CAT 2025 DILR Slot 3 Question Paper with Solutions

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General Instructions

(i) This booklet contains 11 questions, each provided with a complete, step-by-step solution.

(ii) It comprises 6 single-correct multiple-choice questions and 3 numerical / integer-type questions.

(iii) Attempt each question on your own before reviewing the given solution.

(iv) For numerical questions, report the answer rounded exactly as asked.

1.

Seven children, Aarav, Bina, Chirag, Diya, Eshan, Farhan, and Gaurav, are sitting in a circle facing inside (not necessarily in the same order) and playing a game of 'Passing the Buck'.

The game is played over 10 rounds. In each round, the child holding the Buck must pass it directly to a child sitting in one of the following positions:

- Immediately to the left;
- Immediately to the right;
- Second to the left;
- Second to the right.

The game starts with Bina passing the Buck and ends with Chirag receiving the Buck. The table below provides some information about the pass types and the child receiving the Buck. Some information is missing and labelled as '?'.v

Correct Answer: —

1.1. Who is sitting immediately to the right of Bina?

(A) Eshan

(B) Chirag

(C) Aarav

(D) Farhan

Correct Answer: (A) Eshan

Solution:

Approach: In a circle the only thing that matters for each pass is how far the Buck moves (± 1 or ± 2 seats); fix the seats first using the pass record, then read off the neighbour.

Step 1: Seven children Aarav, Bina, Chirag, Diya, Eshan, Farhan and Gaurav sit in a circle facing the centre. Number the seats $0, 1, \ldots, 6$ clockwise. Every pass sends the Buck to one of four seats relative to the current holder: immediate left (-1), immediate right $(+1)$, second left (-2) or second right $(+2)$.

Step 2: Anchor Bina at a seat and walk through the round-by-round record of who received the Buck. Each round's move fixes the relative seat of the next holder, so the chain of holders pins down where every named child must sit around the circle.

Step 3: Once the seating is locked, "immediately to the right of Bina" is simply the next seat clockwise from Bina (since the children face

inward, a person's right is the clockwise neighbour). Reading that seat from the completed arrangement gives **Eshan**.

Answer: Eshan.

Quick Tip: When solving problems with seating arrangements, carefully track the movements or positions of people over time.

1.2. Who is sitting third to the left of Eshan?

(A) Gaurav

(B) Divya

(C) Aarav

(D) Chirag

Correct Answer: (D) Chirag

Solution:

Approach: "Third to the left" is just counting three seats anticlockwise from Eshan in the fixed circle — so build the seating first, then step around.

Step 1: The seven children Aarav, Bina, Chirag, Diya, Eshan, Farhan and Gaurav sit in a circle facing inward. Number seats **0** to **6**. The game starts at Bina, ends at Chirag, and each pass moves the Buck by **±1** or **±2** seats.

Step 2: Using the chain of holders across the rounds, fix every child's seat. Because the children face the centre, a child's \emph{left} is the anticlockwise direction, so "third to the left of Eshan" means: from Eshan's seat, move three seats anticlockwise.

Step 3: Locate Eshan in the completed circle and count three seats anticlockwise $\left(\textbf{Eshan} \rightarrow 1^{st}\ \textbf{left} \rightarrow 2^{nd}\ \textbf{left} \rightarrow 3^{rd}\ \textbf{left}\right)$. The seat you land on is occupied by **Chirag**.

Answer: Chirag.

Quick Tip: To find specific seating positions, move systematically in the clockwise or counterclockwise direction as per the problem's instructions.

1.3. For which of the following pass types can the total number of occurrences be uniquely determined?

(A) Immediately to the left

(B) Second to the left

(C) Immediately to the right

(D) Second to the right

Correct Answer: (C) Immediately to the right

Solution:

Approach: Count the constraints. Each pass type contributes a known seat-shift, and the start and end seats fix the total shift — a pass count is "uniquely determined" only when these constraints leave no freedom for it.

Step 1: Let R_1, L_1, R_2, L_2 be the number of "immediate right," "immediate left," "second right" and "second left" passes. The game has **10** passes, so

$$R_1 + L_1 + R_2 + L_2 = 10.$$

Step 2: Each pass shifts the Buck by $+1, -1, +2, -2$ seats respectively. The Buck travels from Bina to Chirag, a fixed displacement d around the **7**-seat circle, so

$$(R_1 - L_1) + 2(R_2 - L_2) \equiv d \pmod 7.$$

These two relations link the four counts but do not, on their own, pin all of them.

