



JOB ORIENTED IBA MATH COURSE

Lecture-01 (Percentage)

Part-1: CLASS DISCUSSION

Group -1: Basic Percentage Calculation

- 0.01 is what percent of 0.1?
(A) $\frac{1}{100}$ (B) $\frac{1}{10}$ (C) 10 (D) 100 (E) None of these
- In a multinational corporation, 75 percent of the total workforces are software developers, and 45 percent of the total workforces are male software developers. What percent of the software developers in that corporation is a female?
(A) 16% (B) 25% (C) 32% (D) 40% (E) None of them
- In a venture capital firm, 56 percent of the total startup applications get approved for funding, and 42 percent of the total applications are tech startups that get approved for funding. What percent of the funded startups are non-tech startups?
(A) 16% (B) 25% (C) 32% (D) 40% (E) None of them
- A tech company launched a new smartphone model and projected a 25% increase in sales volume this quarter compared to the previous quarter. However, due to supply chain delays, the actual sales volume was 20% less than that of the previous quarter. What percent of the projected sales volume was actually achieved?
(A) 25% (B) 45% (C) 55% (D) 64% (E) 60%
- Of the 3,600 employees of Company X, $\frac{1}{3}$ are clerical. If the clerical staff were to be reduced by $\frac{1}{3}$, what percent of the total number of the remaining employees would then be clerical?
(A) 25% (B) 22.2% (C) 20% (D) 12.5% (E) 11.1%

Group -2: Percentage of Change

- A chemist was preparing a solution that should have included 35 milligrams of a chemical. If he actually used 36.4 milligrams, what was his percentage error?
(A) 0.4% (B) 1.04% (C) 1.4% (D) 4.0% (E) 40%
- A student multiplied a number by $\frac{3}{5}$ instead of $\frac{5}{3}$. What is the percentage error in the calculation?
(A) 74% (B) 64% (C) 84% (D) 54% (E) None of them
- A manufacturing plant uses a specific industrial solvent in its production line. The price of the solvent has risen to Tk. 20 per liter this month, whereas its rate was Tk. 16 per liter last month. By how much percent should the plant reduce its consumption of the solvent so as to keep its total monthly expenditure on it fixed?
(A) 20% (B) 15% (C) 40% (D) 25% (E) None of them
- An e-commerce merchant allocates 60 percent of their monthly revenue toward operational costs. If their monthly revenue increases by 30 percent and their operational costs increase by 20 percent, by what percent do their monthly savings increase?
(A) 10% (B) 45% (C) 37.50% (D) 50% (E) 12.5%
- A woman spends 80% of her income. Her income increases by 10%, but she manages to keep her total absolute savings completely constant. By what percentage did her expenses increase?
(A) 18.75% (B) 25% (C) 37.50% (D) 50% (E) 12.5%

11. The total population of a village was 5,000. In one year, the male population increased by 10% and the female population increased by 15%. If the total population became 5,600 at the end of that year, what was the original number of males in the village?
- (A) 2000 (B) 3000 (C) 2500 (D) 3500 (E) None of these

Group- 3 : Vis-à-vis

12. Due to supply chain disruptions, the cost of raw plastic for a toy manufacturer increases by 25%. By what percentage must the factory reduce its usage of raw plastic so that its total budget for raw plastic remains completely unchanged?
- (A) 25% (B) 16.67% (C) 20% (D) 33.33% (E) 60%
13. A digital marketing agency decides to decrease its monthly advertising budget by 20%. By what percentage must they increase their conversion rate (leads per dollar spent) so that their total number of monthly leads remains completely unchanged?
- (A) $33\frac{1}{3}\%$ (B) $66\frac{2}{3}\%$ (C) $11\frac{2}{3}\%$ (D) 25% (E) None of these
14. The length of a rectangle is decreased by 25%. By what percentage should the width be increased so that the area of the rectangle remains unchanged?
- (A) 30% (B) 25% (C) 20% (D) 35% (E) None of them
15. A freelance software developer currently works 30 hours a week for a client. She proposes to increase her hourly rate by 20 percent while reducing her weekly working hours so that her total weekly earnings remain completely unchanged. If the client accepts the proposal, how many hours will the developer work per week?
- (A) 24 (B) 25 (C) 20 (D) 28 (E) 26
16. A shipping logistics company faces an increase of 40% in the price of aviation fuel. The management decides that they can only afford to increase their total expenditure on aviation fuel by 12%. By what percentage must the company reduce the volume of fuel it purchases?
- (A) 10% (B) 20% (C) 28% (D) 6.67% (E) Cannot be determined

