

IBA

Name :

Batch:

ANALYTICAL LECTURE - 3

Contents	Page
REVIEW TEST	02
DATA SUFFICIENCY PROBLEMS	04
PROBLEMS ON DATA SUFFICIENCY	07

Review Test

25 minutes

Question 1 – 4 are based on the following information:

Six campers Akib, Shaera, Naomi, Tarique, Turab, and Mariha are arranging a dishwashing schedule for the six days of their camping trip so that each of them will wash dishes on only one day.

Shaera washes either on day 2 or on day 6.

If Akib washes on day 1, Naomi washes on day 4; Naomi does not wash on day 4 unless Akib washes on day 1.

If Akib washes on day 1, Mariha washes on day 5; Mariha does not wash on day 5 unless Akib washes on day 1.

If Turab does not wash on day 3, Akib washes on day 3.

If Akib washes on day 4, Rhittique washes on day 5.

If Shaera washes on day 2, Turab washes on day 5.

If Mariha washes on day 6, Tarique washes on day 4.

- Which of the following is an acceptable order in which the campers can wash dishes from the first to the last day?
 - Tarique, Shaera, Akib, Turab, Naomi, Mariha
 - Shaera, Akib, Mariha, Naomi, Turab, Tarique
 - Mariha, Turab, Shaera, Naomi, Tarique, Akib
 - Naomi, Shaera, Akib, Tarique, Turab, Mariha
 - Akib, Shaera, Tarique, Naomi, Turab, Mariha
- If Tarique washes on day 6, on which day does Naomi wash?
 - 1
 - 2
 - 3
 - 4
 - 5
- If Akib washes on day 1, who washes on day 2?
 - Shaera
 - Naomi
 - Tarique
 - Turab
 - Mariha
- If Shaera washes on day 2, which of the following is a complete and accurate list of the days that could be the day on which Mariha washes?
 - 1
 - 4
 - 1, 4
 - 4, 6
 - 1, 4, 6

Question 5 – 9 are based on the following information:

Exactly seven persons – P, Q, R, S, T, U, and V participate in and finish all of a series of swimming races. There are no ties for any position at the finish of any of the races.

V always finishes somewhere ahead of P.

P always finishes somewhere ahead of Q.

Either R finishes first and T finishes last, or S finishes first and U or Q finishes last.

- If in a race V finishes fifth, which of the following must be true?
 - S finishes first.
 - R finishes second.
 - T finishes third.
 - Q finishes fourth.
 - U finishes last.

6. If in a race R finishes first, V can finish no lower than:
 A. second B. third C. fourth D. fifth E. sixth
7. If in a race S finishes second, which of the following can be true?
 A. P finishes before R. B. V finishes before S. C. P finishes before V.
 D. T finishes before Q. E. U finishes before V.
8. If in a race S finishes sixth and Q finishes fifth, which of the following can be true?
 A. V finishes first or fourth. B. T finishes fourth or fifth. C. P finishes second or fifth.
 D. U finishes third or fourth. E. R finishes second or third.
9. If in a race R finishes second and Q finishes fifth, which of the following must be true?
 A. S finishes third. B. P finishes third. C. V finishes fourth.
 D. T finishes sixth. E. U finishes sixth.
10. Department stores range from two to eight floors in height. If a department store has more than three floors, it has an elevator.
- If the above statements are true, then which of the following statement must also be true?
 (A) Second floors do not have elevators.
 (B) Seventh floors have elevators.
 (C) Only floors above third floor have elevators.
 (D) All floors may be reached by elevators.
 (E) Some two-floor department stores do not have elevator.
11. Shahriar: I want to take Professor Shurid's classes if I can. I've heard guest faculties are quite lenient when it comes to giving out the grades.
 Safa: That's not true. My friend, Atoshi took his class last year and he gave him the lowest grade, D.
 From the conversation above it can be inferred that Safa interpreted Shahriar's statement to mean that Professor Shurid
 (A) Makes fair demands on his students.
 (B) Only gives bad grades to a few disturbing elements in the class.
 (C) Has become increasingly lenient in his grading over the past year.
 (D) Gives out fewer bad grades than most teachers in the department.
 (E) Never gives anyone D.
12. Which of the following most logically completes the argument? Ferber's syndrome, a viral disease that frequently affects cattle, is transmitted to these animals through infected feed. Even though chickens commercially raised for meat are often fed the type of feed identified as the source of infection in cattle, Ferber's syndrome is only rarely observed in chickens. This fact, however, does not indicate that most chickens are immune to the virus that causes Ferber's syndrome, since.
 (A) chickens and cattle are not the only kinds of farm animal that are typically fed the type of feed liable to be contaminated with the virus that causes Ferber's syndrome
 (B) Ferber's syndrome has been found in animals that have not been fed the type of feed liable to be contaminated with the virus that can cause the disease
 (C) resistance to some infectious organisms such as the virus that causes Ferber's syndrome can be acquired by exposure to a closely related infectious organism
 (D) chickens and cattle take more than a year to show symptoms of Ferber's syndrome, and chickens commercially raised for meat, unlike cattle, are generally brought to market during the first year of life
 (E) the type of feed liable to be infected with the virus that causes Ferber's syndrome generally constitutes a larger proportion of the diet of commercially raised chickens than of commercially raised cattle

