

CAT Data Interpretation & Logical Reasoning

Sample Paper – 10

Duration: 40 Minutes

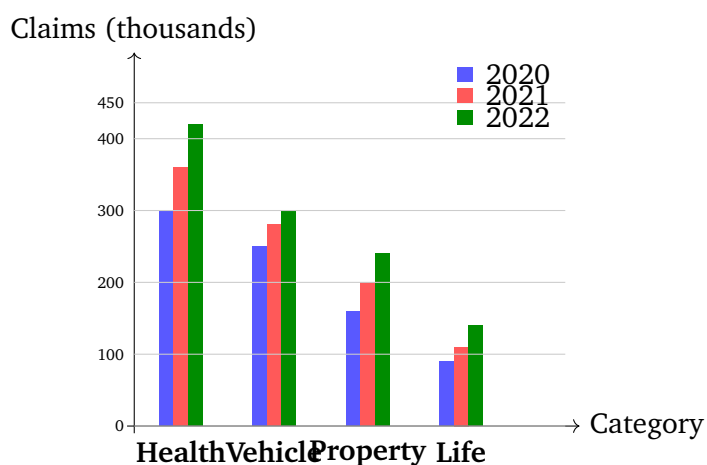
Maximum Marks: 60

Instructions

- This paper contains **20 questions** across **4 sets** (2 Data Interpretation + 2 Logical Reasoning), modelled on the DILR section of **CAT**.
- Each correct answer carries **+3 marks**. There is a penalty of **−1 mark per wrong answer**; **0 marks** for unattempted questions.
- All 20 questions are single-correct MCQ. Maximum Marks: **60**.
- **No personal calculators** are permitted; a basic on-screen calculator is provided in the actual CAT exam.
- **Rough sheets** are provided at the test centre. Each set has a common data/scenario; read it carefully before attempting the questions.

Set A: Data Interpretation — Insurance Claims by Category (Q1 – Q5)

The grouped bar chart below shows the **insurance claims** (in thousands) across four categories for the years 2020, 2021, and 2022.



Q1. Which category had the **highest 3-year total claims**?



- (A) Health (total = 1080 thousand)
- (B) Vehicle (total = 830 thousand)
- (C) Property (total = 600 thousand)
- (D) Life (total = 340 thousand)

Q2. What was the **total claims across all categories** in the year **2021**?

- (A) 900 thousand
- (B) 950 thousand
- (C) 1000 thousand
- (D) 1050 thousand

Q3. What was the **total Vehicle insurance claims** across all three years?

- (A) 780 thousand
- (B) 800 thousand
- (C) 830 thousand
- (D) 860 thousand

Q4. In which year did **Life insurance claims** first exceed 100 thousand?

- (A) 2020 (90 thousand)
- (B) 2022 (140 thousand)
- (C) Both 2021 and 2022
- (D) 2021 (110 thousand)

Q5. Which category showed the **largest absolute increase** in claims from 2021 to 2022?

- (A) Health ($420 - 360 = 60$ thousand)
- (B) Vehicle ($300 - 280 = 20$ thousand)
- (C) Property ($240 - 200 = 40$ thousand)
- (D) Life ($140 - 110 = 30$ thousand)



Set B: Data Interpretation — University Department Enrollment (Q6 – Q10)

The table below shows the **annual student enrollment** across five departments of a university over four academic years.

Department	2019-20	2020-21	2021-22	2022-23
Engineering	1200	1350	1500	1650
Commerce	800	840	900	960
Arts	600	580	620	660
Science	400	450	500	550
Total	3000	3220	3520	3820

- Q6.** In which year did **Arts enrollment decrease** compared to the previous year?
- (A) 2021-22 (Arts enrolled 620)
(B) 2020-21 (Arts dropped from 600 to 580)
(C) 2022-23 (Arts enrolled 660)
(D) No year showed a decrease
- Q7.** What was the **total enrollment across all departments** in **2022-23**?
- (A) 3600
(B) 3700
(C) 3820
(D) 3900
- Q8.** What was the **percentage increase** in Science enrollment from 2019-20 to 2022-23?
- (A) 25%
(B) 30%
(C) 35%
(D) 37.5%



