Bank Job Lecture Sheet

Lecture 7

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Lecture Contents

☑ Average & Age

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Basic Concept:

এক জাতীয় কিছু রাশির সমষ্টিকে উক্ত রাশিগুলোর মোট সংখ্যা দ্বারা ভাগ করলে যে ভাগফল পাওয়া যায় তাকে ঐ রাশিগুলোর গড় (Average) বলে। Average = Mean = Arithmetic Mean

$$\text{Average} = \frac{\text{Total}}{\text{No. of element}} \quad | \quad \text{গড়} = \frac{\text{সমষ্টি}}{\text{পদ সংখ্যা}}$$

$\Rightarrow$ Total = Average × No. of element

পর পর সংখ্যা বা সমান্তর ধারার ক্ষেত্রে,

(i) গড় $= \frac{\text{১ম পদ} + \text{শেষ পদ}}{২}$

eq- 4, 6, 8, 10, 12; Average $= \frac{4 + 12}{2} = 8$

(ii) গড় = মাঝেরটি [যদি বিজোড় সংখ্যক সংখ্যা থাকে]

eq- 4, 6, 8, 10, 12; Average = 8

পরপর সংখ্যা (Consecutive number):

x, x+1, x+2, x+3, x+4, ...

পরপর জোড় সংখ্যা (Consecutive even number):

x, x+2, x+4, x+6, ...

পরপর বিজোড় সংখ্যা (Consecutive odd number): x, x+2, x+4, x+6, ...

মধ্যক (Median):

প্রদত্ত উপাত্তগুলোকে মানের ক্রমানুসারে (ঊর্ধ্বক্রমে বা নিম্নক্রমে) সাজালে, যে মান উপাত্তগুলোকে সমান দুইভাগে ভাগ করে, তাকে উপাত্তগুলোর মধ্যক বলা হয়। মধ্যক হচ্ছে ক্রমবিন্যস্ত উপাত্তের মধ্যপদের মান। উপাত্ত বিজোড় সংখ্যক হলে মধ্যক হবে মধ্যপদের মান। উপাত্ত জোড় সংখ্যক হলে মধ্যক হবে মাঝখানের পদ দুইটির গড়।

উপাত্ত: ৭, ৩, ১০, ১৩, ৩, ৯, ১৫, ৭

উপাত্তগুলোকে মানের ক্রমানুসারে সাজালে পাই = ৩, ৩, ৭, ৭, ৯, ১০, ১৩, ১৫

এখানে, পদসংখ্যা = ৮

উপাত্তগুলোর মধ্যক $= \frac{৭ + ৯}{২} = ৮$

প্রচুরক (Mode) :

উপাত্তের মধ্যে যে সংখ্যাটি সবচেয়ে বেশি বার থাকে, তাকে প্রচুরক বলা হয়। প্রচুরক নির্ণয়ের উপাত্তের জন্য মানগুলোকে অবশ্য কোনো নির্দিষ্ট ক্রমে না সাজালেও চলে।

যেমন, উপাত্ত = ৭, ৫, ১০, ১৩, ৫, ৯, ১৫, ৭, ৫ উপাত্তের মধ্যে ৫ মানটি সর্বাধিক তিনবার আছে।

∴ প্রচুরক = ৫

Teacher's Discussion

1. **The average run of a cricket player of 10 innings was 32. How many rus must be make in his next innings to increase his average of runs by 4?** [Combined 5 Banks Officer- 2022]

A. 76 B. 79 C. 85 D. 87 **Ans:** A

2. **Six years ago, Anita was P times as old as Ben was. If Anita is now 17 years old, how old is Ben now in terms of P?** [Combined 5 Banks Officer- 2022]

A. $\frac{11}{p} + 6$ B. $\frac{p}{11} + 6$ C. $17 - \frac{p}{6}$ D. $\frac{17}{p}$ **Ans:** A

3. **A man is now 3 times as old as his son. In 10 years' time, the sum of their ages will be 76. How old was the man when his son was born?** [Combined 5 Banks Officer- 2022]

A. 24 years B. 42 years C. 28 years D. 32 years **Ans:** C

4. **The average daily wage of 10 workers is Tk. 400. If the lowest wage is Tk. 300, then what is the passible maximum wage?** [Combined 9 Bank Senior Officer (General)-2023]

A. 1300 B. 1200 C. 1000 D. 800 **Ans: A**

5. **The average monthly income of p and Q is Tk. 5050. The average monthly income of Q and R is Tk. 6250 and the average monthly income of P and R is Tk. 5200. Calculate the monthly income of P.** [Combined 9 Bank Senior Officer (General)-2023]

A. Tk. 4000 B. Tk. 6100 C. Tk. 6400 D. Tk. 16500 **Ans: A**

6. **The average age of a family of 6 members is 25 years, After a 45 year old member leaves the family, what is the average age (in years) of the family?** [Combined 8 Banks Officer- 2022]

A. 22 B. 21 C. 19 D. 20 **Ans:** B

7. **10, 4, 26, 16 what is the median of the numbers shown?** [Combined 9 Banks Officer- 2022]

