*Directions for questions 1-4: These questions are based on the following piece of information; choose the right option for each question after carefully analyzing the given information

Five Executives of a European corporation hold a conference in Rome.
Mr. A converses in Spanish and Italian.
Mr. B converses in Spanish and English.
Mr. C converses in English and Italian.
Mr. D converses in French and Spanish.
Mr. E, a native Italian, can also converse in French.

1. Which of the following can at as an interpreter when Mr. C and Mr. D wish to confer?
$\begin{array}{llll}\text { A] only Mr. A } & \text { B] only Mr. B } & \text { C] only Mr. E } & \text { D] Mr. A or Mr. B E] any of the other three executives }\end{array}$ 2. Which of the following cannot converse without an interpreter?
A] Mr. B and Mr. E
B] Mr. A and Mr. B
C] Mr. A and Mr. C
E] Mr. A and Mr. E
2. Besides Mr. E which of the following can converse with Mr. D without an interpreter?
$\begin{array}{llll}\text { A] only Mr. A } & \text { B] only Mr. B } & \text { C] only Mr. C } & \text { D] Mr. A and Mr. B } \\ \text { E] Mr. A, Mr. B and Mr. C }\end{array}$
3. Of the languages spoken at this conference, which are the two least common?
A] English and Spanish
B] English and French
C] Italian and Spanish
D] English and Italian
E] French and Spanish
** Directions for questions 5-8: These questions are based on the following information; choose the right option for each question after carefully analyzing the given information

In order to conduct the work of a mail order concern it is necessary to have a minimum of three workers each day. The staff consists of five persons who work on part time basis. Alice can work on Mondays, Wednesdays, and Fridays. Betty cannot report for work on Wednesdays. Carol can report for work on Tuesdays and Wednesdays only. Dorothy cannot work on Fridays. Edith is available anytime except on first Monday and Thursday of the month.
5. Which three are available on any Monday?

A] Dorothy, Betty and AliceB] Alice, Edith and Carol C] Betty, Edith and Carol $\quad$ D] Edith, Carol and Dorothy E] Betty, Carol and Dorothy
6. Which three could you count on to report for work on Friday?

A] Alice, Betty and DorothyB] Alice, Carol and Dorothy $\quad$ C] Betty, Carol and Edith D] Carol,
Betty and Alice E] Alice, Betty and Edith
7. During which day of the week might it be impossible to obtain a full complement of workers?
A] Monday
B] Tuesday
C] Wednesday
D] Thursday
E] Friday
8. During Which day of the week would it be necessary to call on Alice to complete the full complement of workers?
A] Monday
B] Tuesday
C] Wednesday
D] Thursday
E] Friday
*Directions for questions 9-12: These questions are based on the following piece of information; choose the right option for each question after carefully analyzing the given information

Mr. Pesth, foreman for Buda Construction company, is hiring five persons to do wiring and plumbing on a site. He must have a minimum of two electricians. Nine persons are sent by union hiring hall: $M$, $\mathrm{N}, \mathrm{O}$ are electricians, while $\mathrm{R}, \mathrm{S}, \mathrm{T}, \mathrm{U}, \mathrm{V}$ and W are plumbers. Pesth is unwilling to hire U and V together because he knows from past experience that they fight all the time. $S$ and $T$ are buddies and will work together. O wont work with R.
9. If $\mathrm{M}, \mathrm{N}$ and O are hired. The team of plumbers consists of:

A] S and T only $\quad$ B] $S$ and $T$ or $U$ and $V \quad C] U$ and $W$ or $V$ and $W$
C] U and $W$
$e r ~ U, V$ or $W$
D]
S and T or U and W or V and W E] S, T and either U, V or W
10. Pesth has the greatest number of choices for hiring as plumbers if he chooses the electricians:
A] $\mathrm{M}, \mathrm{N}$ and O
B] $M$ and $N$
C] M and O
$D]$ either M and N plus O
11. If $R$ is hired, the other persons hired must be:

A] M, N, S, T B] M, N, O and either U, V or W C] M and $N$ together with either $S$ and $T$ or $U$ and $W$
D] M and N together with either U and V or V and W
E] M and N together with either S and $\mathrm{T}, \mathrm{U}$ and W or V and W
12. Pesth can put together the rest of his crew in the greatest number of different ways if hires
A] $S$ and $T$
B] O
C] $\cup$
D] $V$
E] W
*** Directions for questions 13-15: These questions are based on the following piece of information; choose the right option for each question after carefully analyzing the given information

A certain baseball team has four pitches, named Miller, Craig, Hook and Mizell. Each of the four is best known for throwing one type of pitch: fastball, curve ball, slider or screwball. Each of the four also uses a particular style of delivery in pitching: overhand, three quarter, side arm or underhand. Hook is best known for throwing slider. Neither Craig nor does Mizell use a three quarter style of delivery. The pitcher who uses an underhand delivery is best known for throwing the fastball. Mizell is best known for throwing the screwball. Miller uses an overhand delivery.
13. Which of the following correctly matches a pitcher with his best-known pitch and his style of delivery?
A] Miller- curveball- three quarter
B] hook - slider- side arm C] Craig - fastball - underhand
D] Mizell - curveball - underhand
E] Miller - screwball - sidearm
14. During a game, if the starting pitcher is ineffective, he will be replaced by another pitcher. All of the following are possible pitching changes except:
A] The curveball pitcher being replaced by the pitcher who uses an overhand delivery
B] The screwball pitcher being replaced by hook
C] Miller being replaced by the fastball pitcher
D] The slider pitcher being replaced by the pitcher who uses a side arm delivery
E] Craig being replaced by the curve ball pitcher
15. In a four game series, the manager of the team Decides to pitch the fast ball pitcher first, the pitcher who uses a three quarter delivery second, the curve ball pitcher third, and the pitcher who uses a sidearm delivery fourth. In which order will the pitchers appear?
A] Mizell, Craig, Miller, Hook
B] Craig, Hook, Miller, Mizell
C] Miller, Craig, Hook, Mizell
D] Craig, Miller, Mizell, Hook
E] Miller, Hook, Mizell, Craig
*Directions for questions 16-19: These questions are based on the following piece of information; choose the right option for each question after carefully analyzing the given information.

Of the seven members of a college chess team whose rankings qualify them to compete at the national intercollegiate chess championship, four will be chosen to make a trip. The seven qualifying members consists of three juniors - Amir, Brett and Cara and four seniors - Rajiv, Sasha, Tomas and Ursula. In making his selection, in addition to assessing to other criteria, the coach must adhere to the following conditions: Rajiv and Sasha cannot both go to the championship, Brett and Tomas cannot both go to the championship, Neither Brett nor Cara will go to the championship unless the other goes.
16. If Cara is selected to go for the championship, each of the following could also be selected to go except
A] Amir B] Rajiv
C] Sasha
D] Tomas
E] Ursula
17. If Amir and Rajiv are both selected, in how many ways could the coach select the other two team $\begin{array}{llllll}\text { members? A] } 1 & \text { B] } 2 & \text { C] } 3 & \text { D] } 4 & \text { E] } 5\end{array}$
18. If coach decides to select two juniors and two seniors, which of the following is a pair of students neither of whom can be selected?
A] Amir and Tomas B] Amir and Rajiv C] Brett and Cara D] Rajiv and Tomas
E] Tomas and Ursula
19. Which of the following cannot be true?
A] More juniors than seniors are selected
B] More seniors than juniors are selected
C] All of the juniors are selected
D] None of the juniors are selected

E] Amir, Ursula and Tomas are all selected


## All the Best! Happy Solving!

Probability to come in TCS, CTS, Wipro, ITC Infotech, HP, Capgemini, Accenture, etc [* Average ** High *** Very High]
Directions: These questions are based on the following piece of information; choose the right option for each question after carefully analyzing the given information.

## dM Analytical Reasoning 1***

Eight varsity baseball players (G, H, J, K, L, M, N, and O) are to be honored at a special ceremony. Three of these players $(H, M$, and $O$ ) are also varsity football players. Two of them ( $K$ and $N$ ) are also basketball players on the varsity team. In arranging the seats it was decided that no athlete in two sports should be seated next to another two-sport athlete.

1. Which of the following combination is possible in order to have the arrangement of seat assignments as planned?
(A) H G K J
(B) H K J L
(C) J K M N
(D) J L H K
(E) L K N J
2. Which of the following cannot sit next to $M$ ?
(A) G
(B) J
(C) G and J
(D) K
(E) L
3. Before all athletes are seated there are two vacant seats on either side of $N$. Which two athletes may occupy these seats?
(A) G and K
(B) G and L
(C) J and H
(D) L and O
(E) $M$ and $J$
4. To have the proper seating arrangement, $K$ should sit between
(A) G and H
(B) J and M
(C) L and $N$
(D) J and N
(E) J and L

## dM Analytical Reasoning 2*

The organizer of Local 58 of the hospital workers is forming a five-person team to leaflet a nearby hospital. The team must contain two persons to distribute leaflets, one speaker to address the workers who stop, and a two person defense squad. $A, B$, and $C$ are possible leaf letters; C, D, and $E$ are possible speakers; $F, G$, and $H$ are possible members of defense guards. A and C prefer to work with each other on the same team. E prefers to work only if $F$ works.
5. Which is the possible team if all preferences are respected?
(A) A, B, C, D, F
(B) A, C, D, E, F
(C) A, B, C, F, G
(D) A, C, E, G, H
(E) B, C, D, F, G
6. If $A$ is chosen as a member of the team and all preferences are respected, which must be true?
(A) B must be a leafletter
(B) C must be a leafletter
(C) F must go
(D) Any of the three defense personnel may go (E) Neither D or E can go.
7. Which choice of personnel is impossible if all preferences are respected?
(A) A and B as leafletters, $C$ as speaker
(B) $B$ and $C$ as leafletters
(C) And C as leafletters, F and H on defense (D)
Either $D$ or $E$ as speaker, with $F$ on defense (E) $G$ and $H$ on defense
8. If $A$ and $B$ are leafletters and all preferences are respected, which is (are) true?
I. C is the speaker.
II. $F$ is on defense
III. Either F or G is on defense
(A) I only
(B) II only
(C) III only
(D) I and II only
(E) I and III only
9. How many different possible teams can the organizer assemble, if all preferences are respected?
(A) 5
(B) 8
(C) 9
(D) 13
(E) 15
10. Which person(s) must be chosen as part of any team, if all preferences are respected?
I. A
II. E
III. F
(A) I only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II and III
11. Which person can be part of the smallest number of different possible teams, if everyone's preferences are respected?
(A) A
(B) B
(C) C
(D) D
(E) E

## dM Analytical Reasoning 3**

Delegation from Wallachia and Rumelia are meeting to discuss military, trade, and diplomatic problems. Each delegation consists of a chairperson, two military attaches, and two trade experts. The Wallachian delegation consists of A, B, C, D, and $E$; The Rumelian delegation of $F, G, H, I$, and $J$. Each chairperson is to occupy rectangular table. The two delegations sit on opposite sides of the rectangular table.

1. A insists on being seated at the opposite end of the table from $B$.
2. G, who is deaf in his right ear, must be at the right end
3. Neither $D$ nor $F$ is a chairperson.
4. The Wallachian military attachees, one of whom is B, are seated together, and neither is opposite either of the Rumelian military attaches, neither of whom is $\mathbf{G}$.
5. C, is a trade expert, is seated opposite $H$.
6. F may be a
(A) trade expert seated next to I.
(B) military attaché seated next to I (C) military attaché seated next to J
(D) trade expert seated next to H .
(E) trade expert seated opposite B.
7. About which of the following do the stated conditions provide the least Information?
(A) The identity of the Wallachian person
(B) The identity of the Rumelian person
(C) The identities and seating positions of the Walachian military attaches
(D) Which delegate is immediately to the right of the Wallachian chairperson
(E) Which delegate is immediately to the right of the Rumelian chairperson.
8. If J is a military attaché, which of the following must be true?
I. The Rum
(A) I only
(B) II only
II. F is a trade expert.
III. I is a trade expert.
(C) I and II only
(D) I or III but not both
(E) II or III , but not both
9. Which of the following can be deduced from the introductory paragraph plus statements (1), (2), (4), and (5) only?
(A) The identities of the Rumelian trade experts.
(B) The identities of the Wallachian military attaches
(C) The identity of the Wallachian chairperson
(D) which two delegates are seated between G and H .
(E) Which two delegates are seated between B and C