Group-4 : Successive Changes

17. A towel, when bleached, was found to have lost 20% of its length and 10% of its breadth. The percentage of decrease in area is
- (A) 10% (B) 10.08% (C) 20% (D) 28% (E) None of them
18. Due to a shift in market conditions, an investment fund's total asset portfolio experiences a 15 percent drop in asset volume and a 20 percent drop in average asset valuation. What is the total percentage decrease in the overall value of the portfolio?
- (A) 30% (B) 32% (C) 34% (D) 35% (E) 36%
19. A wholesale car dealership offers an initial seasonal markdown of 20 percent followed by a special promotional discount of k percent. If these two successive deductions are completely equivalent to a single flat discount of 32 percent, what is the value of k ?
- (A) 20 (B) 25 (C) 30 (D) 35 (E) 40
20. A wholesale electronics distributor regularly offers a volume discount ranging from 10% to 30% on bulk orders. During a year-end inventory clearance, an additional 20% is deducted from the already discounted price. If a client buys a corporate server rack that costs Tk. 500 before any discounts, what is the lowest possible price they could pay for it?
- (A) Tk. 263 (B) Tk. 284 (C) Tk. 280 (D) Tk. 390 (E) None of these

Group-5: Word Problems

21. In a software development company, 40 percent of the engineers have passed an advanced cloud computing certification exam. Among the engineers who have not passed the exam, 36 have attended the company's internal preparatory seminar and 54 have not attended the seminar. How many total engineers work at the company?
- (A) 60 (B) 80 (C) 100 (D) 120 (E) 150

22. A tech startup has raised 40 percent of the total capital it needs for a new software project by securing an average investment of Tk. 300 from the venture capitalists already pitched. The venture capitalists already pitched represent 25 percent of the total group of investors the startup intends to approach. If the startup is to raise exactly the total budget required for the project, what must be the average investment per person from the remaining group of investors?
- (A) Tk 250 (B) Tk 300 (C) Tk 140 (D) Tk 150 (E) Tk 187.50
23. The percentage of integers from 1 through 100 whose squares end with the digit 1 is $x\%$, and the percentage of integers from 1 through 200 whose squares end with the digit 1 is $y\%$. Which one of the following is true?
- (A) $x = y$ (B) $x = 2y$ (C) $x = 4y$ (D) $y = 2x$ (E) $y = 4x$
24. In a certain school, 20% of students are below 8 years of age. The number of student above 8 years of age is two-third of the number of students of 8 years of age which is 48. What is the total number of students in the school?
- (A) 72 (B) 80 (C) 96 (D) 100 (E) None of these
25. The price of sugar increases by 32%. A family reduces its consumption so that the expenditure of the sugar is up by 10% only. If the total consumption of sugar before the price rise was 10 kg per month, then the consumption of sugar per month is approximately?
- (A) 8.33 kg (B) 8.5 kg (C) 8.35 kg (D) 8.75 kg (E) None of these
26. A box contains 24 red socks and 43 green socks. How many green socks must be removed from the box so that 60% of the socks in the box will be green?
- (A) 7 (B) 8 (C) 6 (D) 10 (E) None of these
27. The population of a certain town increases by 50 percent every 50 years. If the population in 1950 was 810, in what year was the population 160?
- (A) 1650 (B) 1700 (C) 1750 (D) 1800 (E) None of Them