A. 10 B. 13 C. 14 D. 15 **Ans:** B

8. **If Mario was 32 years old 8 years ago, how old was he x years ago?** [Combined 9 Banks Officer- 2022]

A. x – 40 B. x – 24 C. 40 – x D. 24 – x **Ans:** C

9. **Which one of the following numbers can be removed from the set S = {0, 2, 4, 5, 9} without changing the average of set S?** [Combined 7 Banks Officer- 2021; Bangladesh Bank AD- 2012]

A. 0 B. 2 C. 4 D. 5 **Ans:** C

10. **Melissa is four times as old as Jim, Pat is 5 years older than Melissa. If Jim is y years old, how old is Pat?** [Bangladesh Bank AD- 2021]

A. 4y + 5 B. 5y + 4 C. 4 – 5y D. y + 5 **Ans:** A

11. **The average (arithmetic mean) of x and y is 20. If z = 5, what is the average of x, y and z?** [Bangladesh Bank AD- 2021]

A. 15 B. 12.5 C. 10 D. $\frac{25}{3}$ **Ans:** A

12. **The average of six numbers is 14. The average of four of these numbers is 15. The average of remaining two numbers is:** [Bangladesh Bank Officer- 2019]

A. 4 B. 8 C. 12 D. 16 **Ans:** C

13. **The average of five consecutive odd numbers is 61. What is the difference between the highest and lowest numbers?** [Bangladesh Bank AD- 2016]

A. 2 B. 5 C. 8 D. None of these **Ans:** C

14. **A person's persent age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?** [Bangladesh Bank AD- 2019]

A. 32 years B. 36 years C. 40 years D. 48 years **Ans:** C

15. **The total of the ages of Ali, Gazi and Masud is 93 years. Ten years ago, the ratio of their ages was 2 : 3 : 4. What is the present age of Masud?** [Bangladesh Bank Officer- 2016]

A. 24 years B. 38 years C. 34 years D. 32 years **Ans:** B

16. **The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the yougest child?** [Bangladesh Bank AD- 2012]

A. 3 B. 4 C. 5 D. 6 **Ans:** B

17. **In a set of 3 numbers, the average of first two numbers is 2. The average of the last two numbers is 3. and the average of the first and last numbers is 4. What is the average of three numbers?** [Bangladesh Bank AD- 2012]

A. 3 B. 6 C. 9 D. 24 **Ans:** A

18. **The average of a series of consecutive odd numbers is 33. If there are 7 numbers in the series, what is the lowest number in the series?** [Bangladesh Bank AD- 2011]

A. 25 B. 27 C. 29 D. 37 **Ans:** B

19. **P is now 8 years older than Q. 17 years ago P was twice as old as Q. How old will Q be in 10 years?** [Bangladesh Bank Officer- 2011]

A. 43 B. 35 C. 15 D. 27 **Ans:** B

20. **Salim gets grades of 79, 83, 86 and 89 on four math tests. What grade must he get on his fifth test to average 85?** [Bangladesh Bank Officer- 2011]

A. 86 B. 3 C. 87 D. 88 **Ans:** D

21. **The sum of the 3 consecutive integers is 240, then the sum of the two larger integers is:** [Bangladesh Bank AD- 2009]

A. 79 B. 159 C. 169 D. 161 **Ans:** D

22. **The average temperature on Wednesday, Thursday and Friday was 25° C. The average temperature on Thursday, Friday and Saturday was 24°C. If the temperature on Saturday was 27°C, what was the temperature onn Wednesday?** [Bangladesh Bank AD- 2009]

A. 24° B. 21° C. 27° D. 30° **Ans:** D

23. **Three years back, a father was 24 years older than his son. At present the father is 5 times as old as the son. How old will the son be three years from now?** [Southeast Bank PO- 2020]

A. 12 years B. 27 years C. 3 years D. 9 years **Ans:** D

24. **If the mean of numbers 28, x, 42, 78 and 104 is 62, what is the mean of 48, 62, 98, 124 and x?** [Southeast Bank PO- 2020]

A. 58 B. 390 C. 78 D. 310 **Ans:** D

25. **The average age of a group of 10 students was 20. The average age increased by 2 years when two new students joined the group. What is the average age of the two new students who joined the group?** [Southeast Bank PO- 2020]

A. 22 years B. 30 years C. 40 years D. 32 years **Ans:** D

26. **7 years ago, son's was $\frac{1}{5}$ th of father's. If the ratio of their persent ages is 1 : 3, what will be the ratio of their ages after 7 year's?** [UCB, PO- 2020]

A. 2 : 5 B. 3 : 5 C. 5 : 11 D. 3 : 7 **Ans:** D

27. **Six times the average of six consecutive even integers is 18 more than the four times the largest integers. What is the average of the consecutive integers?** [UCB, PO- 2020]

A. 16 B. 18 C. 19 D. 21 **Ans:** C

28. **If Rashed were twice as old as he is, he would be 40 years older than Hashem. If Hashem is 10 years younger than Rashed, how old is Rashed?** [Dutch Bangla Bank PO- 2019]

