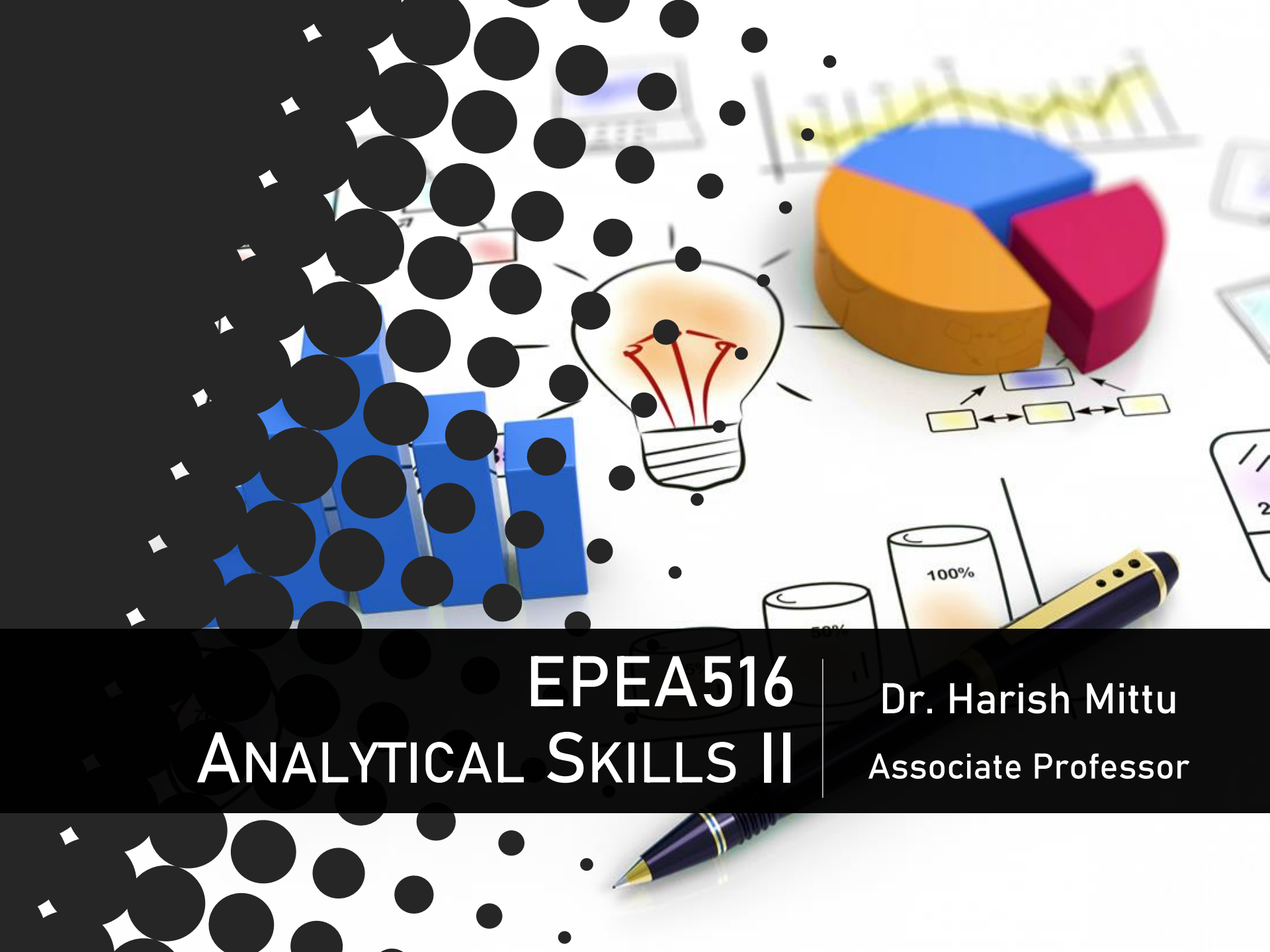

EPEA516
Analytical Skills II

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Learning Outcomes

After this lecture, you will be able to

- solve different problems based on series completion.

Problem 1

- Insert the missing number in the following series:

5, 8, 12, 17, 23,…..?, 38

- $T_2 - T_1 = 8 - 5 = 3$
- $T_3 - T_2 = 12 - 8 = 4$
- $T_4 - T_3 = 17 - 12 = 5$
- $T_5 - T_4 = 23 - 17 = 6$
- $T_6 - T_5 = X - 23 = 7$
- $T_7 - T_6 = 38 - X = 8$

Problem 1

- Insert the missing number in the following series:

5, 8, 12, 17, 23,….., 38

- $T_2 - T_1$ = 8 – 5 = 3; $T_3 - T_2$ = 12 – 8 = 4; $T_4 - T_3$ = 17 – 12 = 5
- $T_5 - T_4$ = 23 – 17 = 6; $T_6 - T_5$ = X – 23 = 7; $T_7 - T_6$ = 38–X= 8
- 30– 23 = 7 and 38 – 30 = 8
- X or missing number = 30
- 5, 8, 12, 17, 23, 30, 38

Problem 2

- Insert the missing number in the given series:

4, 9, 20, 43, 90, ___?___

- T_2 = 9 = 2 × 4 + 1
- T_3 = 20 = 2 × 9 + 2
- T_4 = 43 = 2 × 20 + 3
- T_5 = 90 = 2 × 43 + 4
- T_6 = 2 × 90 + 5 = 185
- 4, 9, 20, 43, 90, 185

Problem 3

- Insert the missing number in the given series:

  1, 1, 4, 8, 9, 27, 16, ___ ?

- First Series – 1, 4, 9, 16, ……

  or $1^2, 2^2, 3^2, 4^2, \ldots\ldots$

- Second Series - 1, 8, 27, ….. ?

  or $1^3, 2^3, 3^3, \ldots$

  or $1^3, 2^3, 3^3, 4^3, \ldots$

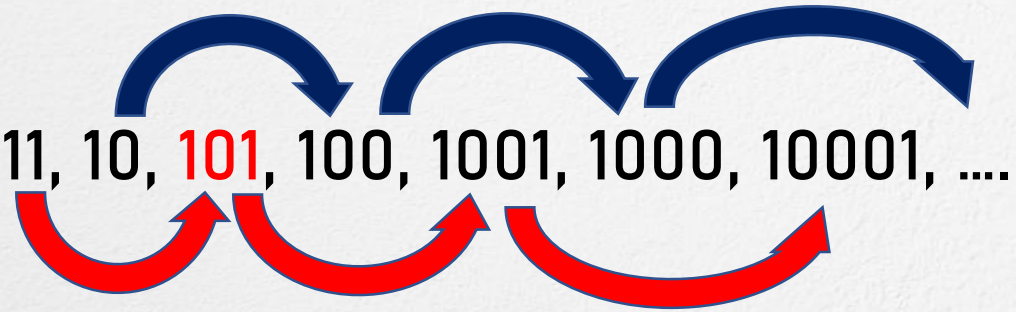
- Missing Number = 64

Problem 4

- Fill in the missing number in the following series:

11, 10, ?, 100, 1001, 1000, 10001, ….

- T_2 = 10, T_4 = 100, T_6 = 1000, ……
- T_1 = 11, T_3 = ?, T_5 = 1001, T_7 = 10001, ……
- T_3 = 101



- 11, 10, 101, 100, 1001, 1000, 10001, ….

Problem 5

- Find the fifth term in the following series:

  99, 95, 86, 70,…?….

- $T_2 - T_1 = 95 - 99 = -4 = -2^2$
- $T_3 - T_2 = 86 - 95 = -9 = -3^2$
- $T_4 - T_3 = 70 - 86 = -16 = -4^2$
- $T_5 - T_4 = X - 70 = -25 = -5^2$
- $T_5 = X = 70 - 25 = 45$
- 99, 95, 86, 70, 45

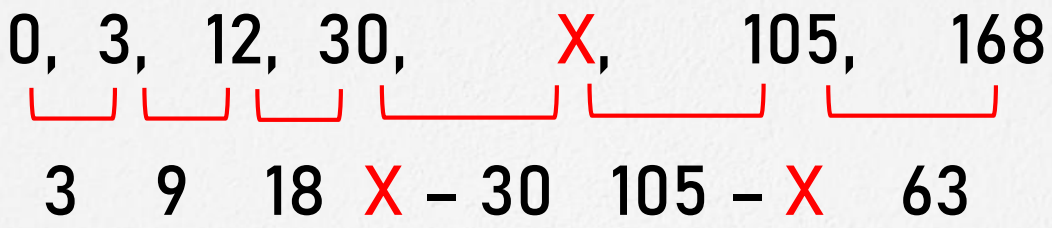
Problem 5

- Find the number corresponding to question mark in the following series:

  0, 3, 12, 30, ?, 105, 168

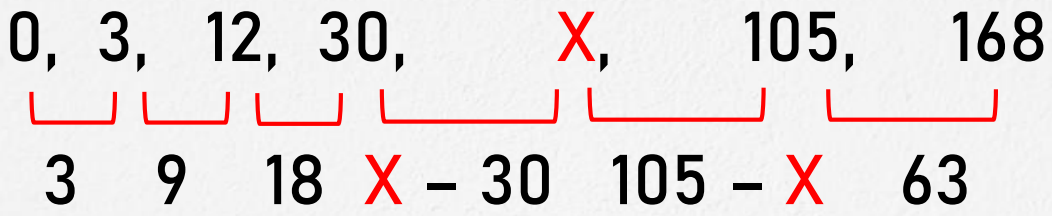
- $T_2 - T_1 = 3 - 0 = 3$
- $T_3 - T_2 = 12 - 3 = 9$
- $T_4 - T_3 = 30 - 12 = 18$
- $T_5 - T_4 = X - 30 = ?$
- $T_6 - T_5 = 105 - X = ?$
- $T_7 - T_6 = 168 - 105 = 63$