13. Most people who take the experimental energy drink Shark develop headaches. Therefore, if Samiha does not drink Shark, she will probably not develop headaches.

The argument above most resembles which of the following:

- (A) Most Doberman are easy to train. So Alfie is sure to have no trouble in training the Doberman, she has just bought.
 - (B) Most US built cars are poorly made. Since, the car was well made it is probably not built in the USA.
 - (C) Most Stage dramas are very well acted. So, the Kothao Keu Nei, which is not a Stage drama, is probably not well acted.
 - (D) Most engineers spent many years in school. So, Shams, who has spent many years in school, is probably an engineer.
 - (E) All societies known to history have had clearly defined social hierarchies. So, there will probably never be a true non-hierarchies society.
14. Experienced pilots often have more trouble than novice pilots in learning to fly the newly developed ultralight airplanes. Being accustomed to heavier aircraft, experienced pilots when flying ultralightcraft, seem not to respect the wind as much as they should.

The passage implies that the heavier aircraft mentioned above are:

- (A) Harder to land than ultralight aircraft
 - (B) Not as popular with pilots as ultralight aircraft
 - (C) Not as safe as ultralight aircraft
 - (D) More fuel efficient than ultralight aircraft
 - (E) Easier to handle in wind than ultralight aircraft
15. Oeshi is standing to the right side of Abrar. Nafis is standing on the opposite side of Abrar. Since the opposite of right is wrong, Nafis must be standing on the wrong side of Oeshi.

Which of the following logical errors has the author of the argument above committed?

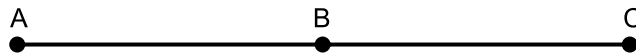
- (A) He has used a single term to mean two different things.
- (B) He has confused cause and effect.
- (C) He has assumed to be true what he wants to prove to be true.
- (D) He has provided no factual evidence of his conclusion.
- (E) He has drawn a general conclusion from an insufficient number of examples.

DATA SUFFICIENCY PROBLEMS:

The data sufficiency problems consist of a question and two statements, labeled (1) and (2), in which certain data are given. You have to decide whether the data given in the statements are sufficient for answering the question. Using the data given in the statements plus your knowledge of mathematics and everyday facts (such as the number of days in July or the meaning of counterclockwise), you must indicate whether

- (a) Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked;
- (b) Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked;
- (c) BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked; but NEITHER statement ALONE is sufficient.
- (d) EACH statement ALONE is sufficient to answer the question asked;
- (e) Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data specific to the problem are needed.