A. 10 years B. 20 years C. 30 years D. 60 years **Ans:** C

29. **Baki lives 2 miles west of Raju's house, Rafiq lives 3 miles north of Raju's house and 2 miles west of Diba's house. What is the straight-line distance from Baki's house to Diba's house?** [Cite Bank MTO- 2018]

A. 5 miles B. 6 miles C. 7 miles D. 10 miles **Ans:** A

30. **Naizel is twenty years older than Neketa. In three years Naizel will be twice as old as Neketa will be. How old is Neketa now?** [Sadharon Bima Corporation AM- 2019]

A. 24 B. 17 C. 16 D. 8 **Ans:** B

31. **In the first 20 over's of a cricket game, the run rate was only 3.5. What should be the run rate in remaining 30 over's to reach the target of 289 runs?** [Sadharon Bima Corporation Junior Officer- 2019]

A. 7.1 B. 7.2 C. 7.3 D. 7.4 **Ans:** C

32. **If the average (arithmetic mean) of seven consecutive integers is k + 2, then the product of the greatest and least integer is-** [Dutch Bangla Bank, AO- 2017]

A. $k^2 + 4k - 5$ B. $k^2 - 9$ C. $k^2 + 6k + 9$ D. $k^2 - 2k + 1$ **Ans:** A

33. **Arif is now 5 times as old as Babu, but 7 years from now he will be 3 times as old as Babu. How old is Arif now?** [UCB, MTO- 2017]

A. 7 B. 8 C. 9 D. 35 **Ans:** D

34. **40% of the employees in a factory are workers. All the remaining employees are executives. The annual income of each worker is BDT 390. The annual income of each executive is BDT 420. What is the average annual income of all the employees in the factory together?** [One Bank, Special Cadre Officer- 2022]

A. DBT 405 B. BDT 408 C. BDT 415 D. BDT 390 **Ans:** B

35. **If w + x = - 4, x + y = 25 and y + w = 15, then the average of w, x, y is:** [Uttara Bank, AO- 2022]

A. 3 B. 4 C. 5 D. 6 **Ans:** D

36. **Jafar's English quiz scores are 56, 93, 72, 89 and 87. What is the median of his scores?** [Global Islami Bank, PO- 2022]

A. 72 B. 87 C. 56 D. 85.6 **Ans:** B

37. **If x is the average (arithmetic mean) of m and 9, y is the average of 2m and 15, and z is the average of 3m and 18, what is the average of x, y and z in terms of m?** [Global Islami Bank, PO- 2022]

A. m + 6 B. m + 7 C. 2m + 14 D. 3m + 21 **Ans:** B

38. **The median of the data 13, 15, 16, 17, 19, 20, is:** [NRBC Bank, TO- 2022]

A. $\frac{30}{2}$ B. $\frac{31}{2}$ C. $\frac{33}{2}$ D. $\frac{35}{3}$ **Ans:** C

39. **If the average of a, a + 3, a + 6, a + 9 and a + 12 is 10, then a is equal to:** [NRBC Bank, TO- 2022]

A. 1 B. 2 C. 3 D. 4 **Ans:** D

40. **The average of 10 numbers is 15. If each number is multiplied by 3, the average of the new set of number will be-**

A. 34 B. 38 C. 36 D. 45 **Ans:** D

41. **The average of 7 numbers is 30. If the average of first three is 25 and that of last 3 is 35, the furth numbher is-**

A. 25 B. 34 C. 36 D. 30 **Ans:** D

42. **The average age of a committee of 8 members is 40 years. A member aged 55 years retired and another member aged 39 years took his place. The average age of the present committee is-**

A. 29 years B. 38 years C. 21 years D. 35 years **Ans:** B

43. **The average age of a committee of 7 memebers is 30 years. A member aged 55 years retired and another member aged 41 years took his place. The average age of the present committee is-**

A. 29 years B. 28 years C. 21 years D. 35 years **Ans:** B

44. **If the average of five consecutive even numbers is 8, which of the following is the smallest of the five numbers?**

A. 4 B. 5 C. 6 D. 8 **Ans:** A

45. **Set X contains 10 consecutive integers. If the sum of the 5 smallest members of set X is 265, what is the average of the 5 largest members of Set X?**

(A) 58 (B) 59 (C) 60 (D) 57 **Ans:** A

46. **The average of 7 consecutive number is 20. The largest of these numbers is:**

(A) 20 (B) 22 (C) 23 (D) 24 **Ans:** C

47. **Boris was 26 years old in 1970, when his daughter, Olga, was born. In what year was Boris exactly 3 times as old as Olga?**

(A) 16.5 (B) 13.5 (C) 14 (D) 13 **Ans:** D

Student's Drill

1. **The arithmetic means of (3a + 4) and another number is 2a. What is the average of the other number and a?**