- Q9.** Which department **consistently enrolled the most students** across all four years?
- (A) Engineering (1200, 1350, 1500, 1650)
(B) Commerce (800, 840, 900, 960)
(C) Arts (600, 580, 620, 660)
(D) Science (400, 450, 500, 550)
- Q10.** By how much did **total university enrollment grow** from 2019-20 to 2022-23?
- (A) 700
(B) 820
(C) 900
(D) 1000

Set C: Logical Reasoning — Truth-Teller / Liar Puzzle (Q11 – Q15)

Four friends — A, B, C, D — each either **always** tells the truth (truth-teller) or **always** lies (liar). Exactly **two** of them are truth-tellers and exactly **two** are liars. They make the following statements:

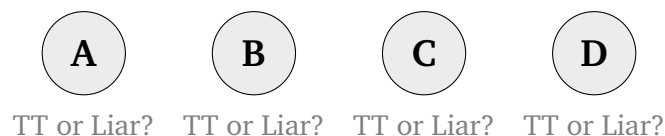
(A says:) “B is a truth-teller” and “D is a liar”

(B says:) “A is a truth-teller” and “C is a liar”

(C says:) “A is a liar” and “B is a liar”

(D says:) “C is a truth-teller” and “A is a liar”

Exactly 2 truth-tellers, exactly 2 liars



- Q11.** Who among the four is **definitely a truth-teller**?

(A) C



- (B) D
- (C) A
- (D) None of them

Q12. Which **pair** consists of the **two liars**?

- (A) A and B
- (B) A and C
- (C) B and D
- (D) C and D

Q13. How many of the four friends are **truth-tellers**?

- (A) 2
- (B) 1
- (C) 3
- (D) 4

Q14. C says “A is a liar.” This statement is:

- (A) True
- (B) False
- (C) Cannot be determined
- (D) Partially true

Q15. A fifth person E says “D is a truth-teller.” Since D is a liar, this statement is **false**. Therefore E must be:

- (A) A truth-teller
- (B) Cannot be determined
- (C) A liar
- (D) Either a truth-teller or a liar



Set D: Logical Reasoning — Linear Office Arrangement (Q16 – Q20)

Six employees — P, Q, R, S, T, U — each occupy one of six offices numbered **1 to 6** from left to right (one person per office). The following conditions apply:

- (i) P is in **Office 2**.
- (ii) T is in **Office 5**.
- (iii) Q and S occupy **adjacent offices** (offices with consecutive numbers).
- (iv) R's office number is **less than** U's office number (R is to the left of U).
- (v) Q occupies an **even-numbered** office.



P=Office 2 and T=Office 5 are fixed; others to be determined

Q16. Who occupies **Office 3**?

- (A) P
- (B) Q
- (C) T
- (D) S

Q17. Who are the **immediate neighbors** of Q (Office 4)?

- (A) S and T
- (B) P and T
- (C) R and S
- (D) T and U

Q18. How many offices are **between** R (Office 1) and U (Office 6)?

- (A) 3
- (B) 4



(C) 5

(D) 2

Q19. Who is in the office **immediately to the left of T** (Office 5)?

(A) S

(B) U

(C) Q

(D) R

Q20. If U and R **swap their offices**, who would then occupy **Office 1**?

(A) R

(B) P

(C) S

(D) U



Detailed Solutions**Sol. 1.****Solution**

Concept — Column Summation: Add the 3-year claim values for each category and compare.

Step 1 — Calculate the 3-year total for each category:

- Health: $300 + 360 + 420 = 1080$ thousand
- Vehicle: $250 + 280 + 300 = 830$ thousand
- Property: $160 + 200 + 240 = 600$ thousand
- Life: $90 + 110 + 140 = 340$ thousand

Step 2 — Identify the highest total: $1080 > 830 > 600 > 340$. Health had the highest 3-year total.

Why other options are wrong:

- Option B: Vehicle (830) — second highest, 250 thousand less than Health.
- Option C: Property (600) — third highest, significantly below Health.
- Option D: Life (340) — the lowest total among all four categories.

Final Answer: Health had the highest 3-year total claims (1080 thousand) $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 1](#)

Sol. 2.**Solution**

Concept — Row Summation: Add the 2021 claims across all four categories.

Step 1 — Read the 2021 values for each category:

- Health: 360 thousand
- Vehicle: 280 thousand
- Property: 200 thousand
- Life: 110 thousand

Step 2 — Sum all values: $360 + 280 + 200 + 110 = 950$ thousand.

