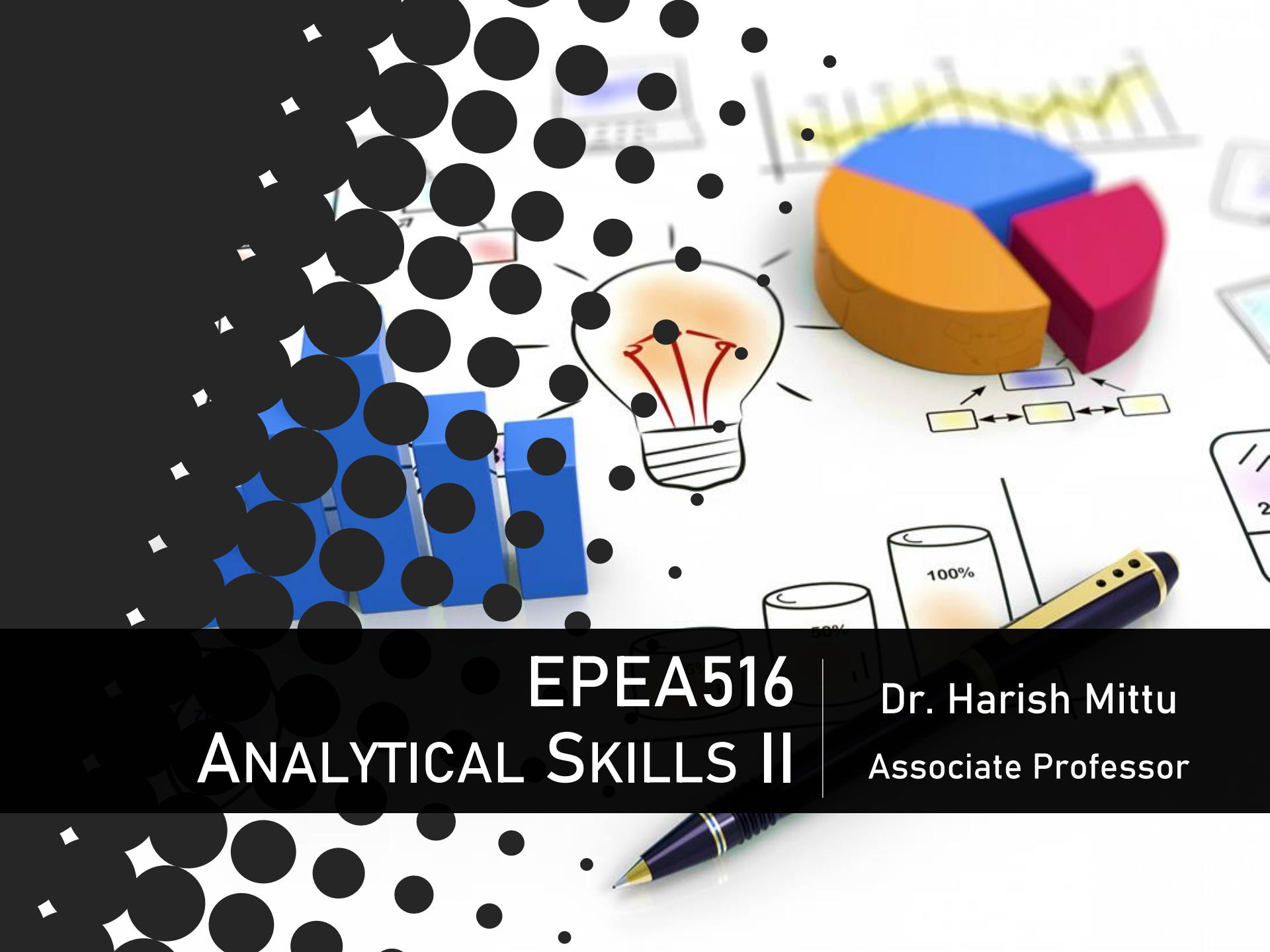

EPEA516
Analytical Skills II

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Learning Outcomes

After this lecture, you will be able to

- develop understanding about the basics of data sufficiency,
- analyze steps and strategies for solving data sufficiency questions,
- solve various problems relating to data sufficiency.