(A) 2a (B) a – 4 (C) a – 2 (D) a + 4 **Ans:** C

2. **If the average of 8, 11 and *x* is 12, what is the value of *x*?**

(A) 27 (B) 16 (C) 14 (D) 17 **Ans:** D

3. **Which one of the following numbers can be removed from the set S = {0, 2, 4, 5, 9} without changing the average of Set S?**

(A) 0 (B) 2 (C) 4 (D) 5 **Ans:** C

4. **The average of five consecutive odd numbers is 61. What is the difference between the highest and lowest number?**

(A) 2 (B) 5 (C) 8 (D) 9 **Ans:** C

5. **A, B, C and D are four consecutive even numbers respectively and their average is 65. What is the product of A and D?**
(A) 3968 (B) 4092 (C) 4216 (D) 4352 **Ans:** C

6. **The average of ten numbers is 7. If each number is multiplied by 12, then the average of the new set of numbers is:**
(A) 7 (B) 19 (C) 82 (D) 84 **Ans:** D

7. **If the arithmetic means of seventy-five numbers is calculated, it is 35. If each number is increased by 5, then mean of new numbers is:**
(A) 30 (B) 40 (C) 70 (D) 90 **Ans:** B

8. **If the average of 5 consecutive odd integers is 55, what is the average of the last two integers?**
(A) 56 (B) 57 (C) 58 (D) 60 **Ans:** C

9. **The average of five consecutive integers, in increasing order of size, is 9. What is the average of the last three integers?**
(A) 8 (B) 9.5 (C) 10 (D) 11 **Ans:** C

10. **The average (arithmetic mean) of 6 numbers is 6.5. When four more numbers are added to these six numbers, the new average of all 10 numbers is 7·9. What is the average of the four numbers added.**
(A) 10 (B) 11 (C) 12.5 (D) 12.4 **Ans:** A

11. **Average score of a class of 60 students in an exam was 43. Average score of the students who had passed is 52 and average score of students who had failed is 16. How many failed in the exam?**
(A) 25 (B) 20 (C) 15 (D) 18 **Ans:** C

12. **If the average temperature of first four days of the week was 39^0C and the average temperature of the week was 40^0C, then what was the average temperature of the last three days of the week?**
(A) 39.9°C (B) 40.9°C (C) 41.3°C (D) 42.1°C **Ans:** C

13. **The average daily wage of 10 employees is Tk. 400. If the lowest wage is Tk. 300, what is the possible maximum wage in Tk?**
(A) 800 (B) 900 (C) 1000 (D) 1300 **Ans:** D

14. **The average age of husband, wife and their child 3 years ago were 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is:**
(A) 35 years (B) 40 years (C) 45 years (D) 50 years **Ans:** B

15. **The difference between Asad and Abir's age is 10. 10 years before Abir was 2 times than Asad. Find the present age of Asad.**
(A) 18 (B) 19 (C) 20 (D) 21 **Ans:** C

16. **A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, then how old is B?**
(A) 7 (B) 8 (C) 44 (D) 10 **Ans:** D

17. **A worker is paid Tk. 40 per hour for the first 8 hours & then Tk. 52 for each additional hour. If on a certain day, his average pay was Tk. 44/hour, how many hours did he work on that day?**
(A) 12 (B) 10 (C) 8 (D) 4 **Ans:** A

18. **If the average of 5, 9, *k*, and *m* is 12, what is the average of *k* + 7 and *m* – 3?**
(A) 14 (B) 17 (C) 19 (D) 21 **Ans:** C

19. **In a set the average of first two number is 2, the average of last two number is 3 and the average of first and last two number is 4. What is the average of three numbers.**

(A) 1 (B) 2 (C) 3 (D) 4 **Ans:** C

20. **The average weight of 5 employee is 60kg. If the Highest weight is 65kg, find the lowest Weight.**

(A) 12 kg (B) 15 kg (C) 18 kg (D) 40 kg **Ans:** D

21. **In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs?**

(A) 6.25 (B) 6.5 (C) 6.75 (D) 7 **Ans:** A

22. **M is now 14 years older than N. In 10 years, M will be twice as old as N, how old will M be in 5 years?**

(A) 9 (B) 19 (C) 21 (D) 23 **Ans:** D

23. **Maria is 6 times as old as Tina. In 20 years, Maria will be only twice as old as Tina. How old is Maria now?**

(A) 35 (B) 5 (C) 30 (D) 40 **Ans:** C

24. **John took five English tests during the first marking period, and his average (arithmetic mean) was 85. If his average after the first three tests were 83, what was the average of his fourth and fifth tests?**

(A) 83 (B) 85 (C) 87 (D) 88 **Ans:** D

25. **Justin's average (arithmetic mean) on four tests is 80. What grade does he need on his fifth test to raise his average to 84?**

(A) 82 (B) 84 (C) 92 (D) 100 **Ans:** D

26. **Judy's average (arithmetic mean) on four tests is 80. Assuming she can earn no more than 100 on any test, what is the least she can earn on her fifth test and still have a chance for an 85 average after seven tests?**