Take the Following Example:

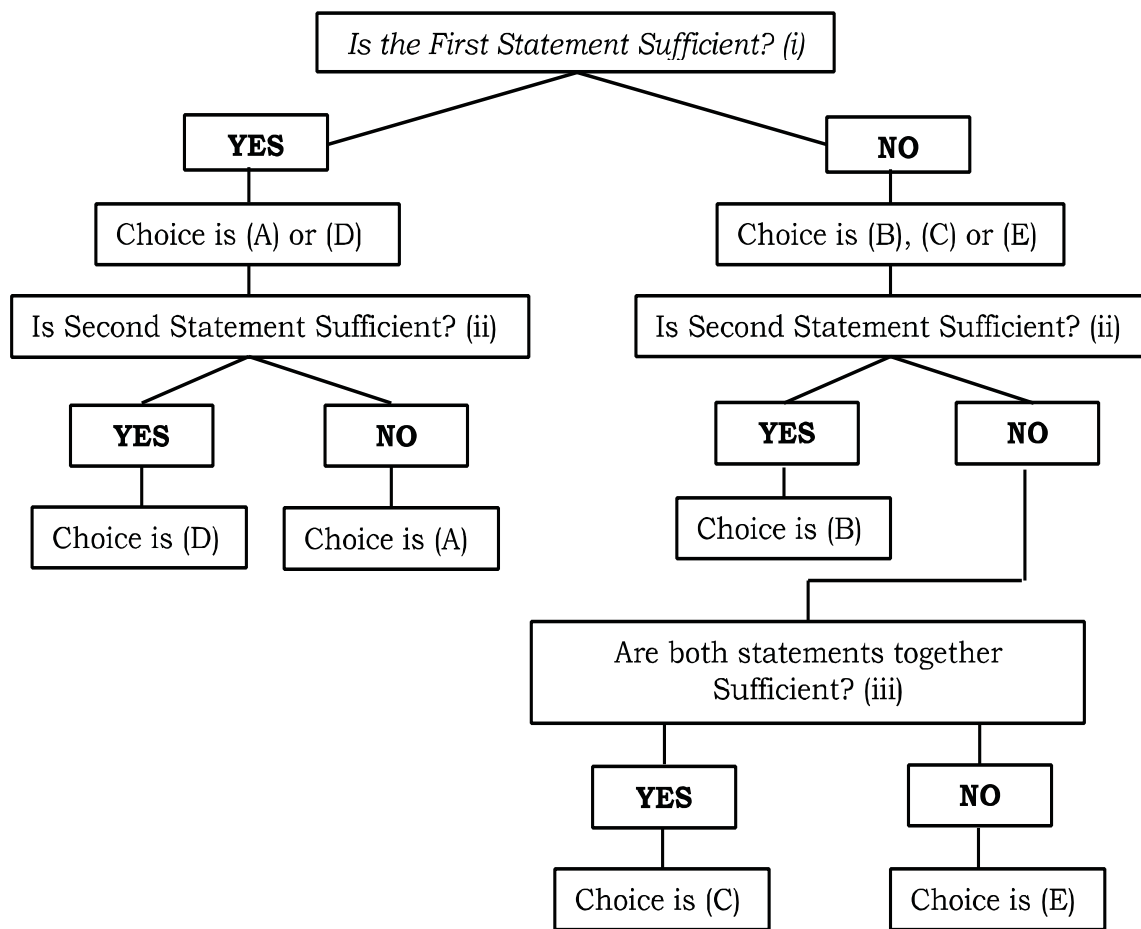


What is the length of segment AC?

- (1) B is the midpoint of AC
- (2) $AB = 5$

In this question statement (1) alone tells you B is the midpoint of AC, so $AB=BC$ and $AC=2AB=2BC$. Since statement (1) does not give a value of AB or BC, you cannot answer the questions using Statement (1) alone. Statement (2) says that $AB=5$. Since statement (2) does not give you a value for BC, the question cannot be answered by statement (2) alone. Using both statements together you can find a value for both AB & BC; therefore you can find AC, so the answer to the problem is Choice (C).

Now take a look at the following Diagram. The whole process will become clear.