Basics

- Sufficiency
  - Statement ≠ Right or True
  - Solve Question – Given Statement
- Data Sufficiency
  - A Question
  - Some Statements
  - Data - One or More Statements
  - Conclude – Data Provided

Steps

- Data
  - First Statement
  - Second Statement
  - First & Second Statements
  - Answer

Strategies

- Understand
  - Data Sufficiency Answer Choices
  - Statement ‘1’ alone is sufficient to answer the question but statement ‘2’ alone is not sufficient to answer the question.
  - Statement ‘2’ alone is sufficient to answer the question but statement 1 alone is not sufficient to answer the question.

Strategies

- Understand
  - Either of the statements by itself is sufficient to answer the question.
  - Statements ‘1’ and ‘2’ taken together are not sufficient to answer the question and requiring more data pertaining to problem.
  - Both the statements taken together are sufficient to answer the question but neither of the two statements alone is sufficient to answer the question.

Strategies

- Assumptions – Not Allowed
  - ~~General Knowledge~~ & Mathematical Principles
    - Example - Is Delhi the most populated city in India?
    - Statement 1 - The Capital of the India is the most populated city in the India.
    - Statement 2 - Delhi is the capital.

    Both the statements taken together are sufficient to answer the question but neither of the two statements alone is sufficient to answer the question.

Strategies

- Elimination Method
  - Statement ‘1’ (Sufficient)
  - Eliminate Choices (Statement ‘1’ Insufficient)
  - Statement ‘1’ (Insufficient)
  - Eliminate Choices (Statement ‘1’ Sufficient)
  - Statement ‘2’ (Sufficient)
  - Eliminate Choices (Statement ‘2’ Insufficient)
  - Statement ‘2’ (Insufficient)
  - Eliminate Choices (Statement ‘2’ Sufficient)

Strategies

- Analyze - Sufficiency
  - ~~Exact Value - ?~~
  - ~~True/False~~
  - Review
  - Enough Information
  - Answer
  - Conclusion

Problem 1

- What marks have been obtained by Arjun?
- I. Arjun's marks are the average of marks of Nilesh and Mohit.
- II. Nilesh obtained 80 marks, and this is 25% more than the marks obtained by Mohit.
- Both the statements taken together are sufficient to answer the question but neither of the two statements alone is sufficient to answer the question.

Problem 1

- Explanation
- Statement II
  - Calculate marks of Mohit.
- Statement I
  - Arjun's marks = average of marks of Nilesh and Mohit.

Problem 2

- What is the three-digit number?
- I. Two-fifth of that number is less than half of that number by 20.
- II. One-fourth of that number is 25% of that number.
- Statement I alone is sufficient to answer the question but statement II alone is not sufficient to answer the question.

Problem 2

- Explanation
- Statement I - Two-fifth of that number is less than half of that number by 20.
  - $\frac{2\ (\text{Number})}{5} = \frac{\text{Number}}{2} - 20$
- Statement II - One-fourth of that number is 25% of that number.
  - $\frac{(\text{Number})}{4}$ = 25% of Number i.e., $\frac{\cancel{25}(\text{Number})}{\cancel{100}\ 4} = \frac{(\text{Number})}{4}$

Problem 3

- What is the ratio between the ages of the father and the son ?
- I. The sum of their ages is 50 years.
- II. 3 times the sum of their ages is equal to 5 times the father's age.
- Statement II alone is sufficient to answer the question but statement I alone is not sufficient to answer the question.

Problem 3

- Explanation
- Statement I – The sum of their ages is 50 years.
  - Age of Father + Age of Son = 50
- Statement II – 3 times the sum of their ages is equal to 5 times the father's age.
  - 3(Age of Father + Age of Son) = 5(Age of Father)
  - $\frac{\text{Age of Father}}{\text{Age of Son}} = \frac{3}{2}$
- Statement II alone is sufficient.