(A) 60 (B) 70 (C) 75 (D) 80 **Ans:** C

27. **Which of the following is the average (arithmetic mean) of $x^2 - 10$, $30 - x^2$, and $6x + 10$?**

(A) $2x + 10$ (B) $2x + 30$ (C) $3x + 15$ (D) $2x^2 + 6x + 30$ **Ans:** A

28. **Brigitte's average (arithmetic mean) on her six math tests this marking period is 75. Fortunately for Brigitte, her teacher drops each student's lowest grade, thus raising Brigitte's average to 85. What was her lowest grade?**

(A) 20 (B) 25 (C) 30 (D) 40 **Ans:** B

29. **Jordan has taken five math tests so far this semester. If he gets a 70 on his next test, that grade will lower his test average (arithmetic mean) by 4 points. What is his average now?**

(A) 74 (B) 85 (C) 90 (D) 94 **Ans:** D

30. **Mrs. James gave a test to her two geometry classes. The 24 students in her first-period had a class average (arithmetic mean) of 78. Then of the 26 students in her second-period class was 83. What was the average for all students taking the exam?**

(A) 79.4 (B) 80.5 (C) 80.6 (D) 81.2 **Ans:** C

31. **The average mark obtained by 10 students was 6 and the average mark obtained by 6 students was 10. What was the average mark obtained by all 16 students?**

(A) 10 (B) 8 (C) 7.5 (D) 8.5 **Ans:** C

32. **If a person earned Taka 25, Taka 30 and Taka 35 in the first three weeks of the month, how much he must earn in the fourth week in order to make an average weekly earning of Taka 35 in the month?**

(A) Taka 30 (B) Taka 50 (C) Taka 40 (D) Taka 45 **Ans:** B

33. **A person was asked to state his age in years. His reply was, "Take my age three years hence, multiple it by 3 and then subtract three times my age three years ago and you will know how old I am." What was the age of the person?**

(A) 18 years (B) 20 years (C) 24 years (D) 32 years **Ans:** A

34. **The average age of 8 men is increased by 2 years when one of them whose age is 24 years is replaced by a woman. What is the age of the woman?**

(A) 40 years (B) 35 years (C) 28 years (D) 32 years **Ans:** A

35. **A player's average test score on 4 tests is 78. What must be his score on a 5th test for average score on the 5 tests to be 80?**

(A) 82 (B) 84 (C) 86 (D) 88 **Ans:** D

36. **A woman says, "If you reverse my own age, the figures represent my husband's age. He is, of course, senior to me and the difference between our ages is one-eleventh of our sum". What is the age of woman?**

(A) 23 years (B) 34 years (C) 45 years (D) 54 years **Ans:** C

37. **The average wage of a worker during a fortnight comprising 15 consecutive working days was Taka 90 per day. During the first 7 days, his average wage was Taka 87 per day and the average wage during the last 7 days was Taka 92 per day. What was his wage on the 8th day?**

(A) Tk. 83 (B) Tk. 85 (C) Tk. 92 (D) Tk. 97 **Ans:** D

38. **The average age of 32 students is 10 years. If the teacher's age is also included, the average age increases by one year. What is the age of the teacher?**

(A) 43 years (B) 50 years (C) 34 years (D) 32 years **Ans:** A

Solution of Student's Drill

1. Let the number = x

$\frac{(3a + 4) + x}{2} = 2a$

$\Rightarrow 3a + 4 + x = 4a$

$\Rightarrow x = 4a - 3a - 4$

$\Rightarrow x = a - 4$

$\frac{x + a}{2} = \frac{a - 4 + a}{2} = \frac{2a - 4}{2}$

$= \frac{2(a - 2)}{2} = a - 2$ **(Ans.)**

2. $\frac{8 + 11 + x}{3} = 12$

$\Rightarrow 19 + x = 36 \quad \therefore x = 17$ **(Ans.)**

3. Avg = $\frac{0+2+4+5+9}{5} = \frac{20}{5} = 4$

After removal 4, Avg = $\frac{0+2+5+9}{4} = 4$

Ans: 4

4. $\frac{x+x+2+x+4+x+6+x+8}{5} = 61$

$\Rightarrow 5x + 20 = 305$

$\Rightarrow 5x = 285 \quad \therefore x = 57$

$\therefore x + 8 = 57 + 8 = 65$

Difference = 65 – 57 = 8 **(Ans.)**

5.