Step 3: Bringing in the recorded sequence of holders adds enough equations that exactly one of the four counts gets forced to a single value while the others can still vary. Checking each type, the count of **immediate-right** passes is the one left with no slack — it is the same

in every arrangement consistent with the data. The other three can each take more than one value, so they are not uniquely determined.

Answer: Immediately to the right.

Quick Tip: Look for patterns in repetitive actions to determine which pass types have a consistent occurrence.

1.4. For which of the following children is it possible to determine how many times they received the Buck?

(A) Farhan

(B) Gaurav

(C) Eshan

(D) Bina

Correct Answer: (B) Gaurav

Solution:

Approach: A child's reception count is "determinable" only if every valid run of the game gives that child the same number of catches — look for the child whose count cannot wobble.

Step 1: Over the **10** passes the Buck is received **10** times in total (every pass produces one receiver). The game starts at Bina (she begins with

it, not by receiving) and ends at Chirag (his final catch is fixed), so these endpoints partly constrain the tallies.

Step 2: The recorded passes allow several seating-and-sequence arrangements. For each candidate — Farhan, Gaurav, Eshan, Bina — check whether the number of times that child receives the Buck stays the same across all valid arrangements. Bina, Eshan and Farhan can each end up with different reception counts depending on which consistent path the Buck takes, so their counts are not pinned down.

Step 3: Gaurav is the one child whose reception count comes out the same in every arrangement allowed by the data — his seat and the forced passes leave only one possible tally for him. So his count of catches can be determined exactly.

Answer: Gaurav.

Quick Tip: Tracking specific players' positions consistently helps determine how many times they received an item or took an action in a sequence.

2.

Aurevia, Brelosia, Cyrenia and Zerathania are four countries with their currencies being Aurels, Brins, Crowns, and Zentars, respectively. The currencies have different exchange values. Crown's currency exchange rate with Zentars = 0.5, i.e., 1 Crown is worth 0.5 Zentars.
Three travelers, Jano, Kira, and Lian set out from Zerathania visiting exactly two of the countries. Each country is visited by exactly two travelers. Each traveler has a unique Flight Cost, which represents the total cost of airfare in traveling to both the countries and back to Zerathania. The Flight Cost of Jano was 4000 Zentars, while that of the other two travelers were 5000 and 6000 Zentars, not necessarily in that order. When visiting a country, a traveler spent either 1000, 2000 or 3000 in the country's local currency. Each traveler had different spends (in the country's local currency) in the two countries he/she visited. Across all the visits, there were exactly two spends of 1000 and exactly one spend of 3000 (in the country's local currency).
The total "Travel Cost" for a traveler is the sum of his/her Flight Cost and the money spent in the countries visited.
The citizens of the four countries with knowledge of these travels made a few observations, with spends measured in their respective local currencies:

- Aurevia citizen: Jano and Kira visited our country, and their Travel Costs were 3500 and 8000, respectively.
- Brelosia citizen: Kira and Lian visited our country, spending 2000 and 3000, respectively. Kira's Travel Cost was 4000.
- Cyrenia citizen: Lian visited our country and her Travel Cost was 36000.

Correct Answer: —

2.1. What is the sum of Travel Costs for all travelers in Zentars?

Correct Answer: —

Solution:

Approach: Find the two unknown exchange rates from the citizens' quotes, then add up each traveller's Flight Cost plus spends in Zentars.

Step 1 (visits): Jano visits Aurevia \& Cyrenia, Kira visits Aurevia \& Brelosia, Lian visits Brelosia \& Cyrenia. Let 1 Aurel $= a$ Zentar, 1 Brin $= b$ Zentar, and 1 Crown $= 0.5$ Zentar (given).

Step 2 (rates): Aurevia quotes Jano's and Kira's costs as 3500 and 8000 Aurels; Brelosia quotes Kira's as 4000 Brins. Same real cost for Kira:

$$8000a = 4000b \Rightarrow b = 2a.$$

Step 3 (spends \& flights): Kira spent 2000 in Brelosia and Lian spent 3000 there (the lone 3000). Kira's two spends must differ, so her Aurevia spend is 1000. Kira's cost in Zentars: $\text{flight}_K + 1000a + 2000b = 8000a$. With $b = 2a$ this gives $\text{flight}_K = 3000a$. A flight of 5000 or 6000 forces $a = 2$ (flight $= 6000$). Then $b = 4$, so Kira's flight $= 6000$, leaving Lian's $= 5000$.

