers, $\text{Mean}=\frac{max+\text{median}+min}{3}$. Questions that give you $max+min$ are really one-variable questions in disguise.

Algebra

Logarithms *(Q10, Q20, Q28, Q34)* — The four rules that cover everything here:

$$\log_b(MN)=\log_b M+\log_b N,\qquad \log_b\frac{M}{N}=\log_b M-\log_b N$$

$$\log_b M^k=k\log_b M,\qquad \log_b M=\frac{\log_a M}{\log_a b}$$

For nested logs, **peel from the outside in**. For a log *inequality*, always check the domain first: the base must be positive and $\neq 1$, and the argument must be positive. Remember that $\log_b x>0$ means $x>1$ when $b>1$, but $x<1$ when $0<b<1$.

Sequences and series *(Q14, Q17, Q23, Q32)* —

AP: $t_n=a+(n-1)d,\qquad S_n=\frac{n}{2}[2a+(n-1)d]$

GP: $t_n=ar^{n-1},\qquad S_n=\frac{a(1-r^n)}{1-r},\qquad S_\infty=\frac{a}{1-r}\ (|r|<1)$

If $S_m=S_n$ for a GP, every term between them sums to zero — which almost always means $r=-1$. For $\sum a_k b_k$ where the two APs are symmetric about a centre, use the difference of squares.

Quadratics *(Q18, Q19, Q35)* — For $ax^2+bx+c=0$: sum of roots $=-\frac{b}{a}$, product $=\frac{c}{a}$. A parabola opens upward when $a>0$ (minimum, no maximum) and downward when $a<0$. Watch for a leading coefficient written as a **square** — it is positive whatever the variable.

Polynomials *(Q1, Q25)* — Remainder Theorem: the remainder on dividing $P(x)$ by $(x-k)$ is $P(k)$. Factor Theorem: $(x-k)$ divides $P(x)$ exactly when $P(k)=0$. The roots of $x^{n-1}+\cdots+x+1=0$ are the nth roots of unity other than 1, so each satisfies $a^n=1$.

Modulus *(Q12)* — $|a-b|$ is the distance between a and b. The identity $|a-b|+|b-c|=|c-a|$ holds exactly when b lies **between** a and c.

Number system

Factors *(Q3)* — If $N = p^x q^y r^z$ then N has $(x+1)(y+1)(z+1)$ factors. For factors that are **perfect squares**, count only the even exponents: $\left(\lfloor \frac{x}{2} \rfloor + 1\right)\left(\lfloor \frac{y}{2} \rfloor + 1\right)\cdots$

Remainders and cyclicity *(Q33)* — Reduce the base first, then find the cycle length of its powers. Divisibility by 9 is tested by the digit sum. If a base shares a factor with the divisor raised high enough, the whole term vanishes.

Divisibility of expressions *(Q26)* — Substitute a single letter for the repeated power, then use $t^3 + k^3 = (t+k)\left(t^2 - kt + k^2\right)$, or just test the root with the Remainder Theorem.

Integral solutions *(Q11)* — For $ax + by = N$ in positive integers, fix one variable modulo the other coefficient to get the allowed values, then step through them. To minimise $x + y$, load as much of N as possible onto the variable with the **larger** coefficient.

Geometry and mensuration

Circles *(Q13, Q27)* — A tangent is perpendicular to the radius at the point of contact, so a circle touching a vertical line has its centre at the same height, at a horizontal distance equal to the radius. Equation: $(x-h)^2 + (y-k)^2 = r^2$.

Triangles and the sine rule *(Q37)* — $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$, where R is the circumradius. Always pair a side with the angle **opposite** it.

Regular polygons *(Q31)* — A regular n-gon inscribed in a circle of radius R splits into n isosceles triangles with apex angle $\frac{360^\circ}{n}$:

$$\text{Area} = \frac{n}{2} R^2 \sin \frac{360^\circ}{n}$$

Offset paths *(Q22)* — A path traced at a constant distance r outside any convex polygon has length $\text{perimeter} + 2\pi r$, because the corner arcs together make one full circle.

Coordinate geometry *(Q21, Q29)* — Angle between two lines: $\tan\theta = \left|\frac{m_1 - m_2}{1 + m_1 m_2}\right|$; perpendicular lines satisfy $m_1 m_2 = -1$. Area from vertices: $\frac{1}{2}\left|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right|$ — but if a side lies on an axis, base × height is much faster.