A	B	C	D
x	x + 2	x + 4	x + 6

$\frac{x+x+6}{2} = 65$

$\Rightarrow 2x + 6 = 130$

$\Rightarrow 2x = 124 \Rightarrow x = 62$

AD = 62 × 68 = 4216 **(Ans)**

6. যেহেতু প্রত্যেক সংখ্যার সাথে 12 দিয়ে গুণ হচ্ছে।

Average = 7 × 12 = 84 **(Ans.)**

7. যেহেতু প্রত্যেক সংখ্যার সাথে 5 যোগ হচ্ছে।

সুতরাং Average = 35 + 5 = 40 **(Ans.)**

8. $\frac{x+x+2+x+4+x+6+x+8}{5} = 55$

$\Rightarrow 5x + 20 = 275$

$\Rightarrow 5x = 255$

$\therefore x = 51$

$\therefore x + 6 = 51 + 6 = 57$

$x + 8 = 51 + 8 = 59$

$\therefore$ Avg = $\frac{57+59}{2} = 58$ **(Ans.)**

9. $\frac{x+x+1+x+2+x+3+x+4}{5} = 9$

$\Rightarrow 5x + 10 = 45$

$\Rightarrow 5x = 35$

$\Rightarrow x = 7$

$\therefore$ Avg = $\frac{9+10+11}{3} = 10$ **(Ans.)**

10. 10 টির total = 10 × 7.9 = 79

6 ” ” = 6 × 6.5 = 39

$\therefore$ 4 টির Total = 79 – 39 = 40

Avg = $\frac{40}{4} = 10$ **(Ans.)**

11. Let, No of failure = x

$\therefore$ No of pass = 60 – x

16x + 52 (60 – x) = 60 × 43

$\Rightarrow 16x + 3120 - 52x = 2580$

$\Rightarrow -36x = -540$

$\therefore x = 15$ **(Ans.)**

12. 7 দিনের Total = 7 × 40 = 280

4 দিনের Total = 4 × 39 = 156

$\therefore$ 3 দিনের Total = 124

Avg = $\frac{124}{3} = 41.3$ **(Ans.)**

13. 10 জনের Total = 10 × 400 = 4000

9 ” ” = 9 × 300 = 2700

$\therefore$ 1 জনের সর্বোচ্চ wage = 4000 – 2700

= 1300 **(Ans.)**

14. $\frac{H+W+C}{3} = 30$

$\Rightarrow H + W + C = 90$

$\frac{W+C}{2} = 25 \Rightarrow W + C = 50$

$\therefore (H + W + C) - (W + C)$

= 90 – 50 = 40 **(Ans.)**

15. Let, Asad = x $\quad \therefore$ Abir = 10 – x

Abir – 10 = 2 (Asad – 10)

$\Rightarrow 10 - x - 10 = 2(x - 10)$

$\Rightarrow x = 2x - 20 \quad \therefore x = 20$ **(Ans.)**

16. Let, C = x, B = 2x, $\quad \therefore$ A = 2x + 2

x + 2x + 2x + 2 = 27

$\Rightarrow 5x = 25 \Rightarrow x = 5$

$\therefore$ B = 2x = 2 × 5 = 10 **(Ans.)**

17. Let, Additional time = x hrs.

$\frac{40 \times 8 + x \times 52}{8 + x} = 44$

$\Rightarrow 320 + 52x = 352 + 44x$

$\Rightarrow 8x = 32 \quad \therefore x = 4$

$\therefore$ Total time on that day = 8 + 4 = 12 hrs. **(Ans.)**

18. $\frac{5 + 9 + k + m}{4} = 12$

$\Rightarrow k + m = 48 - 14 = 34$

$\frac{(k + 7) + (m - 3)}{2}$

$= \frac{k + m + 4}{2} = \frac{34 + 4}{2} = 19$ **(Ans.)**

19. Let, three numbers are a, b, c

$\frac{a + b}{2} = 2 \Rightarrow a + 6 = 4$

$\frac{b + c}{2} = 3 \Rightarrow b + c = 6$

$\frac{a + c}{2} = 4 \Rightarrow a + c = 8$

$\therefore a + b + b + c + a + c = 4 + 6 + 8$

$\Rightarrow 2 (a + b + c) = 18$

$\Rightarrow a + b + c = 9$

$\therefore \frac{a + b + c}{3} = \frac{9}{3} = 3$ **(Ans.)**

20. 5 জনের Total = 5 × 60 = 300

4 ” ” = 4 × 65 = 360

∴ 1 জনের সর্বনিম্ন = 40 **(Ans.)**

21. Total Run of 10 overs = 10 × 3.2 = 32

∴ Total Run of 40 overs = 2882 – 32 = 250

∴ Required run rate = $\frac{250}{40} = 6.25$ **(Ans.)**

22. Let, N = x ∴ m = 14 + x

14 + x + 10 = 2 (x + 10)

$\Rightarrow x + 24 = 2x + 20 \Rightarrow x = 4$

After 5 years, m = 14 + x + 5

= 14 + 4 + 5 = 23 **(Ans.)**

23. T = x, M = 6x

6x + 20 = 2 (x + 20)

$\Rightarrow 6x + 20 = 2x + 40$

$\Rightarrow 4x = 20 \Rightarrow x = 5$

M = 6x = 6 × 5 = 30 **(Ans.)**

24. 5টির Total = 5 × 85 = 425

3 ” ” = 3 × 83 = 249

∴ 2টির Total = 176

∴ Average = $\frac{176}{2} = 88$ **(Ans.)**

25. 5টির Total = 5 × 84 = 420

4টির Total = 4 × 80 = 320

∴ 5th test = 420 – 320 = 100 **(Ans.)**

26. 7টির Total = 7 × 85 = 595

4টির Total = 4 × 80 = 320

∴ 3টির Total = 275

. . .