Why other options are wrong:



- Option A: 900 thousand — under-counts by 50; likely misreads one category value.
- Option C: 1000 thousand — over-counts by 50; perhaps uses 2022 Health value (420) instead of 360.
- Option D: 1050 thousand — over-counts by 100; arithmetic error using incorrect values.

Final Answer: Total claims across all categories in 2021 = 950 thousand $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 2](#)

Sol. 3.

Solution

Concept — Column Summation: Add the Vehicle claims for all three years.

Step 1 — Identify Vehicle claims for each year: 2020 = 250 thousand, 2021 = 280 thousand, 2022 = 300 thousand.

Step 2 — Sum all values: $250 + 280 + 300 = 830$ thousand.

Why other options are wrong:

- Option A: 780 thousand — under-counts by 50; possibly misreads 2020 as 200 instead of 250.
- Option B: 800 thousand — under-counts by 30; small misread of one or two year values.
- Option D: 860 thousand — over-counts by 30; perhaps uses 310 for 2022 instead of 300.

Final Answer: Total Vehicle insurance claims = 830 thousand $\Rightarrow$ **C**

Answer: (C) [Go Back to Q 3](#)

Sol. 4.

Solution

Concept — Threshold Identification: Find the first year in which Life insurance claims exceeded 100 thousand.

Step 1 — Check Life claims year by year:



- 2020: 90 thousand (< 100 — below threshold)
- 2021: 110 thousand (> 100 — **first year above threshold**)
- 2022: 140 thousand (> 100 — also above, but not the first)

Step 2 — Identify the first crossing year: 2021 is the first year Life claims exceeded 100 thousand.

Why other options are wrong:

- Option A: 2020 — Life claims were only 90 thousand in 2020, which is below 100.
- Option B: 2022 — claims did exceed 100 in 2022, but 2021 was earlier.
- Option C: Both 2021 and 2022 — while true that both years exceeded 100, the question asks for the *first* year, which is 2021 alone.

Final Answer: Life insurance claims first exceeded 100 thousand in 2021 $\Rightarrow$ **D**

Answer: (D) [Go Back to Q 4](#)

Sol. 5.

Solution

Concept — Absolute Change Comparison: Calculate the 2021-to-2022 increase for each category and find the largest.

Step 1 — Calculate the absolute increase from 2021 to 2022 for each category:

- Health: $420 - 360 = 60$ thousand
- Vehicle: $300 - 280 = 20$ thousand
- Property: $240 - 200 = 40$ thousand
- Life: $140 - 110 = 30$ thousand

Step 2 — Identify the largest absolute increase: $60 > 40 > 30 > 20$. Health showed the largest absolute increase.

Why other options are wrong:

- Option B: Vehicle (increase of 20) — the smallest absolute increase among all categories.
- Option C: Property (increase of 40) — second largest, but 20 thousand less than Health.



- Option D: Life (increase of 30) — third largest, behind both Health and Property.

Final Answer: Health showed the largest absolute increase (60 thousand) from 2021 to 2022 $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 5](#)

Sol. 6.

Solution

Concept — Identifying a Decrease in a Time Series: Compare each year's Arts enrollment with the previous year's value.

Step 1 — Track Arts enrollment year by year:

- 2019-20: 600 (baseline)
- 2020-21: 580 ($580 < 600 \Rightarrow$ **Decreased by 20**)
- 2021-22: 620 ($620 > 580 \Rightarrow$ Increased)
- 2022-23: 660 ($660 > 620 \Rightarrow$ Increased)

Step 2 — Identify the year with a decrease: Only 2020-21 saw a decrease in Arts enrollment (from 600 to 580).

Why other options are wrong:

- Option A: 2021-22 — enrollment rose from 580 to 620 in this year.
- Option C: 2022-23 — enrollment rose from 620 to 660 in this year.
- Option D: No year showed a decrease — incorrect; 2020-21 clearly shows a drop.

Final Answer: Arts enrollment decreased in 2020-21 $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 6](#)



Sol. 7.

Solution

Concept — Row Summation: Add the 2022-23 enrollment values across all departments.

Step 1 — Read the 2022-23 enrollment for each department: Engineering = 1650, Commerce = 960, Arts = 660, Science = 550.

Step 2 — Sum all values: $1650 + 960 + 660 + 550 = 3820$.