Problem 5



- $a_2 - a_1 = 9 - 3 = 6$
- $a_3 - a_2 = 18 - 9 = 9$
- $a_4 - a_3 = X - 30 - 18 = X - 48$
- $a_5 - a_4 = 105 - X - (X - 30) = 135 - 2X$
- $a_6 - a_5 = 63 - (105 - X) = X - 42$

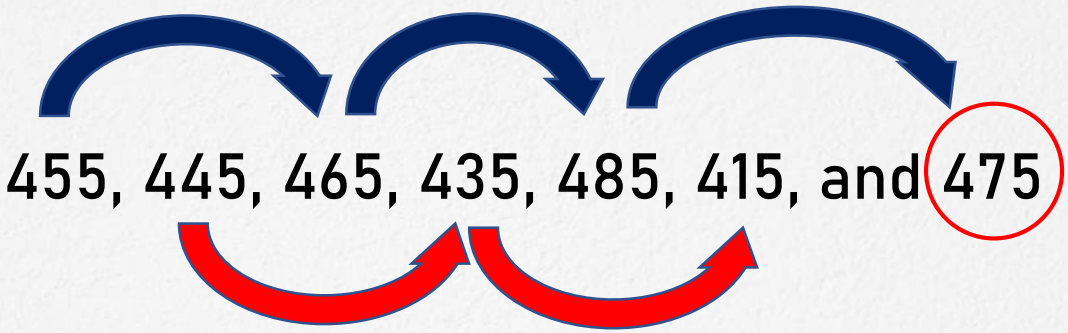
Problem 5



- $a_2 - a_1 = 9 - 3 = 6$; $a_3 - a_2 = 18 - 9 = 9$
- $a_4 - a_3 = X - 30 - 18 = X - 48$;
- $a_5 - a_4 = 105 - X - (X - 30) = 135 - 2X$
- $a_6 - a_5 = 63 - (105 - X) = X - 42$
- $X = 60$
- 3, 9, 60 – 48 = 12, 135 – 2 x 60 = 15, and 60 – 42 = 18

Problem 6

- Find out the wrong number in the following series:



- 455, 465, 485, and 475
- 465 – 455 = 10; 485 – 465 = 20; and 475 – 485 = -10
- 445, 435, and 415
- 435 – 445 = -10; and 415 – 435 = -20
- Correct number = 485 + 30 = 515

Problem 7

- Find out the wrong number in the following series:

  1, 5, 11, 19, 29, and 55

- 5 - 1 = 4
- 11 –5 = 6
- 19 – 11 = 8
- 29 – 19 = 10
- 55 -29 = 26
- Correct number = 29 + 12 = 41

Problem 8

- Find out the wrong number in the following series:

  2, 4, 4, 16, 8, 256, and 64

- 2, 4, 8, and 64
- 2^1, 2^2, 2^3, and 2^6
- 4, 16, and 256
- 2^2, 2^4, and 2^8
- Correct number = 2^4 = 16

Problem 9

- In the following questions a number series is given. After the series a number is given followed by a, b, c, d and e. Complete the series starting with the number given following the sequence of the given series.

  1, 9, 65, 393

  2, a, b, c, d, e

- 9 = 1 x 8 + 1
- 65 = 9 x 7 + 2
- 393 = 65 × 6 + 3

Problem 9

- 1, 9, 65, 393
- 2, a, b, c, d, e
- 9 = 1 x 8 + 1; 65 = 9 x 7 + 2; 393 = 65 × 6 + 3
- a = 2 x 8 + 1 = 17
- b = 17 × 7 + 2 = 121
- c = 121 x 6 + 3 = 729
- d = 729 x 5 + 4 = 3649
- e = 3649 × 4 + 5 = 14601

Problem 10

- Find out the wrong number in the following series:

3, 10, 24, 54, 108, 220, and 444

- 10 = 2 × 3 + 4
- 24 = 2 × 10 + 4
- 54 = 2 × 24 + 6
- 108 = 2 × 54 + 0
- 220 = 2 × 108 + 4
- 444 = 2 × 220 + 4
- Correct number 52 = 2 × 24 + 4 and 108 = 2 x 52 + 4

Conclusion

- Pattern - Series
- Missing Number/Wrong Number
- Complete/Correct Series

Summary

- Problems - Series Completion

That’s all for now…