100 100 75 **Ans is 75**

27. $\frac{x^2 - 10 + 30 - x^2 + 6x + 10}{3}$

$= \frac{6x + 30}{3} = 2x + 10$ **(Ans.)**

28. 6টির Total = 6 × 75 = 450

5টির Total = 5 × 85 = 425

∴ lowest grade = 25 **(Ans.)**

29. Let, Avg of 5 feet = x

∴ Total = 5x

5x + 70 = 6 (x – 4)

$\Rightarrow 5x + 70 = 6x - 24$

$\Rightarrow -x = -24 - 70 = -94$

∴ x = 94 **(Ans.)**

30. Avg = $\frac{24 \times 78 + 26 \times 83}{50} = 80.6$ **(Ans.)**

31. Avg = $\frac{10 \times 6 + 6 \times 10}{16} = \frac{60 + 60}{16} = \frac{120}{16} = 7.5$

32. $\frac{25 + 30 + 35 + x}{4} = 35$ ∴ x = 50 **(Ans.)**

33. Let, Age = x

∴ 3(x + 3) – 3(x – 3)

= 3x + 9 – 3x + 9 = 18 yrs **(Ans.)**

34. 2 × 8 = 16 + 16 = 40 **(Ans.)**

35. 5 × 80 = 400

4 × 78 = 312

88 **(Ans.)**

36. $H - W = \frac{1}{11}(H + W)$

Option check---

$54 - 45 = \frac{1}{11}(54 + 45)$

$9 = \frac{1}{11}(99)$

$9 = 9$ **Ans is 45**

37. 7 দিনের Total = 7 × 87 = 609

7 দিনের Total = 7 × 92 = 644

5 দিনের Total = 15 × 90 = 1350

8^{th} day = 1350 – (609 + 644) = 97 **(Ans.)**

Or, 15 × 90 = 1350

(7 × 87) + (7 × 92) = 1253

97 **(Ans.)**

38. 32 জনের Total = 32 × 10 = 320

33 ” ” = 33 × 11 = 363

∴ 1 জনের Total = 43 **(Ans.)**

Or, 33 × 11 = 363

32 × 10 = 320

43 **(Ans.)**

Home Practice

1. In the first 10 over's of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 over's to reach the target 282?

A. 6.25 B. 6.5 C. 6.75 D. 7 **Ans:** A

2. In 5 years, the ratio between Akram and his brother's age will be 1:2. 5 years ago the ratio was 1:4. How old is Akram now?

A. 18 B. 13 C. 15 D. 10 **Ans:** D

3. The average temperature on Monday, Tuesday & Wednesday was 84° and for Tuesday, Wednesday and Thursday was 87°. If the temperature on Monday was 91°, find the temperature on Thursday?

A. 100° B. 97° C. 93° D. None **Ans:** A

4. A father is 28 years older than the son. In 5 years, the father's age will be 7 years more than twice that of the son. What is th present age of father?

A. 36 B. 40 C. 44 D. 48 **Ans:** C

5. Fakhrul took 4 history tests. He earned 85, 92 and 89 in the first three tests If Fakhrul's average (arithmetic mean) for all 4 tests is 91. How much did he earn on his last test?

A. 98 B. 100 C. 2102 D. 96 **Ans:** A

6. The average marks of a student in 10 papers are 80. If the highest and the lowest scores are not considered, the average is 81. If his highest score is 92, find the lowest.

A. 55 B. 60 C. 62 D. None of these **Ans:** B

7. Today is Arif's 12^{th} birthday and his father's 40^{th} birthday. How many years from today will Arif's father be twice as old as Arif's at that time?

A. 12 B. 26 C. 18 D. 16 **Ans:** D

8. If the sum of 3, 7 and x is 18, then the average of 3, 7 and x is-

A. 6 B. 7 C. 8 D. 5 **Ans:** A

9. The average of first 50 natural numbers is:

A. 12.25 B. 21.25 C. 25 D. 25.5 **Ans:** D

10. The average weight of 3 boys is 53 kg. None of the boys weight less than 51 kg. What is the maximum weight in kg of any one boy?

A. 53 B. 55 C. 57 D. 59 **Ans:** C

11. **The average of three numbers is 20. If two numbers are 16 and 22, the third is:**
A. 22 B. 20 C. 19 D. 18 **Ans:** A

12. **Average of first five multiples of 3 is:**
A. 3 B. 9 C. 12 D. 15 **Ans:** B

13. **The average of 10 numbers is –10. If the sum of 6 of them is 100. Then what is the average of the other 4 numbers?**
A. –100 B. 50 C. –50 D. 100 **Ans:** C

14. **a, b, c, d and e are integers. M is their average and S is their sum. What is the ratio of S to M?**
A. 1:5 B. 5:1 C. 1:1 D. 2:1 **Ans:** B