Why other options are wrong:

- Option A: 3600 — under-counts by 220; misreads multiple department values.
- Option B: 3700 — under-counts by 120; likely misreads Engineering as 1530 instead of 1650.
- Option D: 3900 — over-counts by 80; arithmetic error in summation.

Final Answer: Total enrollment in 2022-23 = 3820 $\Rightarrow$ **C**

Answer: (C) [Go Back to Q 7](#)

Sol. 8.

Solution

Concept — Percentage Change: $\% \text{ change} = \frac{\text{New} - \text{Old}}{\text{Old}} \times 100$.

Step 1 — Identify Science enrollment for the two years: 2019-20 = 400; 2022-23 = 550.

Step 2 — Calculate the percentage increase:

$$\% \text{ increase} = \frac{550 - 400}{400} \times 100 = \frac{150}{400} \times 100 = 37.5\%$$

Why other options are wrong:

- Option A: 25% — would imply 2022-23 value = $400 \times 1.25 = 500$, not 550.
- Option B: 30% — would imply 2022-23 value = $400 \times 1.30 = 520$, not 550.
- Option C: 35% — would imply 2022-23 value = $400 \times 1.35 = 540$, not 550.

Final Answer: Science enrollment increased by 37.5% from 2019-20 to 2022-23 $\Rightarrow$ **D**



Answer: (D) [Go Back to Q 8](#)

Sol. 9.

Solution

Concept — Consistent Maximum Across All Years: Check which department has the highest enrollment in every single year.

Step 1 — Identify the top department in each year:

- 2019-20: Engineering (1200) > Commerce (800) > Arts (600) > Science (400)
- 2020-21: Engineering (1350) > Commerce (840) > Arts (580) > Science (450)
- 2021-22: Engineering (1500) > Commerce (900) > Arts (620) > Science (500)
- 2022-23: Engineering (1650) > Commerce (960) > Arts (660) > Science (550)

Step 2 — Identify the consistent leader: Engineering is the top-enrolled department in all four years without exception.

Why other options are wrong:

- Option B: Commerce — consistently second, always below Engineering.
- Option C: Arts — consistently third, and even dipped in 2020-21.
- Option D: Science — consistently the lowest of the four departments.

Final Answer: Engineering consistently enrolled the most students across all four years $\Rightarrow$

Answer: (A) [Go Back to Q 9](#)

Sol. 10.

Solution

Concept — Absolute Change (Overall Total): Subtract the 2019-20 total from the 2022-23 total.

Step 1 — Identify total enrollment for the two years: 2019-20 total = 3000; 2022-23 total = 3820.



Step 2 — Calculate the growth: $3820 - 3000 = 820$.

Why other options are wrong:

- Option A: 700 — under-counts by 120; would imply 2022-23 total = 3700, not 3820.
- Option C: 900 — over-counts by 80; would imply 2022-23 total = 3900, not 3820.
- Option D: 1000 — over-counts by 180; would imply 2022-23 total = 4000, not 3820.

Final Answer: Total university enrollment grew by 820 from 2019-20 to 2022-23
 $\Rightarrow$

Answer: (B) [Go Back to Q 10](#)

Sol. 11.

Solution

Concept — Truth-Teller/Liar Deduction: Assume A is a truth-teller and check consistency with the constraint of exactly 2 truth-tellers and 2 liars.

Step 1 — Assume A is a truth-teller: A's statements are both true: "B is a truth-teller" and "D is a liar." $\Rightarrow$ B = truth-teller, D = liar.

Step 2 — Determine C's identity: B is a truth-teller, so B's statements are true: "A is a truth-teller" and "C is a liar." $\Rightarrow$ C = liar. (This is consistent with A = truth-teller.)

Step 3 — Verify the solution A=TT, B=TT, C=Liar, D=Liar:

- C (liar): "A is a liar" — FALSE $\checkmark$; "B is a liar" — FALSE $\checkmark$
- D (liar): "C is a truth-teller" — FALSE $\checkmark$; "A is a liar" — FALSE $\checkmark$

All statements are consistent. **Unique solution:** A=TT, B=TT, C=Liar, D=Liar.

Why other options are wrong:

- Option A: C — C is a liar, not a truth-teller.
- Option B: D — D is a liar, not a truth-teller.
- Option D: None — A is definitely a truth-teller.