Part-2: Take-Home Assignment

1. A number m is 8 times another number n . The percentage that n is less than m is
- (A) 90% (B) 87.25% (C) 66.66% (D) 12.50% (E) None of these
2. In a box, there are 60 more black marbles than red marbles. If the number of red marbles is 40% of the total number of marbles, how many marbles are there in the box?
- (A) 270 (B) 280 (C) 300 (D) 360 (E) None of these
3. The wages earned by Arif is 30% more than that earned by Babu. The wages earned by Salek is 60% more than that earned by Babu. How much is the wages earned by Salek more than that earned by Arif?
- (A) 23% (B) 18.75% (C) 30% (D) 50% (E) None of these
4. An investor made a profit of Tk. 420 plus 30% of the amount originally paid for a stock. If the cost of the stock was originally Tk. 2800 then what percent of the cost was the total profit?
- (A) 35 (B) 50 (C) 45 (D) 30 (E) None of these
5. Sanwar spent 20% of his salary for food, 30% for apartment rent, and 25% for other expenses. If the remaining Tk. 3500 were his monthly savings, how much (Take) was his apartment rent?
- (A) 2400 (B) 3600 (C) 4200 (D) 4500 (E) none of these
6. The number 25 is 2.5 percent of which of the following?
- (A) 10 (B) 62.5 (C) 100 (D) 625 (E) 1,000
7. A labor contract specifies a 6 percent salary increase plus a bonus of Tk. 450 for each employee. For a certain employee, this is equivalent to an 8 percent salary increase. What was this employee's salary before the new contract?
- (A) 21,500 (B) 22,500 (C) 23,500 (D) 24,500 (E) 25,500

8. When $\frac{1}{10}$ percent of 5,000 is subtracted from $\frac{1}{10}$ of 5,000 the difference is
 (A) 0 (B) 50 (C) 450 (D) 495 (E) 500
9. If a 10 percent deposit that has been paid toward the purchase of a certain product is \$110, how much more remains to be paid?
 (A) \$880 (B) \$990 (C) \$1,000 (D) \$1,100 (E) \$1,210
10. Tamim's salary is 125% of Mominul's salary; Gazi's salary is 80% of Mominul's salary. The total of all three salaries is Tk. 61, 000. What is Gazi's salary?
 (A) 11,000 (B) 20,000 (C) 16,000 (D) 25,000 (E) None of these
11. If 60% of x is equal to 50% of y, then $(x + y) = ?$
 (A) 1.25x (B) 1.80x (C) 2.20x (D) 3.20x (E) None of these
12. In a month, a salesperson sold 15 generators. A new sales promotion came out next month and he sold 21 generators that month. What was the percent increase in sales?
 (A) 45% (B) 49% (C) 38% (D) 46% (E) 40%
13. If 15% of a number is 4.5, then 55% of the same number is –
 (A) 1.5 (B) 9.5 (C) 16.5 (D) 15 (E) None of these
14. In a college, 45% of the students are boys. If 40% of the boys and 20% of the girls went on a picnic, what percentage of the total students went to the picnic?
 (A) 18% (B) 24% (C) 29% (D) 30% (E) None of these
15. The household expenses of a family went up by 20%. By how many percent must the family reduce household expenditure so that expenses remain same as before?
 (A) 16% (B) 16.66% (C) 18% (D) 20% (E) 22.5%
16. If the price of petrol increases by 25% and Raju intends to spend only an additional 15% on petrol, by how much % will he reduce the quantity of petrol purchased?
 (A) 10% (B) 12% (C) 8% (D) 6.67% (E) None
17. Yesterday the stock price had increased by 25%, but today it has decreased by 25%. How much increase/decrease was there in overall stock price?
 (A) 6.25% decrease (B) 6.25% increase (C) 4.5% decrease (D) 4.5% increase (E) None of these
18. If the length of a rectangle is increased by 20% and the width is decreased by 20%, then the area is:
 (A) Decreased by 20% (B) Decreased by 4% (C) all the same
 (D) Increased by 10% (E) Increased by 20%
19. Per day wage rate of a worker is reduced 50% due to economic slowdown. After one year, the wage rate is increased by 60%. If the per day wage rate before decrease was 300 tk then what is the per day wage rate now?
 (A) Tk. 360 (B) Tk. 330 (C) Tk. 270 (D) Tk. 260 (E) None of these
20. In a class, 34% of the students are female. Given that there are 16 more male than female, how many female students are there in the class?
 (A) 17 (B) 32 (C) 34 (D) 42 (E) None of these
21. The price of rice falls by 20%. How much rice can be bought now with the money that was sufficient to buy 20 kg of rice previously?
 (A) 5 kg (B) 15 kg (C) 25 kg (D) 30 kg
22. 30% of a number when subtracted from 91, gives the number itself. Find the number.
 (A) 60 (B) 65 (C) 75 (D) 70 (E) None of these
23. In an institute, 60% of the students are boys and the rest are girls. Further 15% of the boys and 7.5% of the girls are getting a fee waiver. If the number of those getting a fee waiver is 90, find the total number of students getting 50% concessions if it is given that 50% of those not getting a fee waiver are eligible to get half fee concession?
 (A) 360 (B) 280 (C) 320 (D) 330 (E) 350
24. The rate of increase of the price of sugar is observed to be two percent more than the inflation rate expressed in percentage. The price of sugar, on January 1, 1994 is Tk. 20 per kg. The inflation rates of the years 1994 and 1995 are expected to be 8% each. The expected price of sugar on January 1, 1996 would be
 (A) Tk. 23.60 (B) Tk. 24 (C) Tk. 24.20 (D) Tk. 22 (E) None of these