Problem 4

- Two taps A and B, when opened together, can fill a tank in 6 hours. How long will it take for the pipe A alone to fill the tank?
- I. B alone takes 5 hours more than A to fill the tank.
- II. The ratio of the time taken by A to that taken by B to fill the tank is 2 : 3.
- Either of the statements by itself is sufficient to answer the question.

Problem 4

- Explanation

- (A + B)'s 1 hour filling work = $\frac{1}{6}$

- Statement I - B alone takes 5 hours more than A to fill the tank.

  - (A's 1 hour work) + (B's 1 hour work)

    = (A + B)'s 1 hour work

Problem 4

- Explanation
- (A + B)'s 1 hour filling work = $\frac{1}{6}$
- Statement II - The ratio of the time taken by A to that taken by B to fill the tank is 2 : 3.
  - $\frac{1}{2x} + \frac{1}{3x} = \frac{1}{6}$
- Each one of I and II alone gives the answer or Either of the statements by itself is sufficient to answer the question.

Problem 5

- Shweta walked from her home to the bus stop and back again. How long did it take her to make the entire trip?
- I. She walked from home to the bus stop at the rate of 3 km/h.
- II. She walked back to home at the rate of 5 km/h.
- Statements 'I' and 'II' taken together are not sufficient to answer the question and requiring more data pertaining to problem.

Problem 5

- Explanation
- I. She walked from home to the bus stop at the rate of 3 km/hr.
- II. She walked back to home @ 5 km/hr
- Distance between house and bus stop - not given.
- Therefore, the time of trip cannot be calculated.

Problem 6

- What is the speed of the current?
- I. Speed of the boat is 4 km/hr in still water.
- II. The boat runs at a speed of 6 km/hr downstream.
- Both the statements taken together are sufficient to answer the question but neither of the two statements alone is sufficient to answer the question.

Problem 6

- Explanation
- Speed of current/stream = x km/h
- I. Speed of the boat is 4 km/hr in still water.
  - Speed downstream = (x + 4) km/hr
  - Speed upstream = (x – 4) km/hr.

Problem 6

- Explanation
- II. The boat runs at a speed of 6 km/h downstream.
  - x + 4 = 6
  - x = 2.
- Both the statements taken together are sufficient to answer the question but neither of the two statements alone is sufficient to answer the question.

Problem 7

- What is the speed of a running train?
- I. The train crosses a signal post in 6 seconds.
- II. The train crosses another train running in the opposite direction in 15 seconds.
- Statements ‘I’ and ‘II’ taken together are not sufficient to answer the question and requiring more data pertaining to problem.

Problem 7

- Explanation
- I. The train crosses a signal post in 6 seconds.
- II. The train crosses another train running in the opposite direction in 15 seconds.
- Lengths of the trains are not given, therefore it is not possible to determine the speed of the train.
- Statements 'I' and 'II' taken together are not sufficient to answer the question and requiring more data pertaining to problem.

Problem 8

- What is the rate of interest percent per annum?
- I. The amount doubles itself in 10 years.
- II. The simple interest accrued in 5 years is Rs. 5000.
- Statement I alone is sufficient to answer the question but statement II alone is not sufficient to answer the question.

Problem 8

- Explanation
- I. The amount doubles itself in 10 years.
  - $R = \frac{S.I. \times 100}{P \times T}$ (Because S.I. = P)
- II. The simple interest accrued in 5 years is Rs. 5000.
  - Since P is still unknown, R cannot be calculated.
- Statement I alone is sufficient to answer the question but statement II alone is not sufficient to answer the question.

Conclusion

- Data Sufficiency
  - A Question - Some Statements
  - Data - One or More Statements
  - Conclude – Data Provided

Conclusion

- Steps
  - First Statement
  - Second Statement
  - First & Second Statements
  - Answer

Conclusion

- Strategies
  - Understand
  - Assumptions – Not Allowed
  - Elimination Method
  - Analyze Questions

Summary

- Data Sufficiency
  - Basics
  - Steps
  - Strategies
  - Problems

That’s all for now…