Final Answer: A is definitely a truth-teller $\Rightarrow$

Answer: (C) [Go Back to Q 11](#)



Sol. 12.

Solution

Concept — Identifying the Pair of Liars: From the derived solution $A=TT$, $B=TT$, $C=Liar$, $D=Liar$.

Step 1 — State the known identities: $A = \text{truth-teller}$, $B = \text{truth-teller}$, $C = \text{liar}$, $D = \text{liar}$.

Step 2 — Identify the liar pair: C and D are both liars.

Why other options are wrong:

- Option A: A and B — both are truth-tellers, not liars.
- Option B: A and C — A is a truth-teller; only C is a liar in this pair.
- Option C: B and D — B is a truth-teller; only D is a liar in this pair.

Final Answer: C and D are the two liars $\Rightarrow$ D

Answer: (D) [Go Back to Q 12](#)

Sol. 13.

Solution

Concept — Reading the Constraint: The problem states exactly two truth-tellers and exactly two liars.

Step 1 — Recall the given constraint: “Exactly two of them are truth-tellers and exactly two are liars.”

Step 2 — Confirm with the derived solution: $A=TT$, $B=TT$, $C=Liar$, $D=Liar$. Exactly 2 truth-tellers (A and B) ✓.

Why other options are wrong:

- Option B: 1 — contradicts the problem statement which specifies exactly two truth-tellers.
- Option C: 3 — would mean only one liar, contradicting the exactly-two-liars condition.
- Option D: 4 — would mean all are truth-tellers and none are liars, directly contradicting the setup.

Final Answer: There are exactly 2 truth-tellers $\Rightarrow$ A

Answer: (A) [Go Back to Q 13](#)



Sol. 14.

Solution

Concept — Evaluating a Liar's Statement: C is a liar, so every statement C makes is false.

Step 1 — Establish A's identity: From the derived solution: A is a truth-teller.

Step 2 — Evaluate C's statement "A is a liar": Since A is actually a truth-teller, the statement "A is a liar" is **FALSE**. This is consistent with C being a liar (all of C's statements must be false).

Why other options are wrong:

- Option A: True — the statement is false because A is a truth-teller, not a liar.
- Option C: Cannot be determined — the solution is uniquely determined; A is definitely a truth-teller.
- Option D: Partially true — a logical statement is either true or false; it cannot be partially true.

Final Answer: C's statement "A is a liar" is false $\Rightarrow$ B

Answer: (B) [Go Back to Q 14](#)

Sol. 15.

Solution

Concept — Classifying a New Person Based on Their Statement: If a person makes a false statement, they must be a liar.

Step 1 — Establish D's identity: From the derived solution: D is a liar.

Step 2 — Evaluate E's statement "D is a truth-teller": Since D is a liar, the statement "D is a truth-teller" is **false**.

Step 3 — Classify E: E made a false statement. In a world where people are either always-truth-tellers or always-liars, making a false statement means E is a liar.

Why other options are wrong:

- Option A: A truth-teller — a truth-teller always makes true statements, but E's statement is false; contradiction.
- Option B: Cannot be determined — the statement is definitively false, so E is definitively a liar.



- Option D: Either a truth-teller or liar — the false statement rules out truth-teller; only liar is possible.

Final Answer: E must be a liar $\Rightarrow$ C

Answer: (C) [Go Back to Q 15](#)

Sol. 16.

Solution

Concept — Linear Arrangement Deduction: Apply conditions (i)–(v) step by step to derive the unique seating arrangement.

Step 1 — Apply fixed conditions: From (i): P = Office 2. From (ii): T = Office 5.

Step 2 — Determine Q's office using condition (v): Q must be in an even-numbered office: {2, 4, 6}. Office 2 is taken by P, so $Q \in \{4, 6\}$.

Step 3 — Apply condition (iii) (Q and S are adjacent):

- If Q = 6: S would need to be in Office 5 or 7. Office 5 = T (conflict); Office 7 doesn't exist. **Invalid.**
- If Q = 4: $S \in \{3, 5\}$. Office 5 = T, so S = 3. **Valid.**

$\Rightarrow$ Q = Office 4, S = Office 3.

Step 4 — Assign R and U using condition (iv): Remaining offices: 1 and 6. R must be to the left of U ($R < U$). So R = 1, U = 6.