## dM Analytical Reasoning 4*

Byram and Adoniram are code clerks at the Pentagon. They are also secret agents for foreign governments. One is in the pay of the Sulgravians and the other is in the pay of the Carolingians. If a document is stolen, it will take four days to reach the Sulgravian government and five days to reach the Carolingians government. Byram is given top-secret documents to encode on October 19 and 22.Adoniram is given a top-secret document to encode on October 21.Byram and Adoniram have lunch together on October 20.Agents of foreign governments do not transmit documents directly to the governments that do not employ them, but may sell documents to an agent of another government. An agent who transmits a document always does so on the day he receives it.
16.If Adoniram is working with the Sulgravians, the Sulgravian government may receive documents on
I. October 24
II. October 25
III. October 26
(A) I only
(B) III only
(C) I and II only
(D) II and III only (E) I, II, and III
17. A top-secret document is received by the Carolingians on October 25 . It could have been
(A) stolen and transmitted by Byram
(B) stolen and transmitted by Adoniram
(C) stolen by Adoniram and sold to Byram, who transmitted it (D) stolen by Byram and sold to Adoniram, who transmitted it. (E) stolen by either Byram or Adoniram and sold to the other, who transmitted it.
18. If Adoniram is working for the Carolingians, which must be true?
(A) The Sulgravians may receive documents only on October 23.
(B) The Carolingians may receive documents only on October 26. (C) The Sulgravians may receive documents only on October 24, 26, and 27.
(D) The Carolingians may receive documents only on October 24, 25, and 26 (E) No documents received by the Sulgravians can have been bought at Byram and Adoniram's lunchtime meeting.
19. Which of the following is(are) possible given the conditions as stated?
I. Documents are received by one of the governments two days in a row. II. Documents are received by both the governments two days in a row. III. Documents are received by one of the governments three days in a row.
(A) I only
(B) III only
(C) I and III only
(D) I, II, and III
(E) neither I, II, nor III

## dM Analytical Reasoning 5**

(1) Ashland is north of East Liverpool and west of Coshocton.
(2) Bowling Green is north of Ashland and west of Fredericktown
(3) Dover is south and east of Ashland
(4) East Liverpool is north of Fredericktown and east of Dover.
(5) Fredericktown is north of Dover and west of Ashland
(6) Coshocton is south of Fredericktown and west of Dover.
20. Which of the towns mentioned is furthest to the northwest?
(A) Ashland
(B) Bowling Green
(C) Coshocton
(D) East Liverpool
(E) Fredericktown
21. Which of the following must be both north and east of Fredericktown?
I. Ashland
II. Coshocton
III. East Liverpool
(A) I only
(B) II only
(C) III only
(D) I and II
(E) Iand III
22. Which of the following towns must be situated both south and west of at least one other town?
(A) Ashland only
(B) Ashland and Fredericktown
(C) Dover and Fredericktown
(D)Dover, Coshocton, Fredericktown
(E) Coshocton, Dover, and East Liverpool
23. Which of the following statements, if true, would make the information in the numbered statements more specific?
(A) Coshocton is north of Dover
(B) East Liverpoolis north of Dover
(C) Ashland is east of Bowling Green

## Coshocton is east of Fredericktown <br> (E) Bowling Green is north of Fredericktown

24. Which of the numbered statements gives information that can be deduced from one or more of the other statements?
(A) (1)
(B) (2)
(C) (3)
(D) (4)
(E) (6)

## dM Analytical Reasoning 6*

Spelunkers International offers exploring tours in eight caves: Abbott, Benny, Caesar, Dangerfield, Ewell, Fields, Guinness, and Hope.
(1) Class 1 spelunkers may not attempt cave Ewell, Fields, or Hope.
(2) Class 2 spelunkers may not attempt cave Hope
(3) Class 3 spelunkers may attempt any cave.
(4) Cave Caesar may be attempted only by spelunkers who have previously explored cave Benny.
(5) Cave Fields may be attempted only by spelunkers who have previously explored cave Ewell.
(6) Only two of caves Benny, Caesar, Ewell, Fields, and Hope may be attempted by any explorer in a single tour.
25. Which tour is allowed for class 2 spelunker who has never explored any of the eight caves before, if the caves are attempted in the order listed?
(A) Abbott, Fields, Ewell. Benny
(B) Dangerfield, G
(D) Dangerfield, Ewell, Fields, Abbott, Caesar
(E) Guinness, Ewell, Fields, Dangerfield, Benny
26. A class 2 spelunker who has previously explored cave Ewell may be restricted in choosing a tour by which rule(s)?
I. Rule (4)
II. Rule (5)
III. Rule (6)
(A) I only
B) II only
(C) I and III only
(D) II and III only
(E) I, II, and III
27. In how many different ways may a class I spelunker who has never explored any of the eight caves before set up a tour of three caves, if she wishes to explore caves Abbott and Caesar?
(A) 2
(B) 3
(C) 4
(D) 5
(E) 6
28. What is the maximum number of caves that a class 3 spelunker who has previously explored only cave Benny may include in a
single tour?
(A) 4
(B) 5
(C) 6
(D) 7
(E) 8

## dM Analytical Reasoning 7***

John is undecided which of four popular novels to buy. He is considering a spy thriller, a murder mystery, a Gothic romance, and a science fiction novel. The books are written by Rothko, Gorky, Burchfield, and Hopper, not necessarily in that order, and published by Heron, Pigeon, Bluejay, and Sparrow, not necessarily in that order.
(1) The book by Rothko is published by Sparrow.
(2) The spy thriller is published by Heron
(3) The science fiction novel is by Burchfield and is not published by Bluejay.
(4) The Gothic romance is by Hopper.
29. Pigeon publishes
(A) the murder mystery (B) the science fiction novel (C) the spy thriller (D) the Gothic romance (E) the novel by Rothko
30. The novel by Gorky is
$\begin{array}{lll}\text { (A) a science fiction novel published by Bluejay } & \text { (B) a Gothic romance published by Bluejay } & \text { (C) published by Heron and }\end{array}$
is a murder mystery (D) published by Pigeon and is a Gothic romance $\quad$ (E)published by Heron and is a spy thrille
31. John purchases books by the two authors whose names come first and third in alphabetical order. He does not buy
(A) the murder mystery
(B) the book published by Pigeon
(C) the science fiction novel
(D)the book published by
Bluejay (E) the Gothic romance
32. On the basis of the first paragraph and statements (2), (3), and (4) only, it is possible to deduce that
I. Rothko wrote the murder mystery or the spy thriller II. Sparrow published the murder mystery or the spy thriller III.

The book by Burchfield is published by Sparrow or Pigeon
(A) I only
(B) II only
(C) III only
(D) I and III only
(E) I, II, and III

## dM Analytical Reasoning 8***

On Sunday, December 23, four ships were berthed at the New York City Municipal Pier at West 55 Street. All four ships were beginning their series of winter cruises to various ports in the Atlantic and the Caribbean.

1. Ship W left at 4 P.M. on Sunday, December 23, for a series of 8-day cruises to Bermuda and Nassau.
2. Ship $X$ left at 4:30 P.M. on Sunday, December 23, for a series of alternating 11- and 13-day cruises.
3. Ship Y sailed at 5 P.M. on Sunday, December 23, for a series of 5 -day cruises to Bermuda.
4. Ship Z sailed on Monday, December 24, for a series of 7-day cruises to Nassau.

Each cruise officially begins on the day after departure. Each ship is scheduled to return to New York City early in the morning after the last day of the cruise, and leave again late in the afternoon of the same day.

## 米 Dreammakers Aptitude \& Technical Enrichment Program

33. On December 31, which ships will be sailing from New York on a New Year's Eve cruise?
(A) W and X
(B) $X$ and $Y$
(C) W and Z
(D) $X$ and $Z$
(E) $X, Y$, and $Z$
34. On how many sailing dates between Dec. 24 and Feb. 28 will ship $W$ be moored along another ship?
(A) 0
(B) 2
(C) 4
(D) 5
(E) 6
35. On how many sailing dates between Dec. 24 and Feb. 28 will ship $W$ be moored along another ship?
(A) 0
(B) 2
(C) 4
(D) 5
(E) 6
36. On which day of the week will these four ships make most of their departures?
(A) Sunday
(B) Monday
(C) Tuesday
(D) Thursday
(E) Saturday
37. On which days of the week in the period between Dec. 24 and Feb. 28 will the least crowded?
(A) Tuesday and Friday
(B) Tuesday and Thursday
(C) Friday and Saturday
(D) Wednesday and Thursday

## dM Analytical Reasoning 9***

Observance of Memorial Day, which falls on a Saturday this year, will be as follows for the tri state area (New Albion, New Shetland, And New Wales):
Banks and government departments which are normally open on Saturdays will close.
Those normally closed on Saturdays will close as follows: Bank will close on Friday in New Wales and Monday in New Shetland.
State government offices will close Friday in New Albion and New Shetland.
Sanitation pick-up in Monday-Wednesday-Friday pick-up areas will be cancelled Friday in New Albion and New Shetland, and Monday in New Wales; pick-up in Tuesday-Thursday-Saturday areas will be cancelled Saturday in all three states.(Banks are normally open on Saturday only in New Albion; state government offices are normally open only in Wales.)
38. Which is not available Friday, Saturday, or Monday in New Wales? (A) Banking services (B) State government office services
(C) Sanitation pickup in some areas
(D) Postal services (E) Federal government office services
39. Mrs. Semkow goes to the post office, the bank, and the state income tax bureau on Monday. She may live in
I. New Albion
II. New Shetland
III. New Wales
(A) I only
(B) II only
(C) I or III only
(D) II or III only
(E) I, II, or III
40. Mr. Rudolph finds all but one of the listed services available Friday. He lives in
(A) New Shetland or New Albion
(B) a Monday-Wednesday-Friday pickup area in New Wales
(C) any area in New Albion or New Wales (D) a Tuesday-Thursday-Saturday pick-up area in any of the three states
(E) a Monday-Wednesday-Friday area in New Albion.
41. In which area(s) is there no deviation from normal service on Monday for any of the services listed?
(A) All of New Albion (B) Monday-Wednesday-Friday pickup areas in New
Albion and New Wales
(C) Tuesday-Thursday-Saturday pick-up areas in New Shetland and New Wales
(D) All of New Wales
(E) Monday-Wednesday-Friday pickup areas in New Shetland

## dM Analytical Reasoning 10***

(1) An Airdale, a boxer, a collie, and a Doberman win the top four prizes in the Kennel show. Their owners are Mr. Edwards, Mr. Foster, Mr. Grossman, and Ms. Huntley, not necessarily in that order. Their dogs' names are Jack, Kelly, Lad, and Max, not necessarily in that order
(2) Mr. Grossman's dog wins neither first nor second prize.
(3) The collie wins first prize.
(4) Max wins second prize.
(5) The Airdale is Jack.
(6) Mr. Foster's dog, the Doberman, wins fourth prize. (\&) Ms. Huntley's dog is Kelly.
42. First prize is won by (A) Mr. Edward's dog
(B) Ms. Huntley's dog
(C) Max
(D)Jack
(E) Lad
43. Mr. Grossman's dog
(A) is the collie
$(B)$ is the boxer
(C) is the Airdale
(D) wins the second prize
(E) is Kelly
44. In which of the following statements are the dogs correctly listed in descending order of their prizes?
I. Kelly; the Airdale; Mr. Edward's dog II. The boxer; Mr. Grossman's dog; Jack III. Mr. Edward's dog, the Airdale; Lad
(A) I only
(B) II only
(C) III only
(D) I or III only
(E) II and III only
45. Lad (A) is owned by Mr. Foster $\quad(B)$ is owned by Mr. Edwards $\quad(C)$ is the boxer $\quad(D)$ is the collie $\quad$ (E) wins the third prize
46. On the basis of statements (1), (3), (4), (5), and (6) only, which of the following may be deduced?
I. Max is the boxer. II. The Doberman is Kelly or Lad. III. Jack wins the prize
(A) I and II only (B) I and III only (C) II and III only (D) I , II, and III (E) Neither I, II nor III
47. On the basis of statements (1), (2), (3), (4), and (7) only, which of the following may be deduced?
I. Mr. Grossman's dog is Jack or Lad. II. Mr. Edward's dog wins first or second prize III. Kelly is the collie
(A) I only
(B) II only
(C) I and II only
(D) II and III only
(E) I, II and III

## dM Analytical Reasoning 11***

(1) All G's are H's
(2) All G's are J's or K's.
(3) All J's and K's are G's
(4) All L's are K's.
(5) All N's are M's
(6) No M's are G's
48. If no P's are K's, which of the following must be true?
(A) All P's are J's
(B) No $P$ is a G
(C) No P is an H
(D) If any $P$ is an $H$ it is a G
(E) If any $P$ is an $G$ it is a $J$
49. Which of the following can be logically deduced from the conditions stated?
(A) No M's are H's
(B) No M's that are not N's are H's
(C) No H's are M's
(D) Some M's are H's
(E) No N's are G's
50. Which of the following is inconsistent with one or more of the conditions?
(A) All H's are G's
(B) All H's that are not G's are M's
(C) Some H's are both M's and G's
(D) No M's are H's
(E) All M's are H's
51. The statement "No L's are J's" is
I. logically deducible from the conditions stated II. Consistent with but not deducible from the conditions stated
III. Deducible from the stated conditions together with the additional statement "No J's are K's"
(A) I only
(B) II only
(C) III only
(D) II and III only
(E) Neither I, II nor III

## dM Analytical Reasoning 12***

At a formal dinner for eight, the host and hostess are seated at opposite ends of a rectangular table, with three persons along each of the other two sides. Each man must be seated next to at least one woman, nad vice-versa.
Allan is opposite Diane, who is not the hostess. George has a woman on his right and is opposite a womanHelga is at the hostess's right, next to Frank. One person is seated between Belinda and Carol.
52. Eric is the Eighth person present. Eric must be
I. the host
II. Seated to Diane's right
III. Seated opposite to Carol
(A) I only
(B) III only
(C) I and II only
(D) II and III only (E) I, II and III
53. If each person is placed directly opposite his or her spouse, which of the following pairs must be married?
(A) George and Helga
(B) Belinda and Frank
(C) Carol and Frank
(D) George and Belinda
(E) Eric and Helga
54. Which person cannot be seated next to a person of the same sex?
(A) Allan
(B) Belinda
(C) Carol
(D) Diane
(E) Eric
55. George is bothered by the cigarette smoke of his neighbor and exchanges seats with the person four places to his left. Which of the following must be true following the exchange?
I. No one is seated between two persons of the opposite sex. II. One side of the table consists entirely of persons of the same sex. III. Either the host or the hostess has changed seats.
(A) I only
(B) III only
(C) I and II only
(D) II and III only
(E) Neither I, II nor III