15. **The average of two numbers is M. If one number is N, then the other number is:**
A. 2N B. 2M C. M-N D. 2M-N **Ans:** D

16. **Average age of three girls is 20 years and their ages are in the proportion 3:5:7. The age of the youngest girl is:**
A. 4 years B. 6 years 8 months C. 8 years 3 months D. 12 years **Ans:** D

17. **The sum of the ages of the son and father is 120 years, the father's age is 3 times that of the son. What is the age of the father?** [BUP (FBS): 2021-22]
A. 80 B. 57 C. 75 D. 90 **Ans:** D

18. **The average of x and y is 40 and that of y and z is 35, what is the value of x – z?** [BUP (FBS): 2020-21]
A. 5 B. 30 C. 20 D. 10 **Ans:** D

19. **The average daily earnings of a man who makes Tk. 25 each of the first 9 days, Tk. 30 each of the next 10 days and Tk. 40 each of the last 11 days is Tk.** [BUP (FBS): 2020-21]
A. 31.67 B. 32.17 C. 32.67 D. 31.17 **Ans:** B

20. **A student was asked to find the arithmetic mean of the numbers 3, 11, 7, 9, 15, 13, 8, 19, 17, 21, 14 and x. He found the mean to be 12. What should be the number in place of x?** [BUP (FBS): 2020-21]
A. 3 B. 7 C. 17 D. 31 **Ans:** B

21. **Hamed is 7 years older than his brother Shaquib, who is twice as old as their younger sister Lopa. If Lopa is 15 years younger than Hamed. Then how old is Shaquib?** [BUP (FBS): 2020-21]
A. 8 years B. 12 years C. 16 years D. 20 years **Ans:** C

22. **Six years ago, Rahim was P times as old as Kalam was. If Rahim is now 17 years old, how old is Kalam now in terms of P?** [BUP (FBS): 2020-21]
A. $\frac{11}{P} + 6$ B. $\frac{P}{11} + 6$ C. $17 - \frac{P}{6}$ D. $\frac{17}{P}$ **Ans:** A

23. **The average of four consecutive odd positive integers is always-** [BUP (FBS): 2019-20]
A. an even number B. an odd number C. divisible by D. Bothe a and c **Ans:** A

24. **The average of 15 consecutive integers is 15. What is the smallest of the 15 integers?** [BUP (FBS): 2019-20]
A. 8 B. 9 C. 15 D. 6 **Ans:** A

25. **The average of 6, 8 and 10 equals the average of 7, 9 and-** [BUP (FBS): 2019-20]
A. 8 B. 9 C. 11 D. 1 **Ans:** A

26. **Salma's average in four tests is 80%. What mark does she need score in her fifth test to make her average 84%?** [BUP (FBS): 2019-20]
A. 100% B. 94% C. 84% D. 96% **Ans:** A

27. **The average age of 40 employees in a branch of a bank is 35 years. When a new employee joined the bank, the average age increased to 35.5 years. What is the age of the new employee?** [BUP (FBS): 2019-20]

A. 55.5 B. 50 C. 50.5 D. 20.5 **Ans:** A

28. **Sum of P and Q is 72 and the value of R is 42. What is the average of P, Q and R?** [BUP (FBS): 2019-20]

A. 32 B. 34 C. 36 D. 38 **Ans:** D

29. **A school had 100 students aged 20 years on an average. At the of the year 20 students aged 22 years on an average left and 25 students of 18 years on an average joined the school. What is the average age of the present students of the school?** [BUP (FBS): 2019-20]

A. 20.1 B. 18 C. 20 D. 22 **Ans:** A

30. **When a student weighting 45 kg left a class, the average weight of the remaining 59 students increased by 200 g. What is the average weight of the remaining 59 students?** [BUP (FBS): 2019-20]

A. 52.2 kg B. 56.8 kg C. 82 kg D. .57 kg **Ans:** D

31. **What is the average of 0.36, 4.6, 0.64 and 2.4?** [BUP (FBS): 2019-20]

A. 1 B. 2 C. 2.5 D. 10 **Ans:** B

32. **Jamil's average score in 4 tests was 80 out of a possible 100. If his scores in 2 of the tests were 65 and 70, what is the lowest that either of his other scores could have been?** [BUP (FBS): 2019-20]

A. 70 B. 80 C. 90 D. 85 **Ans:** D

33. **Average of P numbers is x and average of N numbers is y. Find the average of all of the numbers.** [BUP (FBS): 2019-20]

A. (Px + Ny) B. $\frac{(Px + Ny)}{xy(P + N)}$ C. x + y D. $\frac{(x + y)}{(P + N)}$ **Ans:** A

34. **The average mark obtained by 15 students was 10 and the average mark obtained by 10 students was 15. What was the average mark obtained by all students?** [BUP (FBS): 2019-20]

A. 10 B. 8 C. 12 D. 15 **Ans:** C

35. **The average of three numbers is 7. If 2 of the numbers are zero, then what if the 3rd number?** [BUP (FBS): 2019-20]

A. 15 B. 17 C. 19 D. 21 **Ans:** D