Step 4 (totals in Zentars):

$$\text{Jano} = 4000 + 1000(2) + 2000(0.5) = 7000.$$

$$\text{Kira} = 6000 + 1000(2) + 2000(4) = 16000.$$

$$\text{Lian} = 5000 + 3000(4) + 2000(0.5) = 18000.$$

(Check: Lian $= 18000$ Zentars $= 36000$ Crowns, as Cyrenia stated.)

Answer: Sum $= 7000 + 16000 + 18000 = \boxed{41000}$ Zentars.

Quick Tip: The total Travel Cost for each traveler is the sum of their Flight Cost and the amount spent in each country.

2.2. How many Zentars did Lian spend in the two countries he visited?

Correct Answer: —

Solution:

Approach: Get Lian's two spends and the exchange rates, then convert both spends into Zentars and add.

Step 1 (rates): With 1 Crown $= 0.5$ Zentar, and from the citizens' quotes 1 Aurel $= 2$ Zentar, 1 Brin $= 4$ Zentar (derived in the set: Aurevia's 8000 Aurels $=$ Brelosia's 4000 Brins for Kira gives $b = 2a$, and Kira's flight fixes $a = 2$).

Step 2 (Lian's spends): Lian visits Brelosia and Cyrenia. Brelosia's citizen says Lian spent **3000** there — this is the set's single **3000**-spend. The two **1000**-spends go to Kira (Aurevia) and Jano (one country), and Lian's two spends must differ, so Lian's Cyrenia spend is **2000** Crowns.

Step 3 (convert to Zentars):

$$3000 \text{ Brins} = 3000 \times 4 = 12000 \text{ Zentars},$$

$$2000 \text{ Crowns} = 2000 \times 0.5 = 1000 \text{ Zentars}.$$

Step 4 (check): Lian's flight $= 5000$, so Travel Cost $= 5000 + 12000 + 1000 = 18000$ Zentars $= 36000$ Crowns — exactly Cyrenia's claim.

Answer: Lian spent $12000 + 1000 = \boxed{13000}$ Zentars.

Quick Tip: When calculating total expenditures, subtract the known fixed costs (like Flight Cost) from the total amount.

2.3. What was Jano’s total spend in the two countries he visited, in Aurels?

Correct Answer: —

Solution:

Approach: This is a currency-conversion caselet. The trick is to anchor everything to one common currency (Zentars), pin down each exchange rate from the citizens' Travel-Cost statements, then add up Jano's two local spends and convert to Aurels.

The data: Four currencies → Aurels (Aurevia), Brins (Brelosia), Crowns (Cyrenia), Zentars (Zerathania), with **1 Crown = 0.5 Zentars**. Jano, Kira and Lian each visit exactly two countries and each country gets exactly two visitors. Flight Cost: Jano = **4000**Z, the others **5000**Z and **6000**Z. Each spend is **1000**, **2000** or **3000** local units, with exactly two spends of **1000** and one of **3000** across all visits. Travel Cost = Flight Cost + money spent, stated in that country's currency.

Step 1 – Fix who went where. Aurevia: Jano & Kira. Brelosia: Kira & Lian. Cyrenia: Lian & one more. Kira already has two countries (Aurevia, Brelosia) and Lian has two (Brelosia, Cyrenia), so Cyrenia's second visitor must be Jano. Hence Jano visits **Aurevia and Cyrenia**.

Step 2 – Get the exchange rates. Let **1** Aurel = a Zentars and **1** Brin = b Zentars. Kira's Brelosia Travel Cost is **4000** Brins and her Aurevia Travel Cost is **8000** Aurels; since these are the same total expressed in two currencies, $4000b = 8000a$, so $b = 2a$. Kira spent **2000** Brins in Brelosia, so $\text{flight}_K + (\text{Aurevia spend})\,a = 2000b = 4000a$. Lian's Cyrenia Travel Cost = **36000** Crowns = **18000** Zentars gives $\text{flight}_L + 3000b + 0.5 \times (\text{Cyrenia spend}) = 18000$. Solving the system consistently forces $a = 2,\ b = 4$: so **1** Aurel = **2**Z, **1** Brin = **4**Z, **1** Crown = **0.5**Z.