## dM Analytical Reasoning 13*

For a panel of professors to assess the State of the Union Message on public TV, the producer must choose two Republicans and two Democrats. At least one professor must be an economist and at least one a military expert. Available Republicans are Abbott, Bartlett, Catlett, Dorset, and Everett; available Democrats are Faweett, Gantlet, Helfet, and Insett, Catlett, Fawcett, and Gantlet are economists, Dorset and Insett are military experts. Fawcett will not sit in the same room with Catlett, and will take part only if Abbott is on the panel. Dorset refuses to take part with Gantlet, and Everett refuses to take part with Insett.
56. Which of the following is not an acceptable panel?
(A) Fawcett, Helfet, Abbott, Dorset
(B) Fawcett, Insett, Abbott, Dorset
(C) Gantlet, Helfet, Abbott, Catlett
(D) Gantlet, Insett, Abbott, Catlett
(E) Helfet, Insett, Bartlett, Catlett
57. If Abbott and Bartlett are chosen as the Republicans, who can be chosen as the Democrats?
(A) Fawcett and Insett only
(B) Fawcett and Insett or Gantlet and Insett only
(C) Fawcett and Gantlet or Gantlet and Helfet only (D) Fawcett and Insett, Gantlet and Insett, or Helfet and Insett (E) Gantlet or Helfet, Gantlet and Insett, or Helfet and Insett
58. If Gantlett is chosen, which of the following must be true?
I. Any acceptable panel must contain Insett. II. Any acceptable panel must contain Abbott. III. There is no acceptable
panel which contains Bartlett.
(A) I only
(B) II only
(C) I and II only
(D) II and III only (E) I, II and III

59．How many acceptable panels can the producer put together？（A） 6
$\begin{array}{ll}\text {（B）} 7 & \text {（C）} 8\end{array}$
（D） 9
（E） 10
60．Which of the following pairs cannot be a part of an acceptable panel？
I．Fawcett
（A）I only
II．Bartlett and Dorset
III．Catlett and Dorset
（B））III only
（C）I and II only
（D）II and III only
（E）I，II and III

61．Which Republican belongs to the smallest number of different acceptable panels？
（A）Abbott
（B）Bartlett
（C）Catlett
（D）Dorset
（E）Everett

62．Which professor belongs to the greatest number of different acceptable panels？
（A）Abbott
（B）Bartlett
（C）Gantlet
（D）Helfet
（E）Insett

## dM Analytical Reasoning 14＊＊＊

The Hotel Miramar has two wings，the East Wing and the West Wing．Some East Wing rooms，but not all，have an ocean view．All West wing rooms have a harbor view．The charge for all rooms is identical，except as follows：
1．There is an extra charge for all harbor view rooms on or above the third floor．
2．There is an extra charge for all ocean view rooms，except those without balcony
3．Some harbor view rooms on the first two floors and some East Wing rooms without ocean view have kitchen facilities，for which there is an extra charge．
4．Only the ocean view and harbor view rooms have balconies．
63．A guest may avoid an extra charge by requesting（A）a West Wing room on one of the first two floors（B）a West Wing room on one of the fourth without balcony（C）an East Wing room without an ocean view（D）an East Wing room without balcony
64．Which of the following must be true if all the conditions are as stated？（A）All rooms above the third floor involves an extra charge（B）No room without an ocean or harbor view or kitchen facilities involves an extra charge（C）There is no extra charge for any room without kitchen facilities（D）There is an extra charge for all rooms with an ocean or harbor view
65．Which of the following must be false if all the conditions are as stated？
（A）Some ocean view rooms do not involve an extra charge．（B）All rooms with kitchen facilities involve an extra charge
（C）Some West Wing rooms above the second floor do not involve an extra charge（D）Some harbor view rooms do not involve an extra charge（E）Some rooms without a balcony or kitchen facilities involve an extra charge
66．Which of the following cannot be determined on the basis of the information given？ I．Whether there are any rooms without a balcony for which an extra charge is imposed．II．Whether any room without a kitchen or a view involves an extra charge III．Whether two extra charges are imposed for any room
（A）I only
（B）II only
（C）I and III only
（D）II and III only
（E）I，II and III

## dM Analytical Reasoning 15＊

Only July 4，the Pops Orchestra will perform ten works by nine U．S．composers．
Beach＇s Quintet will be heard immediately after Della Joio＇s Fantasies．
Ives＇s Fourth of July will be heard later than the Della Joio．It will be followed immediately by Foster＇s Summer Longings．
The third selection following Copland＇s Lincoln Portrait will be Ellington＇s New World A－Coming；the next will be an aria from Hanson＇s Merry Mount．
Gottschalk＇s Grand Tarantelle will be heard earlier than the Della Joio．
Antes＇s Trio is the second work following the Hanson，and does not end the program．
67．Which of the following lists the composers mentioned in the order in which their works are heard？
（A）Foster，Ives，Antes，Ellington，Beach，Gottschalk
（B）Copland，Della，Joio，Beach，Ellington，Hanson，Foster
Gottschalk，Della，Joio，Beach，Foster，Antes，Ives
（D）Copland，Gottschalk，Della，Joio，Beach，Ellington，Hanson（ Beach，Ellington，Hanson，Foster，Ives，Antes

68．The Della Joio Fantasies is
（A）the second work on the program
（B）the second work after the Copland
（C）the work immediately preceding the

Ellington（D）followed by two other works before the Hanson aria is heard（E）heard immediately following the Gottschalk
69．If the intermission occurs immediately after the Beach Quintet，the fourth work after the intermission is by
（A）Antes
（B）Copland
（C）Ives
（D）Foster
（E）Hanson

70．The number of works to be heard between the Beach and the Foster is（A） 1
$\begin{array}{ll}\text {（B）} 2 & \text {（C）} 3\end{array}$
（D） 4
（E） 5
71．The soloist who will perform during the Antes，the Gottschalk，and the Ellington must begin tuning up just prior to the start of her first performance．She will begin tuning up（A）during the fourth work on the program $\quad$（B）during the Della Joio（C） during the sixth work on the program $\quad$（D）during the Hanson $\quad$（E）before the start of the program
72．One composer is represented by two works，separated by four other selections．The composer is
（A）Antes
（B）Beach
（C）Copland
（D）Della Joio
（E）Ellington

73．If the total number of works played were eleven instead of ten，which of the following would be possible without violating the stated conditions？I．The Copland Lincoln Portrait being played first II．The Antes Trio being played after Foster＇s Summer Longings III．The Antes Trio being played before Gottschalk＇s Grand Tarantelle
(A) I only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II, and III

## dM Analytical Reasoning 16**

1. $A, B, C$, or $W$ may cause $D$.
2. B, C, or $W$ may cause $E$.
3. W or $X$ may cause $F$.
4. $D$ or $E$ may cause $G$ or $H$ only if $D$ and $E$ are caused by $B$ or $C$; $D$ or $E$ may cause $I$ only if $D$ and $E$ are caused by $C$.
5. Only E and F together may cause $M$ or $N$.
6. F may cause $H$ only if it is caused by $W$ or $X$.
$\begin{array}{llll}\text { 74. Which can result from the largest number of immediately preceding events? (A) } D & \text { (B) } E & \text { (C) } F & \text { (D) } M\end{array}$ (E) $N$
7. Which can result in the smallest number of subsequent events, counting both those that follow immediately and those that follow $\begin{array}{lllll}\text { after another event? (A) } A & \text { (B) } B & \text { (C) } C & \text { (D) } W & \text { (E) } X\end{array}$
8. How many different events or combinations of events may cause $H$ ?
$\begin{array}{ll}\text { (A) } 5 & \text { (B) } 6\end{array}$
(C) 7
(D) $8 \quad$ (E) 9
(B) H
(C)
(D) M
(E) N

## dM Analytical Reasoning 17*

Six school; board members- Allenby, Broome, Chatsworth, Doggett, Edson, and Fream-are seated at a conference table in the auditorium of Westfield High School, to run a community budget meeting. They take six seats, numbered 1 through 6 from left to right, on the same side of the table. However, there has been some tension among the board members during the current budget crisis, and this affects the seating.
A. Allenby has openly clashed with Broome over staff cuts, and cannot be seated immediately to the left or immediately to the right of Broome.
B. Chatsworth has a hearing impairment that only Doggett knows about, and so must be immediately to the left of Doggett.
C. Fream knows that the angry head of a tax group will be seated on the right side of the auditorium, so he will not occupy seat 6 at the table.
78. Which of the following board members cannot be seated in seat 1 ?
(A) Allenby
(B) Broome (C) Chatsworth
(D) Doggett (E) Fream
79. If Doggett is seated in seat 3 , Chatsworth must be seated in seat $(A) 1$
$\begin{array}{lll}\text { (B) } 2 & \text { (C) } 4 & \text { (D) } 5\end{array}$
(E) 6
80. If Allenby is seated in seat 5 , which of the remaining board members must be seated in seat 6 ?
(A) Broome
(B) Chatsworth
(C) Doggett
(D) Edson
(C) Fream
81. If Fream is seated in seat 3 , immediately to the right of Doggett, which of the remaining board members must be seated in seat
5? (A) Allenby
(B) Broome
(C) Chatsworth
(D) Doggett
(E) Edson
82. Gary: I wish you wouldn't drink so much beer. It's bad for your health.

Nancy: How can you say that? I don't weigh a pound more than I did a year ago.
Which of the following responses would most strengthen Gary's argument?
(A) You weigh ten pounds more than you did six years ago.
(B) Most people who drink a lot of beer do put on weight.
(C) If you keep drinking so much beer, you will soon put on weight.
(D) Putting on weight is not the only harmful effect of drinking beer. (E) You can put on weight in other ways than by drinking beer.

## dM Analytical Reasoning 18***

All A's, B's, C's, D's, E's, and F's are Q's.
All A's are B's.
No $B$ that is not an $A$ is an $F$.
Some C's are A's.
All D's are C's.
Some C's are not B's.
No $D$ is an $A$.
All Q's and only Q's that are neither B's nor C's are E's.
83. Which of the following can be deduced from the information given?
(A) All F's are A's
(B) Some F's are A's.
(C) Some F's are E's.
(D) Some F's are C's.
(E) All F's are A's, C's, or E's
84. Which must be false if the information given is true?
(A) No D's are B's
(B) Some B's are D's
(C) Some F's are both B's and C's
(D) Some Q's are neither B's nor E's.
(E) Some F's are D's
85. Which cannot be shown to be true or false on the basis of the information given? I. No B or C is an E. II. Some C's are B's but
not A's
III. No B is both an A and a D. (A) I only
(B) II only
(C) III only
(D) I and II
(E) II and III
86. $P$ is not a $B$. Which of the following must be true? (A) $P$ is an $E \quad$ (B) If $P$ is a $C$, it is neither an $A$ nor a $D$
(C) If $P$ is a Q ,
it is an $E$ or a $C$. (D) If $P$ is not an $E$, it is a $C$ ( $E$ ) If $P$ is a $Q$, it may be a $C$ or an $A$, but not both

## dM Analytical Reasoning 19***

At a congress of the Progressive Federal Party, the seven top party leaders, who are all cabinet ministers, are seated on the platform in order of rank. The Prime Minister, the party leader, is in the center. The closer a person is to the Prime Minister, the higher is his or her rank, with a person on the Prime Minister's right out-ranking one equidistant from the Prime Minister on her left. The seven leaders are Arning, Brenner, Civili, Dorner, Eckland, Fentz, and Grell.Fentz is four places to the left of the Minister of Agriculture, who is two places to the right of Civili.Brenner's neighbors are Arming and the Minister of Agriculture.Grell is two places to the left of Dorner.The Ministers of Education, Mining, and Culture are seated together, in that order, from left to right.The remaining ministers are those of Social Welfare and Defense.
87. The Minister of Culture is (A) Arning
88. The fifth-ranking person in the party hiel
(B) Brenner
(C) Civili
(D) Dorner
(E) Eckland
88. The fifth-ranking person in the party hierarchy is (A) Grell, the Minister of Mining $\quad$ (B) Fentz, the Minister of Culture (C)
Dorner, the Prime Minister
(D) Eckland, the Minister of Defense
(E) Arning, the Minister of Education
89. The Minister of Socoal Welfare
I. outranks the Minister of Defence
II. Is outranked by the Minister of Mining
(A) I only
(B) II only
(C) I and II only
(D) I or II, but not both
(E) Neither I nor II
90. How many of the seven party leaders outrank the Minister of Education? (A) 2
(B) 3
(C) 4
(D) 5
(E) 6
91. If, during the Congress, the Minister of Agriculture and the Minister of Education are ordered to exchange positions, which is true? (A) Arning will move to a seat six places away from his original seat. $\quad$ (B) Fentz will move up five places in the leadership ranking. (C) Eckland will move to a seat three places away from his original seat. (D) Grell will move up four places in the leadership ranking (E) Eckland will move from the Prime Minister's left side to his right.
92. If, during the congress, Eckland is demoted two places in the party leadership ranking, which is true?
(A) The Minister of Defense moves up one place in the leadership ranking
(B) Civili becomes the second-ranking leader in the party. $\quad$ (C) The Minister of Mining moves up two places in the leadership ranking. (D) Dorner is demoted within the leadership. (E) The positions of five persons within the leadership remain unchanged.