Modern maths

Counting *(Q7, Q30)* — Round robin among n teams: $\binom{n}{2}$ matches. For "greater than N" counting problems, split by **number of digits** and handle any fixed digit (like a units digit forced by divisibility) before counting the rest.

Probability *(Q36, Q40)* — $P = \frac{\text{favourable}}{\text{total}}$. For alternating-turn contests, write the first success, then the common ratio "both fail", and sum the infinite GP: $P(\text{A first}) = \frac{p_A}{1 - (1-p_A)(1-p_B)}$.

Sets *(Q2, Q38)* — $n(A \cup B) = n(A) + n(B) - n(A \cap B)$, which rearranges to the very useful $n(A) + n(B) = n(A \cup B) + n(A \cap B)$. For problems with two overlapping conditions, a two-row table (did not appear / failed / passed) is usually clearer than a Venn diagram.

Higher algebra

Matrices *(Q6)* — Multiply row by column. When a question gives A^k in terms of unknowns, find the entry that contains only **one** unknown and solve that first.

Logical reasoning and DI

Distribution grids *(Q4, Q5, Q9)* — Build the full table, never answer from partial deductions. Start from the most constrained row or column, and use totals as a check. "Distinct and decreasing" plus a minimum value is a powerful constraint: the smallest possible set is $min, min+1, min+2, \ldots$, and the gap to the required total tells you how much slack there is.

Table DI *(Q41–Q45)* — Read the column headings carefully: a percentage column is already a percentage, so comparisons need no arithmetic. Net value $=$ gross $\times$ $(1 - \text{rate})$. Before computing, check whether the options let you decide by **comparison** instead.

Verbal ability

Reading comprehension — Match the question type to the technique:

Type	What to do
Inference ("implies")	Find the consequence the writer leaves unstated; never pick something stated outright
Detail / fact	Locate the one sentence; everything else is noise
Main idea / conclusion	Must cover the whole passage, not one vivid detail
Vocabulary in context	The definition is usually in the very next sentence
EXCEPT / NOT	Three options will be supported; find the one that is not
Purpose / structure	Ask what the paragraph is *doing*, not what it says

Extreme words (*always*, *never*, *only*) are usually wrong. The least dramatic option that is fully supported usually wins.

Idioms and phrasal verbs *(Q59, Q61, Q62)* — Learn these as fixed units. From this paper: *usher in* (to begin a period), *put up with* (to tolerate), *silver bullet* (a single complete solution), *silver lining* (consolation in misfortune), *red herring* (a distraction), *dead ringer* (a look-alike).

Commonly confused words *(Q58, Q60, Q63, Q67)* — *appraise* (value) vs *apprise* (inform); *itinerant* (travelling, adjective) vs *itinerary* (schedule, noun); *exacerbate* (worsen) vs *extenuate* (make an offence seem less serious); *negligible* (tiny) vs *negligent* / *neglectful* (careless — of people only).

Grammar *(Q65, Q66, Q68, Q69)* —

- **Parallelism**: items in a list after one "to" must all be bare infinitives.
- **Third conditional**: *If* + past perfect, *would have* + past participle. The inverted form *Had he known…* is equally correct.
- **Causative *have***: *have someone* ***do*** something — bare infinitive, no "to".
- **Idiom**: *regard* ***as***, never *regard to be*; and *one of the most…* takes a **plural** noun.

Cloze *(Q74–Q79)* — Do not read left to right. Find the blank with the tightest logical constraint, eliminate on that one, and check polarity: if the sentence lists benefits, every blank must be positive. A single impossible word rules out an entire option however well its other blanks read.

Sentence insertion *(Q70–Q73)* — The answer is fixed by the sentences on **both** sides. Look for the connector that follows the blank ("So", "This is because", "In fact") — it tells you exactly what the inserted sentence must have said. If the inserted sentence names two things, the next two sentences usually expand them in order.

Para jumbles *(Q86–Q90)* — Three moves, in order:

1. Find the **opener** — the only sentence that names its subject in full, with no pronoun or demonstrative pointing backwards.
2. Find a **mandatory pair** — "wrongly think" → "In fact"; "nothing special" → "But"; a demonstrative ("this", "these", "those skills") and the thing it refers to.
3. Place the **closer** — usually a summary, a consequence, or a contrast beginning "Despite".

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