25. An alloy contains the copper and aluminum in the ratio of 7:4. While making the weapons from this alloy, 12% of the alloy got destroyed. If there is 12 kg of aluminum in the weapon, then weight of the alloy required is :
 (A) 14.4 kg (B) 37.5 kg (C) 40 kg (D) 48 kg (E) 33 kg
26. The cost of a car is 400% greater than the cost of a bike. If there is an increase in the cost of the car is 15% and that of bike 20%. Then the total increase in the cost of the 5 cars and 10 bikes is:
 (A) 17.5% (B) $16\frac{3}{7}\%$ (C) 18.5% (D) 18.25% (E) None of these
27. In a factory, there are workers, executives and clerks, 59% of the employees are workers, 460 are executives and the remaining 360 employees are clerks. How many employees are there in the factory?
 (A) 1500 (B) 2000 (C) 2500 (D) 3000 (E) None of these
28. A survey of n people in the town of X found that 50% of them prefer Brand A. Another survey of 100 people in the town of Y found that 60% prefer brand A. In total 55% of all the people surveyed together prefer Brand A. What is the total number of people surveyed?
 (A) 250 (B) 200 (C) 170 (D) 150 (E) None of these
29. If the price of onion is decreased by 60%, find by how much percent a man must increase his consumption of onion so that expenditure remains same?
 (A) 60% (B) 100% (C) 150% (D) 160% (E) None of these
30. In a certain school, 20% of students are below 8 years of age. The number of student above 8 years of age is two-third of the number of students of 8 years of age which is 48. What is the total number of students in the school?
 (A) 72 (B) 80 (C) 96 (D) 100 (E) None of these
31. If 15% of 40 is greater than 25% of a number by 2, then the number is:
 (A) 12 (B) 16 (C) 24 (D) 32 (E) None of these
32. The sum of two numbers is $\frac{28}{25}$ of the first number. The second number is what percent of the first?
 (A) 12% (B) 14% (C) 16% (D) 18% (E) None of these
33. In a class, 120 students are finance major and 100 students are marketing major. 25% of the finance students and 20% of the marketing students are male. 20% of the male finance students and 25% of the male marketing students passed the final exam. What percentage of male students passed the exam?
 (A) 5% (B) 10% (C) 15% (D) 22% (E) None of these
34. What percentage of numbers from 11 to 90 has 0 or 5 in the unit's digit?
 (A) 10% (B) 15% (C) 20% (D) 21% (E) None of these
35. A Company makes a profit of 6% on its first Tk. 10,000 of sales each day, and 5% on all sales in excess of Tk. 10,000 for the day. How many taka in profit will the company make in a day when sales are Tk. 60,000?
 (A) 2500 (B) 3000 (C) 3100 (D) 3200 (E) none of these
36. In one year, the population of a city increased by 20%. The next year, it decreased by 10%. What was the percentage increase in the population over the two years?
 (A) 8 (B) 10 (C) 15 (D) 18 (E) none of these
37. The ratio of the number of boys and girls in a school is 3 : 2. If 20% of the boys and 25% of the girls are scholarship holders, what percent of the students are not scholarship holders?
 (A) 56 (B) 70 (C) 78 (D) 76 (E) none of these
38. If 50% of x equals the sum of y and 20, then what is the value of x – 2y?
 (A) 20 (B) 40 (C) 60 (D) 80 (E) none of these
39. A CD player and a DVD player have the same price. If the price of the CD player goes up by 10% and that of the DVD player is decreased by 5%, how much more will it cost to buy 5 CD players and 5 DVD players?
 (A) 5% (B) 10% (C) 15% (D) 25% (E) 2.5%