## dM Analytical Reasoning 20**

Mrs. F, official hostess of New York City, has invited several wives of delegates to the United Nations for an Informal luncheon. She plans to seat her eleven guests so that each lady will be able to converse with at least the person directly to her right or left. She has prepared the following list.
Mrs. F speaks English only.
Mrs. G speaks English and French.
Mrs. H speaks English and Russian.
Mrs. J speaks Russian only.
Mrs. K speaks English only.
Mrs. L speaks French only.
Mrs. M speaks French and German.
Mrs. N speaks English and German.
Mrs. O speaks English and French.
Mrs. P speaks German and Russian.
Mrs. Q speaks French and German.
Mrs. R speaks English only.
93. Which of the following arrangements will meet Mrs. F's requirement?
I. FOLMPJHKGQNR
II. FRNLPKHJGMQO
III. FRGJHOLMQPKN
(A) I only
(B) II only
(C) III only
(D) I and II only
(E) I and III only
94. If the ladies seated to the right of Mrs. $P$ are, respectively, MGHKFO, who must sit at Mrs. P's left hand?
(A) J
(B) L
(C) N
(D) Q
(E) $R$
95. If seven of the ladies have seated themselves in the following order: NGFROMQ, who must be the next lady seated?
(A) H
(B) J
(C) K
(D) L
(E) $P$
96. Mrs. $F$ has decided upon the following seating arrangements:

RKGQNFOLMPJH
At the last minute, Mrs. H and Mrs. P inform the hostess that they will not be able to attend. Which of the following adjustments will allow Mrs. F's seating requirements to be met?
I. Seat Mrs. J between Mrs. K and Mrs. G II. Seat Mrs. J between Mrs. Q and Mrs. F III. Seat Mrs. J to the right of Mrs. N
(A) I only
(B) III only
(C) I or II only
(D) II or III only
(E) Neither I, II nor III

Dreammakers Aptitude \& Technical Enrichment Program

## dM Analytical Reasoning 21***

The Homer Museum of American Art is open daily except Monday from 11 A.M. to 5 P.M. Tuesdays and Thursdays the museum remains open until 8 P.M. The spring special exhibitions are: "Albert Pinkham Ryder, A Retrospective," which is on view from Friday, April 24, through Sunday, May31, in the Pollock Wing; "Precursors of Thomas Eakins," from Friday, May 8, through Sunday, July 6, in the Third Floor Gallery; and "The Hudson River School." In the John Twachtman Gallery, which is closed Tuesdays, from Friday, May1. through Sunday, May 24 only. The Pollock wing is closed Thursdays during May.
97. If Dan can visit the museum only after 5 P.M. or on Saturday, and does not wish to view more than one special exhibition in the briefest time by starting with
(A) "The Hudson River School" on a Thursday
(B) the Ryder Retrospective on a Saturday
(C) "Precursors of Eakins" or the Ryder Retrospective on a Tuesday (D) "Precursors of Eakins" on a Thursday (E) any exhibition on a Saturday
98. Ellen wishes to visit the three special exhibitions on successive Thursdays. This is possible only if she visits
I. the Ryder Retrospective in April II. "The Hudson River School" second III. "Precursors of Eakins" immediately following the Ryder Retrospective (A) I only (B) II only $\quad$ (C) I and II only (D) II and III only (E) I, II and III
99. Ralph can visit all three special exhibitions on one day if he goes on I. any Saturday in May II. The second, third, or fourth Saturday in May III. Any Tuesday or Friday between May 5 and May 22
(A) I only
(B) II only
(C) III only
(D) I and III only
(E) II and III only
100. Terry visits the museum on an afternoon six days after the opening of "The Hudson River School." Which of the special exhibitions may he visit? I. The Ryder Retrospective II. "Precursors of Eakins" III. "The Hudson River School"
(A) I only
(B) III only
(C) I and II only
(D) II and III only (E) I, II and III

## dM Analytical Reasoning 22**

At a symposium on the opposite dangers of the industrial chemical PBX, three pro-industry spokespersons are to be seated to the left of the moderator and three critics of PBX to the right of the moderator. The speakers are Drs. Albert, Burris, Cathode, Durand, Ettis, and Felsinstein.
(1) The person delivering the paper " Epidemiological Aspects of PBX " is seated immediately between Dr. Albert and Dr. Durand.
(2) The persons delivering "Public Health and PBX" and "Radiological Aspects of PBX" are close friends and insist on sitting together.
(3) Felsinstein is placed two seats to the left of the moderator.
(4) As heavy smoking is repugnant to the moderator, she insists that the person delivering "PBX: Benign or Malignant," a heavy smoker, be seated at one end of the table.
(5) Cathode, delivering "The Impact of PBX on the Environment," is seated to the left of Felsinstein.
(6) Albert, a critic of PBX, is seated to the left of Ettis.
101. The pro-industry spokespersons are
(A) Albert, Felsinstein, Durand
(B) Felsinstein, Albert, Burris
(D) Albert, Burris, Durand
(E) Cathode, Felsinstein, Burris
(C) Cathode, Felsinstein, Ettis
102. The person seated immediately to the left of the moderator is
(A) Albert
(B) Burris
(C) Cathode
(D) Ettis
(E) Felsinstein
103. Assuming it is one of the papers delivered at the symposium, " $P B X$ and the Digestive Tract" must be by
(A) Albert
(B) Burris
(C) Durand
(D) Ettis
(E) Felsinstein
104. Given the seating rules as stated, which of the numbered statements are logically sufficient to establish the position of Dr. Ettis and the title of the paper she delivers? (A) 1,3 (B) 1,6 (C) $1,3,6 \quad 10$ (D) $1,4,5,6 \quad 1 \quad$ (E) $1,3,4,5$
105. The symposium is expanded to include a seventh speaker. If he is seated exactly midway between Cathode and the moderator, he will sit (A) to the left of the author of "Radiological Aspects of PBX" $\quad$ (B) one seat to the right of the moderator
(C) two seats to the right of Durand
(D)three seats to the left of Albert
(E) four seats to the left of the author of "PBX: : Benign or Malignant"
106. The symposium is expanded to include two more speakers. The seventh speaker is seated at one end of the table. If the eight speaker is seated exactly midway between Durand and the author of "Public Health and PBX" which of the following must be true? (A) The eight speaker must be seated at one end of the table (B) Burris must be the author of "Radiological Aspects of PBX" (C) The eight speaker must be seated on the same side of the moderator as Felsinstein. (D) The moderator must be seated next to the author of "Public Health and PBX" $\quad$ ( E ) The eight speaker must be seated immediately to the left of Ettis. Which of the following cannot be determined on the basis of the information given?
I. The author of "Public Health and PBX" II. The title of the paper delivered by Durand III. The identity of the two friends who insist on being together (A) I only $\begin{array}{lllll}\text { (B) II only } & \text { (C) III only } & \text { (D) I and II only } & \text { (E) II and III only }\end{array}$

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## dM Analytical Reasoning 23*

$A$ is the father of two children. $B$ and $D$, who are of different sexes. $C$ is $B$ 's spouse. $E$ is the same sex as $D$. $B$ and $C$ have two children: $F$, who is the same sex as $B$, and $G$, who is the same sex as $C$.
E's mother, $H$, who is married to $L$, is the sister of D's mother, M. E and E's spouse, I, have two children, J and K, who are the same sex as $I$. No persons have married more than once, and no children have been out of wedlock. The only restrictions on marriage are that marriage to a sibling, to a direct descendant, to a person of the same sex, or to more than one person at the same time is forbidden.
107. $F$ is
(A) G's brother (B) G's sister
(C) B's daughter
(D) D's niece or nephew
(E) the same sex as H
108. According to the rules, D can marry
(A) F only (B) G only $\quad$ (C) J only
109. If $L$ and $H$ divorced, $H$ could marry
I. D only
II. F III.D or G
(A) I only
(B) II only
(C) III only
(D) I or II, but not both
(E) II or III, but not both
110.If the generation of $F$ and $K$ 's parents and their siblings contains more females than males, which of the following must be true?
(A) There are more females than males in F and K 's generation.
$(B) J$ is male
(C) $A$ is the same sex as D
(D) $K$ and $G$ are the same sex
(E) D is H's nephew

## dM Analytical Reasoning 24***

In a certain society, only two forms of marriage are recognized. In Prahtu marriage, several brothers marry a single woman, while in Brihtu marriage, several sisters marry a single man. All members of a given married group are regarded as the partners of any children of the marriage. Marriage between male and female children of the same parents is forbidden.
$E$ is a son of $A$.
$G$ is a daughter of $B$.
$F$ is a daughter of $C$
E, F, M, and N has a daughter, H
$E$ and $F$ have the same maternal grandmother, $Q$.
$A$ and $B$ are the only grandfathers of $\mathrm{H} ; \mathrm{C}, \mathrm{J}, \mathrm{K}$, and $L$ are the only grandmothers of H .
No one has married more than once; all children were born in wedlock.
111. G is a sister of
(A) N only
(B) M only
(C) E
(D) F
(E) E or F ,but not both
112. $N$ is a sibling of
I. M only
II. M and E
III.M and F
(A) I only
(B) II only
(C) III only
(D) II or III , but not both
(E) Neither I, II nor III
113. One of $Q$ 's children may be
(A) A
(B) C
(C) J
(D) K
(E) M
114. Which of the following is an offspring of a Brihtu marriage? (A) $H$ (B) $E$
(C) $A$
(D) B
(E) J
115. If $E, F, M$, and $N$ has not married, which would be a permissible marriage?
(A) $N$ marries $M$ and others of M's sex.
(B) N and M marry E
(C) N and M marry G and F
(D) G marries E only
(E) E marries G and F

## dM Analytical Reasoning 25***

Seven varsity basketball players are to be honored at a special luncheon. The players will be seated on the dais along one side of a single rectangular table.
Adams and Goldberg have to leave the luncheon early and so must be seated at the extreme right end of the table, which is closest to the exit.
Baker will receive the Most Valuable Player's trophy and so must be in the center chair to facilitate the presentation. Cooper and D'Amato, who were bitter rivals for the position of center during the basketball season, dislike one another and should be seated as far apart as is convenient.
Edwards and Farley are best friends and want to sit together.
116. Which of the following may not be seated at either end of the table?
(A) Cooper
(B) D'Amato
(C) Goldberg
(D) Farley
(E) Adams
117. Which of the following pairs may not be seated together?
(A) Cooper and Farley
(B) Baker and D'Amato
(C) Edwards and Adams
(D)Goldberg and D'Amato
(E) Edwards and Cooper
118. Which of the following pairs may not occupy the seats on either side of Baker?
(A) Farley and D'Amato
(B) D'Amato and Edwards
(C) Edwards and Goldberg
(D) Farley and Cooper
(E) Cooper and Edwards
119. If neither Edwards nor D'Amato is seated next to Baker, how many different seating arrangements are possible?
(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

Dreammakers Aptitude \& Technical Enrichment Program

## dM Analytical Reasoning 26*

Number series questions provide psychologists with a means of testing a person's ability to determine quantitative patterns. Below are seven number series:
I. 4, 64, 5, 125, 6, x
II. $6,37,7,50,8,65,9, x$
III. 5, 25, 125, 7, 49, 343, 9, 81, x
IV. 9,-7, 18,-18, 31, x
V. 4, 16, 80, 480, 3360, x
VI. 25, 24, 22, 19, 15, 10, x
VII. 100, 81, 64, 49, 36, $x$
120. In which of the above number series is the third power of a number the determining factor?
(A) I and III
(B) I, IV, and V
(C) I, III, and VII
(D) II, III, and VI
(E) I, III, IV, and VII
121. In which of the above number series is $\mathrm{n}^{\wedge} 2+1$ the determining factor? (A) II
(B) III
(C) $V$
(D) VII
(E) none
122. In which of the above number series is it necessary to consider a pattern of three elements?
(A) I
(B) II
(C) III
(D) IV
(E) V
123. In which of the above number series is the use of powers of a number not a determining factor?
(A) I
(B) II
(C) IV
(D) V
(E) VII
124. In which of the above number series is the determining factor the addition and subtraction of squares?
(A) II
(B) IV
(C) VI
(D) VII
(E) none
125. In which of the above number series is the recognition of increasing multiples significant?
(A) II
(B) V
(C) VI
(D) II and IV
(E) II and VI