Some General Tips and Tricks:

1. Do not solve Data Sufficiency Problems: Always remember your aim is not to arrive at an answer (numerical or otherwise) but only ensure which of the given statements are sufficient to answer the question. Do not waste valuable time solving a problem; you are only to determine whether sufficient information is given to solve the problem.

2. Familiarize with the answer choices: No excuses: On Data Sufficiency, they're always the same! Know in the blink of an eye what choice C is. On test day, if you find that Statement 1 is insufficient, be able to cross out choices A and D without hesitation.

3. Takes notes efficiently: Each statement alone will be sufficient if both of the statements on their own contain all the information necessary to answer the question. The statements will be sufficient together if they contain every piece of necessary information between them. Take the area of a parallelogram: Do you need to know every side length to determine the area? If you have every side length, can you find the area?

4. Don't look at the statements together: Statement 2 may tell you that x is negative, but that fact has no bearing on Statement 1 when viewed by itself. Explore all the possibilities offered by each statement individually. If you've scrutinized Statement 1 and found it sufficient, be equally merciless when it comes to Statement 2.

5. Watch out for Important information: Don't pay so much attention to the statements that you forget the rest of the question. Often, half the information that you need is in the set-up.

6. Know when to solve single-variable equations: If the question asks for the value of x and you whittle the problem down to an equation like $305x = 2(500) - 10205$, don't waste your time solving for x ! It's only important to know that you COULD solve if you wanted to. Remember, all linear one-variable equations have a unique solution, but quadratic equations (equations with an x^2 term) can have zero, one, or two solutions.

7. Know when it's necessary to solve a system of equations: Again, you never need to solve a DS problem—you only need to know that you could. A system of n independent linear equations with n variables can be solved for ALL of the n variables. The key word here is "independent": Equations are independent if they're not multiples of one another. For example, $y = 2x$ and $3y = 6x$ are NOT independent equations because the second equation is just three times the first.

8. Study prime factorizations and divisibility: Although any math concept is fair game on the DS section, prime factorization shows up frequently and reliably. If x is divisible by 15, will x^2 be divisible by 27? What about x^3 ?

9. Study overlapping sets: Be comfortable representing these overlapping sets with Venn diagrams. This topic is a DS favorite. A statement like, "The number of widgets that were not made in Factory A or Factory B is three times greater than the number of widgets that were made in Factory B" can be difficult to unpack in the heat of the moment. Train yourself to answer questions about sets methodically and quickly.

10. Two values are not sufficient: Remember that when you are determining whether there is sufficient information to answer a question of the form, "What is the value of y ?" the information given must be sufficient to find one and only one value for y . Being able to determine minimum or maximum values or an answer of the form $y = x + 2$ is not sufficient, because such answers constitute a range of values rather than the value of y ."

PROBLEMS ON DATA SUFFICIENCY:

Instruction: Mark the appropriate answer as per the following conditions:

- (A) Statement (1) alone is sufficient, but statement (2) is not sufficient.
 - (B) Statement (2) alone is sufficient, but statement (1) is not sufficient.
 - (C) Both statements together are sufficient, but neither statement alone is sufficient.
 - (D) Each statement alone is sufficient.
 - (E) Statement (1) & (2) together are not sufficient.
1. Is the integer n odd?
 - (1) n is divisible by 3.
 - (2) n is divisible by 5.
 2. At a certain picnic, each of the guests was served either a single scoop or a double scoop of ice cream. How many of the guests were served a double scoop of ice cream?
 - (1) At the picnic, 60 percent of the guests were served a double scoop of ice cream
 - (2) A total of 120 scoops of ice cream were served to all the guests at the picnic.
 3. Did Mursalin go to the beach yesterday?
 - (1) If Mursalin goes to the beach he will be sunburned the next day.
 - (2) Mursalin is sunburned today.
 4. Lamiya flipped a fair coin N times. What fraction of the flips came up heads?
 - (1) $N = 24$
 - (2) The number of flips that came up tails was $\frac{3}{8}N$
 5. 3000 applicants took the IBA admission test (written part). How many were selected for personal interview?
 - (1) 60% of the male were selected
 - (2) 40% of the selected students were female.
 6. Nuha and Maisha were among those people who sold raffle tickets to raise money for IBA Sports Club. If Nuha and Maisha sold a total of 100 tickets, how many of the tickets did Nuha sell?
 - (1) Maisha sold $\frac{2}{3}$ as many of the raffle tickets as Nuha did.
 - (2) Maisha sold 8 percent of all the raffle tickets sold for The Club.
 7. Is $xy < 6$?
 - (1) $x < 3$ and $y < 2$
 - (2) $\frac{1}{2} < x < \frac{2}{3}$ and $y^2 < 64$.
 8. Are the integers x , y and z consecutive?
 - (1) The arithmetic mean of x , y and z is y
 - (2) $y-x=z-y$
 9. How long is the diagonal through the center of a particular cube?
 - (1) The diagonal across one face is 4.24 cm.
 - (2) The surface area of the cube is 545 square centimeters.