Step 3 – Jano's spends. Jano's Aurevia Travel Cost is **3500** Aurels = **7000** Zentars. Subtract his flight **4000**Z to get **3000**Z of spending. With the rates fixed, his spends come out to **1000** Aurels in Aurevia

and **2000** Crowns in Cyrenia.

Step 4 – Convert to Aurels. **1000** Aurels stays **1000**. The **2000** Crowns $= 2000 \times 0.5 = 1000$ Zentars $= 1000/2 = 500$ Aurels.

$$\text{Jano's total spend} = 1000 + 500 = \boxed{1500 \text{ Aurels}}$$

Quick Tip: Always subtract the known costs like Flight Costs from the total and apply the exchange rates carefully to convert to the desired currency.

2.4. One Brin is equivalent to how many Crowns?

(A) 0.5

(B) 4

(C) 0.125

(D) 8

Correct Answer: (D) 8

Solution:

Approach: Both Brins and Crowns are tied to Zentars, so once you know each currency's value in Zentars, the Brin-to-Crown rate is just a ratio. Use the citizens' Travel-Cost statements to lock the rates.

The data: 1 Crown $=$ **0.5** Zentars is given. Travelers Jano, Kira, Lian visit two countries each; flights are **4000**Z (Jano), **5000**Z, **6000**Z. Kira's Travel Cost shows as **8000** Aurels (Aurevia) and her Brelosia cost as **4000** Brins for the same person, and Jano's Aurevia cost is **3500** Aurels.

Step 1 – Aurel value. Jano's Aurevia Travel Cost 3500 Aurels must cover his 4000Z flight plus spending; this is only possible if an Aurel is worth more than a Zentar. Working it through, 1 Aurel = 2 Zentars (then 3500 Aurels = 7000Z, comfortably above the 4000Z flight).

Step 2 – Brin value. Kira's single trip is quoted as 8000 Aurels and 4000 Brins. Equal totals give $8000 \times a = 4000 \times b$; with $a = 2$, $b = \dfrac{8000 \times 2}{4000} = 4$. So 1 Brin = 4 Zentars.

Step 3 – Brin to Crown.

$$1 \text{ Brin} = 4 \text{ Zentars}, \quad 1 \text{ Crown} = 0.5 \text{ Zentars}$$

$$1 \text{ Brin} = \frac{4}{0.5} \text{ Crowns} = \boxed{8 \text{ Crowns}}$$

The answer is **8**.

Quick Tip: Use the given exchange rates to convert between different currencies.

2.5. Which of the following statements is NOT true about money spent in the local currency?

(A) Lian spent 2000 in Cyrenia

(B) Kira spent 1000 in Aurevia

(C) Jano spent 2000 in Aurevia

(D) Jano spent 2000 in Cyrenia

Correct Answer: (C) Jano spent 2000 in Aurevia

Solution:

Approach: Build each traveler's local spends once, then read off the four statements. Only one will clash with the table.

The data: Spends are in local currency. Visits: Aurevia = Jano & Kira; Brelosia = Kira & Lian; Cyrenia = Lian & Jano. Exactly two spends are **1000** and exactly one is **3000**; each traveler's two spends differ. Rates: **1** Aurel = **2**Z, **1** Brin = **4**Z, **1** Crown = **0.5**Z (from the Travel-Cost statements).

Step 1 – Fill the spends. Brelosia is given: Kira **2000** Brins, Lian **3000** Brins (this is the lone **3000**). Using flights and Travel Costs:

Jano: 1000 Aurels (Aurevia), 2000 Crowns (Cyrenia)

Kira: 1000 Aurels (Aurevia), 2000 Brins (Brelosia)

Lian: 3000 Brins (Brelosia), 2000 Crowns (Cyrenia)

The two **1000** spends (Jano and Kira in Aurevia) and the single **3000** (Lian in Brelosia) match the constraint.

Step 2 – Test the options.

- "Lian spent **2000** in Cyrenia" – true.
- "Kira spent **1000** in Aurevia" – true.
- "Jano spent **2000** in Aurevia" – Jano spent **1000** Aurels there, not

2000. **FALSE.**

- "Jano spent **2000** in Cyrenia" – true.

The statement that is NOT true is "**Jano spent 2000 in Aurevia**".

Quick Tip: Verify the given data against the problem conditions to identify the false statements.