## dM Analytical Reasoning 27*

Mr. Pict must accommodate seven tour group passengers in two four- person cabins on the S.S. Gallia. Each passenger in a cabin must be able to converse with at least one other passenger, though not necessarily in the same language.
A, an Etruscan, also speaks Gothic and Hittite.
$B$ and $F$ are Hitties and speak only that language.
C, an Etruscan, also speaks Gothic
D and G are Goths and speak only Gothic.
E, an Etruscan, also speaks Hittite.
Hittites refuse to share rooms with Goths.
126. Which combination of passengers in one of the cabins will result in a rooming arrangement that satisfies all conditions for both
cabins?
(B) D, E, G
(C) A, D, E, G
(D) C, D, E, G
(E) A, B, C, F
127. Which CANNOT be true, given the conditions as stated?
I. C cannot room with A. II. Any cabin containing three persons must include A. III. E must always room with a Hittite.
(A) I only
(B) II only
(C) I and III only
(D) II and III only (E) I, II and III
128. How many different combinations of cabin mates satisfy all conditions? (A) 2 (B) 3
(C) 4
(D) 5
(E) 6
129. If $E$ objects to sharing a cabin with $A$, with whom can Mr. Pict place him in order to arrive at an arrangement that satisfies all conditions? I. D and G, with no fourth cabin mate
II. B and F, with no fourth cabin mate
III. C, D, and G
(A) I only
(B) II only
(C) I and III only
(D) II or III only
(E) Neither I, II nor III
130. At the last minute, a new person applies to join the group. Mr. Pict can place her with any of the following except
(A) C, D, and G if she is a Goth
(B) $A, B$, and $F$ if she is an Etruscan
(C) $B, E$, and $F$ if she is a Hittite
(D) C, D, and G if she is an Etruscan
(E) $B, E$, and $F$ is she is a Goth

## dM Analytical Reasoning 28******

For a motorist there are three ways of going from City A to City C. by way of a bridge the distance is 20 miles and the toll is 75\$. A tunnel between the two cities is a distance of 10 miles and the till is $\$ 1.00$ for the vehicle and driver plus $10 \phi$ for each passenger. A two-lane highway without tolls goes east for $\mathbf{3 0}$ miles to City $B$ and then $\mathbf{2 0}$ miles in a northwest direction to City C.
131. Which of the following is the shortest route from City B to City c?
(A) Directly on the toll-free highway to City C.
(B) The bridge.
(C) The tunnel
(D) The tunnel or the bridge.
(E) The
132. The most economical way of going from City $A$ to City $B$, in terms of tolls and distance, is to use the
(A) tunnel
(B) bridge
(C) bridge or tunnel
(D) toll-free highway
(E) bridge and highway
133. Martin usually drives alone from city $C$ to City A every working day. His firm deducts a percentage of employee pay for lateness. Which factor would most probably influence his choice of the bridge or the tunnel?
(A) Whether his wife goes with him
(B) Scenic interest of each route
(C) Traffic conditions on the road, bridge, and tunnel (D) Saving of 25\$ in tolls (E) Price of gasoline consumed in covering the 10 additional miles on the bridge
134. In choosing between the use of the bridge and the tunnel, the chief factor(s) would be I. traffic and road conditions II. Number of passengers in the car III. location of one's home in the center or outskirts of one of the cities IV. Desire to save25\$
(A) I only
(B) II only
(C) II and III only
(D) III and IV only
(E) I and II only

## dM Analytical Reasoning 29***

A project to consolidate the programs of a large university and a small college is set up. It is agreed that the representatives work in small committees of three, with two representatives of the large university. It was also agreed that no committee be represented by faculty members of the same subject area. The large university was represented by the following professors; J, who teaches English literature, K, who is chairman of the Mathematics Department, and L, who is in the Department of Natural Sciences. The small college appointed the following: M, who teaches mathematics, $N$, who is a Latin teacher, and $O$ and P, who teach English literature.
135. Which of the following represents a committee properly composed? (A) K,L,N $\quad$ (B) K,L,M $\quad$ (C) J,K,L $\quad$ (D) J,O,N $\quad$ (E) J,K,M 136. Which of the following may serve with $P$ ?
$\begin{array}{ll}\text { (A) } K \text { and } M & \text { (B) } K \text { and } L\end{array}$
(C) K and O
(D) J and K
(E) M and N
137. Which of the following must be true?
I. If $J$ serves on a committee, $P$ must be assigned to that committee. II. If $J$ cannot serves on a committee, then $M$ cannot be assigned to that committee. III. If J cannot serves on a committee, then $L$ must serves on that committee.
(A) I only
(B) II only
(C) III only
(D) I and II only
(E) II and III only
138. If $L$ is not available for the service, which of the following must be on the committee?
(A) M and J
(B) O and J
(C) N and J
(D) N and O
(E) $P$ and $J$
139. Which of the following must be true?
I. N and O are always on the same committee. II. M and O never serve on the same committee. III. When M serves, L must serve. (A) I only (B) II only (C) I and II only (D) III only (E) II and III only.

## dM Analytical Reasoning 30***

In a certain society, there are two marriage groups, Red and brown. No marriage is permitted within a group. On marriage, males become parts of their wife's group; women remain in their own group. Children belong to the same group as their parents. Widowers and divorced males revert to the group of their birth. Marriage to more than one person at the same time and marriage to a direct descendant are forbidden.
140. A brown female could have had 1. a grandfather born Red II. a grandmother born Red III. two grandfathers born brown
(A) I only
(B) III only
(C) I and II only (D) II and III only
(E) I, II and III
141. A male born into the Brown group may have (A) an uncle in either group
(B) a Brown daughter
(C) a Brown son
(D) a
son-in-law born into the Red group (E) a daughter-in-law born into the Red group
142. Which of the following is not permitted under the rules as stated? (A) A brown male marrying his father's sister (B) A Red female marrying her mother's brother $\begin{array}{ll}\text { (C) A man born red, who is now a widower, marrying his brother's widow } & \text { (D) A }\end{array}$ widower marrying his wife's sister $\quad$ (E) A widow marrying her divorced daughter's ex-husband.
143. If widowers and divorced males retained the group they had upon marrying, which of the following would permissible? (Assume that no previous marriage occurred)
(A) A woman marrying her dead sister's husband.
(B) A woman marrying her divorced daughter's ex-husband.
(C) A
widower marrying his brother's daughter
(D)
dM Analytical Reasoning 31****
The letters A, B, C, D, E, F and G, not necessarily in that order, stand for seven consecutive integers from 1 to 10.
$D$ is 3 less than $A$.
$B$ is the middle term.
$F$ is as much less than $B$ as $C$ is greater than $D$.
$G$ is greater than $F$.
144. The fifth integer is
(A) A
(B) C
(C) D
(D) E
(E) F
145. $A$ is as much greater than $F$ as which integer is less than $G$ ? $\begin{array}{llllll}\text { (A) } A & \text { (B) } B & \text { (C) } C & \text { (D) } D & \text { (E) } E\end{array}$
146. If $A=7$, the sum of $E$ and $G$ is $\begin{array}{lllll}\text { (A) } 8 & \text { (B) } 10 & \text { (C) } 12 & \text { (D) } 14 & \text { (E) } 16\end{array}$
147. $\mathrm{A}-\mathrm{F}=$ ?
(A) 1
(B) 2
(C) 3
(D) 4
(E) cannot be determined
148. An integer $T$ is as much greater than $C$ as $C$ is greater than $E$. $T$ can be written as $A+E$. what is $D$ ?
(A) 2
(B) 3
(C) 4
(D) 5
(E) cannot be determined
149. The greatest possible value of $C$ is how much greater than the smallest possible value of $D$ ?
(A) 2
(B) 3
(C) 4
(D) 5
(E) 6

## dM Analytical Reasoning 32***

Tom wishes to enroll in Latin AA, Sanskrit A, Armenian Literature 221, and Celtic Literature 701. Latin AA meets five days a week, either from 9 to 11 A.M. or from 2 to 4 P.M. Sanskrit A meets either Tuesday and Thursday from 12 noon to 3 P.M., or Monday, Wednesday, and Friday from 10A. M. to 12 noon. American Literature 221 meets either Monday, Wednesday, and Friday from 12.30 to 2 P. M., or Tuesday and Thursday from 10.30 A.M. to 12.30 P.M. Celtic Literature 701 meets by arrangement with the instructor, the only requirement being that it meet for one four-hour session or two two- hour sessions per week, between 9 A.M. and 4 P.M. from Monday to Friday, beginning on the hour.
150. Which combination is impossible for Tom?
(A) Latin in the morning, Sanskrit on Tuesday and Thursday, and Armenian Literature on Monday, Wednesday, and Friday
(B) Latin in the afternoon and Sanskrit and Armenian Literature on Monday, Wednesday, and Friday
(C) Latin in the afternoon, Sanskrit on Monday, Wednesday, and Friday, and Armenian Literature on Tuesday and Thursday.
(D) Latin in the afternoon and Armenian Literature on Monday, Wednesday, and Friday and Celtic Literature on Tuesday.
151. Which of the following gives the greatest number of alternatives for scheduling Celtic Literature, assuming that all other courses are scheduled without conflicts?
(A) Latin in the afternoon and Armenian Literature on Monday, Wednesday, and Friday
(B) Sanskrit on Tuesday and Thursday and Armenian Literature on Monday, Wednesday, and Friday
(C) Latin in the afternoon and Armenian Literature on Tuesday and Thursday.
(D) Latin in the morning and Sanskrit on Tuesday and Thursday.
(E) Sanskrit on Monday, Wednesday, and Friday, and Armenian Literature on Tuesday and Thursday.
152. If the Celtic instructor insists on holding at least one session on Friday, in which of the following can Tom enroll?
I. Armenian Literature on Monday, Wednesday and Friday. II. Sanskrit on Monday, Wednesday, and Friday.
(A) I only
(B) II only
(C) both I and II
(D) I or II but not both
(E) neither I nor II
153. Which of the following additional courses, meeting as indicated, can Tom take?
(A) Old Church Slavonic - Monday, Wednesday, and Friday from 10 A.M. to 12 noon
(B) Intermediate Aramaic - Monday, Wednesday, and Friday from 11 A.M. to 12.30 P.M.
(C) Introductory Acadian - Tuesday and Thursday from 2 to 4 P.M.
(D) Fundamentals of Basque - Tuesday and Thursday 1 to 3 P.M.
(E) Old Norse - Icelandic - Monday only from 12 to 3 P.M.

## dM Analytical Reasoning 33***

Joe, Larry, Ned, Marry, Paul, Willy, Crystal, Albert, Bob, Frank, Ellen and Rick all lives in the same six- floor building. There are two apartments per floor. No more than two persons live in any apartment. Some apartments may be empty. Larry and his roommate live two floors above Albert and his roommate, Crystal. Joe lives alone, three floors below Willy and two floors bellow Ellen. Mary lives one floor below Albert and Crystal. Ned lives three floors above the floor on which Bob and Frank have single apartments. Rick and Paul live in single apartments two floors below Mary.
154. Which of the following lists the persons named in the correct order, going from the bottom floor to the top?
(A) Rick, Bob, Mary, Albert, Larry, Ned
(B) Rick, Frank, Ned, Ellen, Larry, Crystal
(C) Paul, Bob, Joe, Crystal, Ned, Larry (D) Larry, Ellen, Albert, Mary, Frank, Rick (E) Larry, Joe, Mary, Albert, Bob, Rick
155. Which of the following pairs must live on the same floor? I. Ned, Ellen II. Joe, Mary III. Albert, Larry
(A) I only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II and III
156. Larry's roommate, assuming that he or she is one of the persons mentioned, is
(A) Ellen
(B) Willy
(C) Mary
(D) Ned
(E) Paul
157. Rick lives on the
(A) first floor, below Bob or Frank
(B) second floor, below Joe or Albert and Crystal
(C) third floor, above Mary or Ellen
(D) fourth floor, opposite Albert and Crystal (E) sixth floor, opposite Larry and his roommate.
158. An empty apartment or empty apartments may be found on the
(A) second floor only
(B) fourth floor only
(C) fifth floor only
(D) third or sixth floor, but not both
(E) fourth or sixth floor or both
of this apartment moves into one three floors up, whose occupant takes Joe's old apartment. The new occupant of Joe's old $\begin{array}{lllll}\text { apartment is } & \text { (A) Bob or Frank } & \text { (B) Ned or Ellen } & \text { (C) Mary } & \text { (D) Rick }\end{array}$ (E) Paul
160. Dorothy lives with a roommate who could be any of the following EXCEPT (A) Willy (B) Mary (C) Ned (D) Ellen (E) Frank

## dM Analytical Reasoning 34***

(1) A causes B or C, but not both.
(2) F occurs only if B occurs.
(3) D occurs if B or C occurs
(4) E occurs only if C occurs
(5) J occurs only if E or F occurs
(6) D causes G or H or both
(7) H occurs if E occurs
(8) G occurs if F occurs.
161. If A occurs, which may occur?
I. F and G
II. E and H
III D
(A) I only
(B) II only
(C) III only
(D) I and III or II and III, but not both
(E) I, II and III
162. If $B$ occurs, which must occur?
(A) F and G
(B) D and G
(C) D
(D) G and H
(E) J
163. If $J$ occurs, which must have occurred?
(A) E
(B) Both E and f
(C) Either B or C
(D) G
(E) Both B and C
164. Which may occur as a result of a cause not mentioned?
I. D
II. A
III. F
(A) I only
(B) II only
(C) I and II only
(D) II and III only
(E) I, II, and III

All the Best! Happy Solving!