40. Of the total amount received by Boshid, 20% was spent on purchases and 5% of the remaining on transportation. If he is left with Tk. 1520, the initial amount was:
 (A) 2800 (B) 2000 (C) 2400 (D) 1600 (E) 1400
41. A candidate scoring 25% marks in an examination fails by 30 marks while another candidate who scores 50% marks gets 20 marks more than those required to pass. The pass percentage is:
 (A) 25 (B) 35 (C) 40 (D) 50 (E) none of these
42. Two numbers are less than a third number by 30% and 37% respectively. How much percent is the second number less than the first?
 (A) 10 (B) 7 (C) 4 (D) 3 (E) 5
43. The boys and girls in a college are in the ratio 3 : 2. If 20% of the boys and 25% of the girls are adults, the percentage of students who are not adults is :
 (A) 58 (B) 67.5 (C) 78 (D) 82.5 (E) none of these
44. The sales of Konka TV increased by 50% when its price was reduced by 20%. What was the percentage change in the sales revenue of the company?
 (A) 20 (B) 19 (C) 22 (D) 25 (E) 26
45. If in 2007 and in 2009 a worker received 10% more in salary each year then he received in previous year what is the rate of increase in his salary in 2009 compared to 2007?
 (A) 20% (B) 11% (C) 21% (D) 9% (E) 10%
46. If oil price increases 25%, then what will be percentage of reducing oil consumption without increasing fuel cost?
 (A) 20% (B) 11% (C) 16% (D) 9% (E) 10%
47. A factory has 500 workers, 15% of whom are women. If 50 additional workers are to be hired and all of the present workers remain, how many of the additional workers must be women in order to raise the percent of women employees to 20%?
 (A) 10 (B) 25 (C) 30 (D) 35 (E) none of these
48. Mr. Ahsan is insured completely for Tk 50,000 of damages to his car. For any damage above Tk 50,000, the insurance company will pay Tk 50,000 plus 20% of the rest of the damage amount. For a recent accident, Mr. Ahsan was paid Tk 56,000 by the insurance company. What was the total amount of the damage estimated?
 (A) Tk 30,000 (B) Tk 280,000 (C) Tk 104,000 (D) Tk 80,000 (E) Tk 86,000
49. In a club 50% of the male votes and 80% of the female voters voted for candidate A. if candidate A received 70% of the total votes, what is the ratio of male to female voters?
 (A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{1}{8}$ (D) $\frac{1}{4}$ (E) none of these
50. The number of marbles in Amin's collection is 80% of the number in Rahim's collection. If Rahim has 80 more marbles than Amin, how many marbles do they have altogether?
 (A) 720 (B) 120 (C) 135 (D) 400 (E) 520

Answer : Home assignment of Lecture 01

01	B	02	C	03	C	04	C	05	C	06	E	07	B	08	E	09	B	10	C
11	C	12	E	13	C	14	C	15	B	16	C	17	A	18	B	19	E	20	A
21	C	22	D	23	D	24	C	25	B	26	B	27	B	28	B	29	C	30	D
31	B	32	A	33	D	34	C	35	C	36	A	37	C	38	B	39	E	40	B
41	C	42	A	43	C	44	A	45	C	46	A	47	D	48	D	49	B	50	A