10. How many miles long is the route from Mouchak to Kalabagan?
- (1) It will take 1 hour less time to travel the entire route at an average rate of 55 miles per hour than at an average rate of 50 miles per hour.
 - (2) It will take 11 hours to travel the first half of the route at an average rate of 25 miles per hour.
11. Each of the eggs in a bowl is dyed red, or green, or blue. If one egg is to be removed at random, what is the probability that the egg will be green?
- (1) There are 5 red eggs in the bowl.
 - (2) The probability that the egg will be blue is $\frac{1}{3}$.
12. The symbol ∇ represents one of the following operations: addition, subtraction, multiplication, or division. What is the value of $3 \nabla 2$?
- (1) $0 \nabla 1 = 1$
 - (2) $1 \nabla 0 = 1$
13. In a certain class, one student is to be selected at random to read. What is the probability that a boy will read?
- (1) Two-thirds of the students in the class are boys.
 - (2) Ten of the students in the class are girls.
14. Committee member Zafar wants to schedule a one hour meeting on Thursday for himself and three other committee members, Mursalin, Neelim, and Tarique. Is there a one-hour period on Thursday that is open for all four members?
- (1) On Thursday, Mursalin and Neelim have an open period from 9:00 a.m. to 12:00 noon.
 - (2) On Thursday, Zafar has an open period from 10:00 a.m. to 1:00 p.m. and Tarique has an open period from 8:00 a.m. to 11:00 a.m.
15. There is at least one viper and at least one cobra in Pandora's box. How many cobras are there?
- (1) There are a total of 99 snakes in Pandora's box.
 - (2) From any two snakes from Pandora's box, at least one is a viper.
16. The ratio of water to alcohol in a 14-cup container is 2:5. Determine the new volume of the liquid in the container.
- (1) Water is increased by 14%.
 - (2) Mixture whose ratio of water to alcohol is 4:5 is added to that in the container
17. Ohee, a businessman bought an Iron box for \$80. Determine his profit.
- (1) He made a 30% profit.
 - (2) His selling price was \$104
18. Trains A and B left stations R and S simultaneously on two separate parallel rail tracks that are 350 miles long. The trains passed each other at point X after traveling for a certain amount of time. How many miles of the rail tracks had train A traveled when the two trains passed each other?
- (1) Up to point X, the average speed of train B was 25% less than the average speed of train A.
 - (2) Up to point X, the average speed of train B was 60 mph and it took two and a half hours for train B to arrive at point X.
19. On which floor is Raiad residing?
- (1) In a six storey building (Ground floor is parking space), Muib is on fourth floor. Raiad likes to reside only on even numbered floors. Abrar is not on the topmost floor.
 - (2) Abrar is two floors below Rabib who is 3 floors above Raiad.
20. What is Nasif's position with respect to Dipita?
- (1) In a row of 25 students, Nasif is sitting 12th from right end of row and Dipita is sitting 20th from left end of the row.
 - (2) Nasif is 4th from left end and Dipita is 8th from right end.