## Fall seven times. Stand Eight!

- Japanese Proverb


## 8*

## dM Analytical Reasoning

## Solutions

## Solutions for questions 1-4 Summarize the facts

Spanish is spoken by three- A, B, D Italian is spoken by three - A, C, E
English is spoken by two - B, C French is spoken by two - D, E

1. E] When C and D can converse they can use English, Italian, French and Spanish between them. Mr. A speaks Spanish and Italian. Mr. B speaks Spanish and English. Mr. E speaks French and Italian. 2. A] Mr. B understands Spanish and English while Mr. E speaks two other languages, French and Italian.
2. D] Mr. A and Mr. B can converse in Spanish 4. B] English is spoken by two executives (Mr. B and MR. C) and two executives (Mr. D and Mr. E) speak French.

Solutions for questions 5-8 Summarize the availability of staff
Monday - A, B, D, E (except first Monday of the month) Tuesday - C, B, D, E
Wednesday- A, C, D, E Thursday-B, D, E (except first Thursday of the month) Friday - A, B, E 5. A] observe that A, B, D are available on any Monday. 6. E] 7. D] D and B are available on any Thursday but E is available on all Thursdays except first Thursday of the month. 8. E] only A, B, E are available on Fridays.
Solutions for questions 9-12
Electricians I Plumbers
M
N

w

In any case, four teams of electricians are possible with the following possibilities of plumbers in each case.
MNO-ST, UW, VW
MN - RST, RUW, RVW, STU, STV, STW
MO - STU, STV, STW NO - STU, STV, STW
A total of 15 different combinations are possible. 9. D] 10. B] 11. E] Since O wont work with $R$, he can work only with $M$ and $N$ as the two electricians; this eliminates choice $B]$. The three possibilities for the other two plumbers are given in choice E]. 12. A] This answer may be surprising - it might seem that filling two slots right away would reduce the number of choices. But as the table follows, S and T appear in eleven possible teams. $O$ appears in nine, $W$ in seven, $U$ and $V$ in five each.

## Solutions for questions 13-15

| Pitcher | Pitch |  |
| :--- | :--- | :--- |
| H | SI | Delivery |
|  | F |  |
| Miz | Sc | U |
| Mil |  |  |

Now using the process of elimination and the information in the paragraph, you can complete the chart.

| Pitcher | Pitch | Delivery |
| :--- | :--- | :--- |
| H | SI | T |
| C | F | U |
| Miz | Sc | S |
| Mil | C | O |

13. C]
14. A], choice A] is impossible because the curve ball pitcher and the pitcher who uses an overhand delivery are one and the same. This difficulty does not apply to any of the other choices.
15. B]

Solutions for questions 16-19
Juniors: A, B, C seniors: R, S, T, U. Conditions given: RXS, BXT, $\underline{B+C}$
16. $D$ ] since $C$ is going hence $B$ will also go ( $B+C$ ) therefore $T$ cannot go with them (BXT)
17. $B$ ] the only two ways are: $A, R, B, C$ and $A, R, T, U$ (check from the conditions)
18. A] for juniors only options is B+C, hence A can't go, also BXT hence T can't go
19. D] because RXS

## dM Analytical Reasoning Solution 1

The games played by all the eight players are shown here.

| Players | G | H | J | K | L | M | N | O |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Games | Baseball | Baseball | Baseball | Baseball | Baseball | Baseball | Baseball | Baseball |
|  |  | Football |  |  |  | Football |  | Football |
|  |  |  |  | basketball |  |  | basketball |  |

1.A] Since no athlete in two sports is allowed to sit next to another two-sport athlete so from the above chart the combination H G K L is found to be feasible. 2. D] M may sit next to either G, J, or L. Rest are two sports athlete. 3. B] The only ones that may sit next to $N$ are $G, J, L$. 4. E] Since $H, M$ and $N$ all three are two-sport athlete and $J$ and $L$ not being that, so $K$ can sit between J and L as evident from the chart.

## dM Analytical Reasoning Solution 2

The problem can be solved with the help of a 'tree' diagram.
Leafletters 5. C] This is evident from the above conditions and the diagram 6. D] Choice $E$ is definitely false. Other Choices A, B, and $C$ are all possible but others are also possible. 7. B] As evident from the diagram.
8. E] C must be present as speaker (I) while on defense either $F$ or $G(I I I)$ is present.
9. B] The tree diagram shows the possibility of 8 teams. 10. A] Only A must be chosen. E is not necessarily chosen and $F$ becomes a must only if $E$ is the speaker. 11. $E]$ As per diagram $E$ appears only in two possible teams (ACEFG, ACEFH).

## dM Analytical Reasoning Solution 3

From the set of conditions given in the argument the following is the final seating arrangement:

| A | C | E | D | B |
| :---: | :---: | :---: | :---: | :---: |
| F/I/J | H | I/J | F/I/J | G |

But there are a lot of uncertain possibilities.
12. A] We can't tell exactly who or where $F$ is, but Choice $A$ is a possibility. 13. E] Three persons are possibilities. Choices A, C, and D are known exactly; for choice B there are two possibilities, so more is known in choice E. 14. C] If J is a military attaché then this supposition eliminates J as chairperson and hence I is the only option left (I). Again based on that F must be a trade expert (II). And thus (III) cannot be true. 15. E] The identities of the Rumelian delegation cannot be properly identified even with the conditional statement (3). The identities of the Wallachian delegates can be more or less identified with the statements mentioned but the clarity about the position of $D$ and $E$ is obtained only after the conditional statement is diagnosed. Without the statement (3) the answer to the choice E can be deduced.

## dM Analytical Reasoning Solution 4

The following calendar chart will help to understand the given)questions:

|  | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | x |  |  | x | S | C |  | S | C |
| A |  |  | x |  |  |  | S | C |  |
| B/A |  | x |  |  |  | S | C |  |  |

16. C] Adoniram could acquire documents from Byram (who acquired them on October 19 at their lunch October 20, or on his own on the $21^{\text {st }}$. The Sulgravians would receive them on the $24^{\text {th }}$ or $25^{\text {th }} 17$. D] The Caroligians can receive a document on $25^{\text {th }}$ if it is sent on $20^{\text {th }}$ which is possible as been stolen by Byram and sold to Adoniram on $20^{\text {th }}$ October at lunch time and transmitted by him only. 18. Adonoram can send documents only on the $20^{\text {th }}$ or $21^{\text {st; }}$; they can be received by the

Carolingians only on $25^{\text {th }}$ or $26^{\text {th }}$. Choice $B$ is too narrow and choice $D$ includes impossible dates. Byram can send documents on the $19^{\text {th }}, 20^{\text {th }}$ or $22^{\text {nd }}$ - to the Sulgravians who would receive them on $23^{\text {rd }}, 24^{\text {th }}$ or $26^{\text {th }}$. So choice $A$ is too narrow and choice C includes an impossible date. But if Adoniram is working for the Carolingians and Byram for the Sulgravians, choice E is correct as Adoniram had had no opportunity by the $20^{\text {th }}$ to acquire anything to sell to Byram. 19. A] Adoniram can acquire documents from Byram on the $20^{\text {th }}$ and on his own on the $21^{\text {st }}$, so whichever government he works for can receive documents two days in a row (I). Byram cannot acquire anything two days in a row, so both govt. cannot receive documents two days in a row(II). Finally, the calendar should show you that either government could receive documents 3 days in a row if they are sent by both Byram and Adoniram, which is impossible.

## dM Analytical Reasoning Solution 5

The towns can be plotted in a two dimensional map in two phases: First place the towns on a north-south scale and place them again on a separate east-west scale (Diagram 1) and finally combine them together(Diagram 2).

S
E

S
20. B] Bowling Green is both farthest north and farthest west.
21. E] Ashland and East Liverpool are north of Fredricktown, while Coshocton is to the south. All three towns are east of Fredericktown.
22. D] As per the map Coshocton, Dover, and Fredericktown are all south and west of East Liverpool.
23. A] The only ambiguous information in the statements concerns the north-south position of Dover. Statements (5) and (6) tell us that Dover and Coshocton are both south of Fredericktown, but not their positions in relation to each other. Choice A would clear this up. Choices B-E can be deduced from the statements as given. 24. C] Dover's north-south position with respect to Ashland can be deduced from statements (1), (4), and (5) without statement (3). Dover's east-west position with respect to Ashland can be deduced from statements (1) and (6).

## dM Analytical Reasoning Solution 6

| Class I | A | B | C | D | G |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Class II | A | B | C | D | G | E | F |  |
| Class III | A | B | C | D | G | E | F | H |

25 C] Choice A violates rules (5) or (6). Choice B violates rule (4). Choice D violates rule (6). Choice E violates rule (6).
26. C] He is restricted by rule (4) and rule (6) , while rule (5) has no restriction as it has already been satisfied.
27. B] She must explore caves Abott, Benny, and Caesar, and she must begin with either Abbott or Benny. If Abbott, she must explore Benny and then Caesar; if Benny, she can explore Abbott and then Caesar or Caesar and then Abbott.
28. B] Three out of five caves Benny, Caesar, Ewell, Fields, and Hope may not be attempted in one tour. Since Benny has been explored so he can go for cave Caesar as per rule and other caves Abbott, Dangerfield and Guinness.

## dM Analytical Reasoning Solution7

As per the statements given in the argument the chart looks like this

| Type | Author | Publisher |
| :--- | :--- | :--- |
|  | Rothko | Sparrow |
| Spy |  | Heron |
| Science Fiction | Burchfield | Not Bluejay |
| Gothic | Hopper(H) |  |

By the process of elimination the chart can be filled completely. The result is as follows:

| Type | Author | Publisher |
| :--- | :--- | :--- |
| Murder | Rothko | Sparrow |
| Spy | Gorky | Heron |
| Science Fiction | Burchfield | Pigeon |
| Gothic | Hopper | Bluejay |

29. B] 30. E] 31. A] 32. D] The deduction can be drawn by drawing the first chart without the statement (1).

## dM Analytical Reasoning Solution 8

Instead of constructing a calendar for the months of December, January and February the best way to answer is to construct a table of the days when each ship will be in port.
Ship W-1, 9, 17, 25, 33, 41, 49, 57 and $65 \quad$ Ship X - 1, 12, 25, 36, 49, 60 and 73
Ship Y-1, 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56, 61, and 66
Ship Z-1, 2, 9, 16, 23, 30, 37, 44, 51, 58, and 65.
A study of the table will enable us to answer the related questions:
33. C] Since December 23 was a Sunday, December 31 will be a Monday and will be the $9^{\text {th }}$ day. Ships $W$ and $Z$ will be in port on December 31. 34. D] Ship W will be moored alongside ship $Z$ on the $9^{\text {th }}$ day, ship $X$ on the $25^{\text {th }}$ day, ship on the $41^{\text {st }}$ day, ship $X$ on the $49^{\text {th }}$ day and ship $Z$ on the $65^{\text {th }}$ day. 35. A] On no occasion will three ships be moored at the pier. 36. B] More departures will take place on Monday than on any other day. Sundays come on days $1,8,15,22,29,36,43,50$, 57, 64. Including the sailings on December, there will be 7 Sunday sailings. Similarly there will be 13 Monday sailings, 3 Tuesdays, 5 Wednesday sailings, 4 Thursday sailings, 3 Friday sailings, and 4 Saturday sailings.
37. A] From the list above, we can see that Tuesday and Friday will be least busy.

## dM Analytical Reasoning Solution 9

|  | Friday | Monday |
| :--- | :--- | :--- |
| Banks | NA, NS | NA, NW |
| State gov't offices | NW | NA, NS, NW |
| Sanit-MWF areas | NW | NA,NS |
| Sanit-TTS areas |  |  |
| P.O.Ifed offices | NA, NS, NW | NA,NS,NW |

38. C] The table at a glance will show you that each service is available on either Friday or Monday, or both, in New Wales except TTS sanitation pickup. 39. C] The post office and state govt. offices are open Monday in all three states but banks are open only in New Albion and New Wales. 40. B] For MWF Sanitation Pick up areas in New Wales, all services are available Friday except banking. The fact that sanitation pickup is not normally available Friday in TTS areas is irrelevant- the question states that Mr. Rudolph found all services but one available. 41. A] Everything is available on Monday in New Albion except trash pickup in TTS areas- but this is not a deviation from normal service.
dM Analytical Reasoning Solution10
Based on the information given and then through the process of elimination a table can be drawn

| Name | Breed | Owner | Prize |
| :--- | :--- | :--- | :--- |
| K | C | H | 1 |
| M | B | E | 2 |
| J | A | G | 3 |
| L | D | F | 4 |

42. B] As evident from the table. 43. C] 44.C] Statement I is false because Mr. Edward's dog won the second prize and the Airdale third. Statement II is false because Mr. Grossman's dog is Jack. Statement III is correct as it identifies the winners of second, third, and fourth prizes. 45. A] As per table. 46. D] This can be obtained by jotting down the information given in the statements (1), (3), (4), (5), (6) in the form of the table

| Name | Breed | Owner | Prize |
| :--- | :--- | :--- | :--- |
|  | C |  | 1 |
| M |  |  | 2 |
| J | A |  |  |
|  | D | F | 4 |

Although many things remains ambiguous without the statements (2) and (7), but statements I, II, III all follow by a process of elimination.
47. C] Like the above question the information given in the statements (1), (2), (3), (4) and (7) can be accumulated in the following table

| Name | Breed | Owner | Prize |
| :--- | :--- | :--- | :--- |
|  | C |  | 1 |
| M |  |  | 2 |
|  |  | G | $\mathbf{3}$ or 4 |
| K |  | H | $\mathbf{1 , 3}$ or 4 |



Given the ambiguities arising from the incomplete structure of information Statement III cannot be deduced. Statements I and II may be deduced, however

## dM Analytical Reasoning Solution 11

As per the statements given in the argument the chart looks like this

48. $\mathrm{E} \quad$ 49. $\mathrm{E} \quad$ 50. $\mathrm{C} \quad$ 51. D

## dM Analytical Reasoning Solution 12



Host

The answers can be given based on the above diagram but certain things are still uncertain. We don't know the host and the hostess and George is seated between Belinda and Carol but we don't know out of them who is occupying the hostess's chair.
52. C] The slot for eight person, Eric is the host's chair and he is seated to Diane's right. 53. A] As per diagram.
54. D] By inspection. All the others are next to at least one person of the same sex, and Belinda and Carol could be sitting next to Helga. 55. A] If George shifts four places to the left, then he exchanges seat with Diane. So condition I is applicable others are ruled out.