Final arrangement: R(1) – P(2) – S(3) – Q(4) – T(5) – U(6).

Office 3 is occupied by S.

Why other options are wrong:

- Option A: P — P is in Office 2, not Office 3.
- Option B: Q — Q is in Office 4, not Office 3.
- Option C: T — T is in Office 5, not Office 3.

Final Answer: S occupies Office 3 $\Rightarrow$ D

Answer: (D) [Go Back to Q 16](#)



Sol. 17.

Solution

Concept — Adjacent Offices in a Linear Arrangement: The immediate neighbors of Office 4 are Office 3 and Office 5.

Step 1 — Recall the final arrangement: R(1) – P(2) – S(3) – Q(4) – T(5) – U(6).

Step 2 — Identify the neighbors of Q (Office 4):

- Office 3 = S (immediately to the left of Q)
- Office 5 = T (immediately to the right of Q)

Q's immediate neighbors are **S and T**.

Why other options are wrong:

- Option B: P and T — P is in Office 2, two offices away from Q; not an immediate neighbor.
- Option C: R and S — R is in Office 1, three offices away from Q; not an immediate neighbor.
- Option D: T and U — U is in Office 6, two offices away from Q; not an immediate neighbor.

Final Answer: Q's immediate neighbors are S (Office 3) and T (Office 5) $\Rightarrow$ **A**

Answer: (A) [Go Back to Q 17](#)

Sol. 18.

Solution

Concept — Counting Intermediate Offices: Count the offices strictly between Office 1 (R) and Office 6 (U), exclusive of both endpoints.

Step 1 — Recall the arrangement: R = Office 1, U = Office 6.

Step 2 — List the offices between 1 and 6 (exclusive): Offices 2, 3, 4, 5 lie strictly between Office 1 and Office 6. That is **4 offices**.

Step 3 — Verify: P(2), S(3), Q(4), T(5) — exactly 4 people/offices between R and U.

Why other options are wrong:

- Option A: 3 — would be correct only if the endpoints were 2 apart (e.g.,



offices 1 and 5 have 3 offices between them).

- Option C: 5 — would require 7 total offices; this arrangement has only 6.
- Option D: 2 — would correspond to offices 1 and 4 (offices 2 and 3 between them).

Final Answer: There are 4 offices between R (Office 1) and U (Office 6) $\Rightarrow$ **B**

Answer: (B) [Go Back to Q 18](#)

Sol. 19.

Solution

Concept — Identifying the Immediate Left Neighbor: The office immediately to the left of Office 5 is Office 4.

Step 1 — Recall the final arrangement: R(1) – P(2) – S(3) – Q(4) – T(5) – U(6).

Step 2 — Identify Office 4: Office 4 = Q. Therefore, Q is immediately to the left of T (Office 5).

Why other options are wrong:

- Option A: S — S is in Office 3, two offices to the left of T, not immediately adjacent.
- Option B: U — U is in Office 6, which is to the *right* of T, not to the left.
- Option D: R — R is in Office 1, four offices to the left of T.

Final Answer: Q (Office 4) is immediately to the left of T (Office 5) $\Rightarrow$ **C**

Answer: (C) [Go Back to Q 19](#)

Sol. 20.

Solution

Concept — Effect of a Swap: If U and R exchange offices, each takes the other's original position.

Step 1 — Identify original offices: R = Office 1, U = Office 6.

Step 2 — Apply the swap: After swapping: U moves to Office 1 (R's original position); R moves to Office 6 (U's original position). All other employees remain unchanged: P(2), S(3), Q(4), T(5).



Step 3 — Identify who occupies Office 1 after the swap: Office 1 is now occupied by U.

Why other options are wrong:

- Option A: R — after the swap, R is in Office 6, not Office 1.
- Option B: P — P remains in Office 2, unaffected by the R–U swap.
- Option C: S — S remains in Office 3, unaffected by the R–U swap.

Final Answer: After the swap, U occupies Office 1 $\Rightarrow$ D

Answer: (D) [Go Back to Q 20](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	A	10	B
11	C	12	D	13	A	14	B	15	C
16	D	17	A	18	B	19	C	20	D

Quick Reference: Correct Answers

Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	6	B	11	C	16	D
2	B	7	C	12	D	17	A
3	C	8	D	13	A	18	B
4	D	9	A	14	B	19	C
5	A	10	B	15	C	20	D

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