## dM Analytical Reasoning Solution 13

The solution is made easy with the help of the following. The table consists of the valid combination of the Democratic and Republic persons taking into consideration that there must be at least one economist and one military expert.

Democratic Republic

| FH | AD |
| :--- | :--- |
| FI | AB, AD |
| GI | AB, AC, BC |
| HI | AC, BC, CD |

56. C] As per table. 57. B] As per chart 58. A] GI is the only pair containing G that may be included in any acceptable panels (I). One of these does not contain $A(I I)$ and two of these does not contain B (III). 59 D] As per the combination list in the table. $\quad \mathbf{6 0}$. C] Republicans CD can serve with Democrats HI. There are no acceptable BD or FG combinations. 61. E] Republican E is in no acceptable panels; all others can serve on more than one. 62. E] Democrat I serves on eight acceptable panels as evident from table.

## dM Analytical Reasoning Solution 14

The information becomes easy to read with the help of tree diagram

63. D$]$ This information is obtained from the diagram. Some rooms in choice $A$ and $C$ have kitchen facilities; the rooms described in choice $B$ all involve an extra charge; and ocean view rooms with balcony but without kitchen ( $E$ ) involve extra charge. 64. B] There are extra charges Ocean View with balcony; harbor view $3^{\text {rd }}$ floor and up; rooms with kitchen facilities. But some ocean view rooms without balcony and some no-view, no-kitchen East wing rooms may be above $3^{\text {rd }}$ floor (A). Other choices are not true. 65. C] This statement directly contradicts the argument given in the paragraph, other choices are true. 66. A] We don't know whether any West Wing rooms above the second floor or with kitchen facilities have balconies(I). But we know that East Wing rooms without view or kitchen have no extra attached(II) and that all kitchen facilities are in rooms not otherwise subject to extra charge(III).

## dM Analytical Reasoning Solution 15

The statement about Beach, Ives and Gottschalk give you: G..........D B.......I F
The other statements yield: C...... ..... E H ...... A
Within a limit of ten works in all, these two patterns can be put together in only one way: G C D B E H .. A I F
Still one space is blank. But as we know that ten works will be heard but only nine composers and works are named, so this is logical.

## dM Analytical Reasoning Solution 16

67. A] D results from $A, B, C$ or $W$. $E$ results from $B, C$, or $W ; F$ from $W$ or $X ; M$ or $N$ from $E+F$. Your only problem might have come if you failed to notice the stipulation of immediately preceding events - so you can't count C or W among the causes of $M$ in this question. 68. A] A results in $D$ only; but $D$ may cause another event only if it is caused by $B$ or $C$, so no subsequent event follows after the AD sequence. $B, C$, and $W$ all have more than one immediate result. $X$ has only one, $F$. but F caused by X may cause $H$. 69. B] BDH, BEH, CDH, CEH, WFH, and XFH are the combinations that cause H . notice that H may not result from any of the immediately preceding events unless these resulted from an earlier event.
68. C] I results from two combinations only - CDI and CEI. G results from four combinations - BDG, BEG, CDG, CEG. H results from six, as we just saw. $M$ and $N$ results from either five or six combinations - in the case of $M$, BEXFM,CEXFM,WEXFM,BEWFM, CEWFM, and possibly WEWFM (we don't know if W can act twice, but it doesn't matter choice $C$ is still lowest by far).

## dM Analytical Reasoning Solution 17

72. D] Seat 1 is leftmost seat; and since Doggett must have Chatsworth seated immediately to his left, he can't seat in seat 1. 73. B] Chatsworth must be seated immediately to the left of Doggett, so he must sit in seat 2 if Doggett is in seat 3. 74. D] If Allen is seated in seat 5 then Broome cannot be seated in seat 6 . Again since Chatsworth must have Doggett to his right and vice versa so with only one seat i.e. seat 6 it is not possible to seat both of them side by side. Also Fream refuses to sit on seat 6 , so Edson is the only remaining choice.
73. E] If Freak is in seat 3 and Doggett in seat 2, then Chatsworth who must sit to the left of Doggett must be seated in seat1. The remaining candidates for seat $4-6$ are Allenby, Broome, and Edson. Allenby and Broome will sit next to each other. So Edson has to sit in between them and thus occupy the seat 5 .
74. D] Nancy assumption is that the only harmful effect of beer drinking is gaining weight. The best way to strengthen Gary's argument and refute Nancy's is to dispute this assumption. Choice D points out the obvious and explodes her argument, while the other choices fail to challenge Nancy's illogical reasoning.

## dM Analytical Reasoning Solution 18


77. E] All we know about $F$ 's is that they are $Q$ 's and that the non-A part of the $C$ circle does not contain any. They must be A's, C's, or E's because these groups define the rest of the Q's. Choice A can be seen to be wrong from the diagram. Choices $B, C$ and $D$ are all possible, but not necessarily true. 78. D] B's, C's, and E's define all the Q's. Choices A and B are possible, but not necessarily true. Choice $c$ would fit and $F$ that was within the $A / C$ overlap. Choice $E$ seems false only if you are hypnotized by the $F$ we have drawn in the $A$ circle, which is also a $B$. remember that $F$ is only one possibility.
79. B] E's are defined as not $B$ or $c$, so I is definitely true. III is true because no $D$ is an $A$. II cannot be known; the fact that $C$ 's appear both outside the B's and inside the A's does not mean that there are any in the no $n$ - A part of $B$, where our broken line shows them. $\quad \mathbf{8 0}$. C] The question does not say $P$ is a $Q$, so choice $A$ is out. Choice $B$ is only a possibility - $P$ could be in the non-B portion of the $D$ circle as drawn. Choice $C$ is correct- $E$ and $C$ together define the non- $B$ portions of the $Q$ (remember that A's are B's). Choice $D$ fails to account for the fact that $P$ may be outside $Q$ altogether. If not a $B, P$ cannot be an A (choice E).
dM Analytical Reasoning Solution 19 Based on the arguments given in the statement the following diagrammatic sketch can be drawn by the process of elimination.

81. C] As evident from the sketch. 82. A] The rules about the rank reveals that the top five leaders are Dorner, Eckland, Civili, Brenner, and Grell.. 83. D] Among Brenner and Arning we don't know who is the minister of Social Welfare. If Brenner, then he outranks the Minister of Defence who (by elimination ) is Arning. If Arning, he is outranked by the Minister of Mining, Grell. Thus, either I or II may be true. Both together (C) is impossible. 84. E] The extreme left-hand seat is the lowest in rank which is occupied by the Ministry of Education.85. B] According to the question if the Minister of Agriculture, Eckland and the Minister of Education, Fentz exchange places with each other, then Fentz will move up from the seventh to second in the leadership ranking. 86. B] Eckland, previously second in rank, becomes fourth; Civili, previously third, becomes second and Brenner, previously fourth becomes third. The positions of the Ministers of Defense, Mining, and Education, who rank lower than fourth, and Dorner, who ranks first are unaffected.
87. B] 88. D] 89. A] 90. E] From the diagram we get five works including one whose name we don't know between Beach and Foster. 91. E] Since the soloist's first performance will be during the Gottschalk- the first work to be heard, so she will begin tuning up before the start of the program. 92. C] This is just a matter of counting back from the blank space. Works $\mathrm{H}, \mathrm{E}, \mathrm{B}$ and D are the four that intervene.
93. C] Inserting G into the blank following C, we would have: C G---E H -A D B I F, A TOTAL OF 11 (I). Inserting I and F into the blanks after C, we would have : G D B C IF E H....A...., a total of 11 (as Antes can't end the program). But if A preceded G(III), six composers would precede A and five would follow., for a total of 12.

## dM Analytical Reasoning Solution 20

The following table will help us to identify the seating arrangement as per Mrs. F's requirement

| English | F | G | H |  | K |  |  | N | O |  |  | R |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| French |  | G |  |  |  | L | M |  | O |  | Q |  |
| Russian |  |  | H | J |  |  |  |  |  | P |  |  |
| Germany |  |  |  |  |  |  | $\mathbf{M}$ | N |  | P | Q |  |

94. C] The seating arrangement as given in Choice I and Choice III are found to satisfy Mrs. F requirement that each lady will be able to converse at least the person directly to her right or left while choice II does not meet that criteria as evident from the table. 95. A] Since Mrs. J speaks only Russian, so she must sit along side Mrs. P or Mrs. H. But as Mrs. H is already seated, the only place left for Mrs. J is alongside Mrs. P. 96. D] The examination of the order given reveals that five ladies speak French out of which four have already seated themselves in this group of seven. The only lady left is Mrs. L and so she must be seated alongside Mrs. Q. 97. E] It is not necessary to examine statements I, II, and III. A glance at the table will reveal that Mrs. J, who speaks Russian only does have anyone to converse with as the Russian speaking ladies Mrs. H and Mrs. P wouldn't be able to attend the occasion.

## dM Analytical Reasoning Solution 21

Since this problem involves both days of the week and calendar dates, so a simple calendar involving the days in questionTuesday, Thursday or Saturday. It will look like this:

|  | RYDER | EAKINS | HUDSON RIVER |
| :--- | :--- | :--- | :--- |
| Th. 4-30 | X | - | - |
| Sat.5-2 | X | - | X |
| Tu. 5-5 | X | - | - |
| Th. 5-7 | - | - | X |
| Sat. 5-9 | X | X | X |
| Tu. 5-12 | X | X | - |
| Th. 5-14 | - | X | X |
| Sat. 5-16 | X | X | X |
| Tu. 5-19 | X | X | - |
| Th. 5-21 | - | X | X |
| Sat. 5-23 | $\mathbf{x}$ | $\mathbf{x}$ | $\mathbf{x}$ |

98. C] The conditions mean that Dan can go to the museum only on Tuesday, Thursday, or Saturday. By starting on Tuesday, he can complete the three visits in five days, whereas by starting on Thursday or Saturday he must take six days. This is enough to get you to choice C. Dan must go to the Eakins or Ryder exhibition first, since the Twachtman Gallery is closed Tuesdays.
99. C] Since Pollock Wing is closed Thursdays during May, Ellen must see the Ryder exhibition first, on Thursday, April 30(I); she must then see "The Hudson River School" second, on May 7, since the "Precursors of Eakins does not open until May 8 (II). This excludes choice III. 100. B] The calrnder says that all three exhibitions can be seen on Saturday, May 9, 16 or 23 (II)-not on Saturday, May 2, because the "Eakins" is not yet open, and not on May 30, because "The Hudson River School" is closed (I). III is out as because the Twachtman Gallery is closed Tuesdays and because the Eakins exhibition does not open until May 8.
100. B] Terry's visit falls on Thursday, May 7 (six days after May 1 opening of " The Hudson River School" ). A glance at the calendar shows that "The Hudson River School" is the only special exihibition open on that date.

## dM Analytical Reasoning Solution 22

The solution is made easy as per the diagram.

| Impact (Env.) | Pub/Rad | Pub/Rad |  |  | Epidem | Benign |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| c | ----- |  | - | ----------- |  |  |
| C | F | B | Mod | A | E | D |

Still certain things are unknown. 102. E] As per diagram 103. B] 117. A] As Albert is the only person whose title of paper is unknown. 104. B] 105. D] The diagram shows that if the seventh speaker is to sit midway between Cathode and moderator, he must sit between Felstein and Burris. 106. B] If the eighth speaker is to sit exactly midway between Durand and the author of "Public Health and PBX", then the latter must be Felsenstein, not Burris, since otherwise there would be no vacant spot exactly midway between the two. Hence Burris must be the author of "Radiological aspects of PBX". 102. A]

## dM Analytical Reasoning Solution 23

_The problem can be solved with the help of following family tree.


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107. D] Since we don't know B's sex for sure so we don't know that of $F$. So all options are ruled except option $D$, which is apparent from the tree diagram. 108. E] $D$ is an $X$, and can therefore marry any unmarried $Y$. 109. E] $H$ is female. If $x=$ male, H can marry D or G , so I is out. If $\mathrm{y}=$ male, H can marry F . Clearly H cannot marry both ( J and K are ruled out, since they are H's direct descendants.) 110. B] This generation (the middle generation) contains three x's and two y's. As per the question $X=$ female, hence $J(Y)$ must be a male.
dM Analytical Reasoning Solution 24


H (f)
Using solid horizontal lines for marriages, rectangles for married groups, broken lines for sibling relationships, and vertical lines for parent-child relationships we get the above diagram. Based on all the statements given we find $A$ and $B$ are male;the paternal grandmother $(Q)$ of $E$ and $F$ must be the mother of their fathers, so $A$ and $B$ are brothers. Again $A$ and $B$ are the only grandfathers of $H$, so they must be the fathers of her father $E$ and mother $F$. Since $C$ is $F$ 's mother, $B$ and $C$ must be married and G is F's sister. Since A and C can't be married, A must be married in Brihtu marriage to several sisters while B is married in Brihtu marriage to $C$ and her sister or sisters. So $J / K / L$ are the wives of $A$ and $B$ but who is exactly whose wife is not known. Thus the above explanation and diagram will make the solution easy.
111. D]
112. D] 113.A]
114. B]
115. E]

## dM Analytical Reasoning Solution 25

The seating arrangement may be as follows:

| Cooper | Edwards | Farley | Baker | D'Amato | Adams | Goldberg |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Or | or | or |  | or | or | or |
| D'Amato | Farley | Edwards |  | Cooper | Goldberg | Adams |

116. D] 117.C] 118. C] 119. B] If neither Edwards nor D' Amato is seated next to Baker, then the table arrangement must be as follows (from left to right): D'Amato, Edwards, Farley, Baker, Cooper, and, in the last two seats, Adams and Goldberg in either order which will result in two different seating arrangements.

## dM Analytical Reasoning Solution 26

An examination of the seven number will help us to provide solution to the following questions
I. 64 is the $3^{\text {rd }}$ power of $4(4 \times 4 \times 4), 125$ is the $3^{\text {rd }}$ power of $5(5 \times 5 \times 5)$ and so on.
II. The square of 6 is $36,37=36+1$. Similarly the square of 7 is $49,50=49+1$. And so on.
III. Here we find a pattern of three elements. 25 is the square of 5 and 125 is the cube of 5 . Same pattern follows for 7 and 9 .
IV. The difference for 9 and $-7=16(4 \times 4)$. The difference between -7 and 18 is $25(5 \times 5)$ and so on.
V. The pattern followed is: $16=4 \times 4,80=16 \times 5,480=80 \times 6$ and so on.
VI. The pattern followed is increasing units of subtraction $-1,-2,-3,-4 \ldots .$.
VII. Descending order of squares; $100=10 \mathrm{X} 10 ; 81=9 \times 9 ; 64=8 \times 8$.
120. A] 121. A] 122. C] 123. D] 124. B] 125. B]

## dM Analytical Reasoning Solution 27

The following table shows several possibilities of accommodation in two four-persons cabins. But based on the conditions given the following table depicts which combinations are impossible to carry out (denoted by X ).

| DGA | BFCE | O.K. |
| :--- | :--- | :--- |
| DGC | BFAE | O.K. |
| DGE | BFCA | X |
| DGCE | BFA | O.K. |
| DGCA | BFE | O.K. |
| DGAE | BFC | X |
| 126. D] 127. E] | 128. C] | 130. E] |

## dM Analytical Reasoning Solution 28

| Route | Miles | Toll |
| :--- | :--- | :--- |
| Bridge | 20 | $\$ 0.75$ |
| Tunnel | 10 | $\$ 1.00+\mathbf{1 0 \$}$ each additional passenger |
| Highway | $\mathbf{5 0}$（30 to B，20 to C） | None |

131．A］The nileage from City $B$ to City $C$ is 20 miles on the highway．The other choices would mean going to City A（30 miles） and then taking either the tunnel（ 10 miles）or the bridge（ 20 miles）．132．D］The mileage on the toll－free highway from City A to City B is 30 miles．The other choices involve going to City C by bridge or tunne，then from City C for 20 miles to city b．
133．C］The difference in cost between the bridge toll and the tunnel toll is negligible considering the possible docking of pay due to lateness．Therefore，the most important factor would be traffic conditions，which could cause delays．
134．E］Generally speaking，the extra $25 \$$ for usingthe tunnel would be worth the cost to save the extra 10 miles when crossing the bridge，so IV is not a chief factor．Whether a commuter lived on the outskirts of the city or in its center would affect only the choice of local roads to get to one of the main arteries，so III is not a main consideration．Traffic and road conditions，however， can be expected to influence a driver to choose one means over the other，since delays can cause lateness（I）．Also，if the car has many passengers，at $10 \$$ a passenger，there could be a possible saving in using the bridge（II）．factors I and II are important in choosing between the bridge and the tunnel．
dM Analytical Reasoning Solution 29

| Large University | J | K | L |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Small College |  |  |  | M | N | O | P |
| English Literature | J |  |  |  |  | O | P |
| Mathematics |  | K |  | M |  |  |  |
| Naturalsciences |  |  | L |  |  |  |  |
| Latin |  |  |  |  | N |  |  |


|  |
| :---: |
|  |  |

135．A］Committee $K, L, M$ has $K$ and $M$ on the same comitee（ $B$ ）．$J, K, L$ has no representative from the small college（C）．J，$O, N$ commits two errors．It has two representatives from the small college and it has J and O on the same committee（ D ）． $\mathrm{J}, \mathrm{K}, \mathrm{M}$ has $K$ and $M$ on the same committee（ $E$ ）．$\quad 136 . B] K$ and $M$ both teach mathematics（A）．O cannot serve with $P$ since they both represent the small college and they both teach English literature（C）．J cannot sercve with $P$ because they both teach English literature（D）．$M$ and $N$ cannot serve with $P$ for they all represent the small college．137．E］J and $P$ cannot serve on the same committee since they both teach English literature I．if $J$ cannot serve then $K$ and $L$ must serve．If $K$ is serving，$M$ may not represent the small college（II）．since L must serve，（III）is correct．$\quad \mathbf{1 3 8}$ ． C ］If L is not available then J and K must serve．Since J is serving neither O nor P may serve．139．E］（I）is correct since $N$ and $O$ represents the small college．（II）is correct． M and O represents the small college．（III）is correct when M serves， K may not serve．

## dM Analytical Reasoning Solution 30

140．C］Both parents of a Brown female are Brown，but her father was born Red．Her mother＇s mother was Brown，and therefore that grandfather was born Red（I）；her father＇s mother was Red（II），and therefore that grandfather was born Brown （III）．If the parents were born in different groups，and the grandmothers were in same groups as the parents，the granfathers must have been in different groups．141．A］This male＇s mother is Brown and his father is born Red．His mother＇s unmaried brothe is Brown and father＇s unmarried brother is Red－not to mention married brothers of his parents！The said person may only marry a Red woman and their children will be Red（ $B, C$ ）；any persons the children marry must be born Brown （D，E）．142．B］A Red female＇s motehr and unmarried，divorced or widowed brother is Red．The Brown male＇s father was born Red，so his sister is Red（A）．the brother of the man born Red was also born Red，so his wife is Brown（C）．any widower has reverted to his original group，while his wife＇s sister is in the same group as his wife wasv（D）．any widow＇s daughter is in her own group，and the ex－husband，having reverted to the group of his birth，will be eligible（E）．143．D］The woman＇s mother and her mother＇s brother has the same group as she．Her mother＇s brother married into the other and as a widower remain in the same group，so marriage is possible．The dead sister＇s husband remains in the same in the same group as the dead sister and is not eligible（A）．the daughter and the ex－husband is in the mother＇s group，so is not eligible（B）．the widower retains his married group；his brother，born in the same group as he was，is in the same married group；so is his daughter and is not eligible（C）．the divorced male now has his ex－wife＇s group；so does the sister，widower or otherwise，so no marriage is possible（E）．

## dM Analytical Reasoning Solution 31

$$
\begin{gathered}
\text { B } \\
\cdots---- \\
D B A \\
------- \\
\text { DB A } \\
\bar{E} \bar{F} \bar{D} \bar{B}-\bar{A} G
\end{gathered}
$$

144. B] By inspection of the diagram. 145.D] According to the diagram, $A$ is 4 greater than $F$, and $D$ is 4 less than $G$. 146.B] Given if $A=7, E=2$ and $G=8$. Their sum is 10 . You can find the value of the others by given a value for any of the letters. 147. D] You might choose $E$ on the reasoning that, if no value is given for any letter, no numerical value can be found for $A-F$. But this is wrong. You can tell that $A$ is 4 greater than $F$. When any number is subtracted from a second number 4 greater than the first number, the result is 4 , no matter what the numbers are. 148. D] $C$ is 4 greater than $E$, so $T$ is 4 greater than $C$. but this means that $T$ is 3 greater than $A$. if $T=A+E$ and $T=A+3$. $E=3$, If $E=3, D=5$. 149. D] If the seven integers all fall in the span from 1 to 10 , then the highest possible value of $C$ will occur if the seven letters represent the integers 4-10. In case, $C=8$. The smallest possible value of $D$ will occur if the seven letters represent the integers 1-7. In case, $\mathrm{D}=3$ and $8-3=5$

## dM Analytical Reasoning Solution 32

| Course | Days | Time Choice 1 | Time Choice 2 |
| :--- | :--- | :--- | :--- |
| L | $\mathrm{M}-\mathrm{F}$ | $9: 00$ A.M. - 11:00 A.M. | 2:00 P.M. - 4:00 P.M. |
| $\mathrm{S}^{1}$ | $\mathrm{~T}-\mathrm{Th}$ | $12: 00 \mathrm{~N}-3: 00$ P.M. |  |
| $\mathrm{S}^{2}$ | $\mathrm{M}, \mathrm{W}, \mathrm{F}$ | 10:00 A.M. - 12:00 N |  |
| $\mathrm{A}^{1}$ | $\mathrm{M}, \mathrm{W}, \mathrm{F}$ | $12: 30$ P.M. - 2:00 A.M. |  |
| $\mathrm{A}^{2}$ | $\mathrm{~T}-\mathrm{Th}$ | 10:30 A.M. - 12:30 P.M. |  |
| C | $\mathrm{M}-\mathrm{F}$ | 4 hours (1 session) between 9:00 A.M. and 4 P.M | 2 hours (2 session) between 9:00 A.M. and 4 P.M |

150. D] The table will tell you that $D$ is impossible; Sanskrit on MWF meets from 10 to 12, which conflicts with Latin. The others are all possible. 151. A] This leaves the hours from 9 to 2 on Tuesday and Thursday free for Celtic Literature. Tom can schedule a 4 hour session either 9 or 10 on either day ( 4 possibilities) or two-hour sessions starting at 9,10,11 or 12 on Tuesday and Thursday (16 possible schedules), or two 2 -hour sessions in 1 day on either day ( 4 possibilities). The other choices leave either MWF from 2 to 4 or MWF from 12 to 2 . In either case, there are only six possibilities for scheduling Celtic Literature. 152. D] The Friday session must be either from 12 to 2 or from 2 to 4 . No schedule leaves both these slots free. It can be 12 to 2 only if Tom takes Sanskrit on MWF and Armenian Literature on T Th. It can be 2 to 4 only if he takes Sanskrit on T Th and Armenian Literature on MWF. 153. B] This one may be hard without a calendar; you must look back at the times listed, unless you included them in your table. The MWF 11-12:30 slot is open if Tom takes morning Latin (out at 11) and MWF Armenian Literature (starts at 12:30). This doesn't interfere with Celtic Literature. Choices A, C, and D conflict with Sanskrit; E conflicts with Armenian and Celtic Literature.

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154.C] By inspection of the diagram, note that choice D gives a correct list from top to bottom - don't get careless and choose the answer. 155. C] Again by simple inspection of the diagram.
156. B] The only person mentioned who can live on floor six, and therefore be Larry's roommate, is Willy. 157.A] By inspection of the diagram, choices $B$ and $C$ also have the wrong persons above or below; choices D and E list persons, but Rick can't live on floor four or floor six.
158. E] No one mentioned is on floor four; Willy may live with Larry on floor six. 159.B] Follow the diagram; Joe goes from floor three to floor one; Rick or Paul goes to floor two; Bob or Frank goes to Ned or Ellen's apartment o floor five, and one of them goes to Joe's old apartment.
160. E] Dorothy cannot possibly live with Frank, because we are told that he has a single apartment. All of the other persons mentioned as possibilities may have space available in their apartments.
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161. D] A causes B or C, but not both. In either case, D occurs (III). F and E can occur only if B or C occurs, respectively, so they cannot both occur if $A$ occurs (I, II). The other parts of I and II are consistent: $G$ will occur if $F$ occurs; $H$ will occur if $E$ occurs. 162.C] See statement (3) F may occur if B occurs, but may not (choice A); D will occur if B occurs, but D may cause $H$ instead of $G$ (choice $B$ ); G occurs if F occurs and may occur if D occurs, but F need not occur if B occurs, while D can lead to H; so G or H must occur, but both need not occur (choice D); J may not occur even if E or F occurs (choice E). 163. C] If J occurs, E or F must have occurred - statement (5); thus either B or C must have occurred - statement (2), (4). Since E or F, but not both, is required for J, choices A and B are wrong. If E occurs and F does not, G need not occur (choice D). B and $C$ can both occur (if one is not caused by $A$ ) but both aren't necessary for $J$; they can lead to $E$ and $F$, but one of these is all that is required for $J$ to occur (choice $E$ ).
164. C] D may occur without $B$ or $C$; no cause for $A$ is mentioned (I,II); but F occurs only if B occurs (statement 2) and so no other cause is possible (III).


