INDUS RANGERS DEFENCE ACADEMY

4TH Floor Shakumbhari Complex, Chetmani Near: IP Vijaya Mall Bhelupur Varanasi, (U.P.– 221010)

CDS [MATHEMATICS]
PRACTICE SHEET – 1

Time: 1:30 Hr **M. M.: 200 Marks**

General Instructions:

- There are 50 questions
- All questions have 4 marks for correct and –1 mark for wrong answer as a penalty.
- The name, date, and exam must be filled in OMR sheet otherwise the result will not be published.
- OMR fill should be properly.

1. In a certain school, the ratio of boys to girls is 7 : 5. If there are 2400 students in the school, then how many girls are there?
   (a) 500 (b) 700 (c) 800 (d) 1000
2. If a, b, c, d and e are in continued proportion then a/e =
   (a) a^3/b^3 (b) a^4/b^4 (c) b^3/a^3 (d) b^4/a^4
3. The present age of Ravi's father is 4 times of Ravi's present age. 5 years back Ravi's father was 7 times as old as Ravi was at that time. What is the present age of Ravi's father?
   (a) 84 years (b) 70 years (c) 40 years (d) 35 years
4. If A : B = 2 : 3, B : C = 5 : 7 and C : D = 3 : 10, then what is A : D equal to?
   (a) 1 : 7 (b) 2 : 7 (c) 1 : 5 (d) 5 : 1
5. (x+y) : (x−y) = 3 : 5 and xy = positive imply that
   (a) x and y are both positive (b) x and y are both negative
   (c) one of them is positive and one of them is negative
   (d) no real solution for x and y exists
6. The ratio of ages of A and B is 2 : 5 and the ratio of ages of B and C is 3 : 4. What is the ratio of ages of A, B and C?
   (a) 6 : 15 : 20 (b) 8 : 5 : 3 (c) 6 : 5 : 4 (d) 2 : 15 : 4
7. The height of a tree varies as the square root of its age (between 5 to 17 yr). When the age of the tree is 9 yr, its height is 4 ft. What will be the height of the tree at the age of 16 yr?
   (a) 5 ft 4 inch (b) 5 ft 5 inch (c) 4 ft 4 inch (d) 4 ft 5 inch
8. 16 L of a mixture contains milk and water in the ratio 5:3. If 4 L of milk is added to this mixture, the ratio of milk to water in the new mixture would be
   (a) 2: 1 (b) 7:3 (c) 4:3 (d) 8:3
9. The annual incomes of two persons are in the ratio 9:7 and their expenses are in the ratio 4:3. If each of them saves Rs 2000 per year, what is the difference in their annual incomes?
   (a) Rs 4000 (b) Rs 4500 (c) Rs 5000 (d) Rs 5500
10. In an office, one third of the workers are women, half of the women are married and one-third of the married women have children, If three-fourth of the men are married and one third of married men have children, then what is the ratio of married women to married men?
    (a) 1:2 (b) 2:1 (c) 3:1 (d) 1:3
11. There are twelve friends A, B, C, D, E, F, G, H, I, J, K and L who invested in some business in the ratio of 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 10 : 11 : 12 and the duration for which they invested the money is in the ratio of 12 : 11 : 10 : 9 : 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 respectively. Who will get the maximum profit at the end of the year?
    (a) F only (b) G only (c) Both F and G (d) Neither F nor G

12. Income of Mahesh and Kamal are in the ratio 1:2, and their expenses are in the ratio 1:3, Which one of the following statements are correct?
    (a) Mahesh saves more than what Kamal saves
    (b) Saving of both of them are equal
    (c) Kamal save more than what Mahesh saves
    (d) It is not possible to determine who saves more
13. X and Y entered into partnership with Rs. 700 and Rs 600 respectively. After 3 months X withdrew 2/7 of his stock but after 3 months, he puts back 3/5 of what he had drawn. The profit at the end of the year is Rs. 726. How much of this should X receive?
    (a) Rs 336 (b) Rs 366 (c) Rs 633 (d) Rs 663
14. Leela got married 6 years ago. Today her age is $1\frac{1}{4}$ times her age at the time of her marriage. Her son's age is 1/10 times her age. What is the present age of her son?
    (a) 1 years (b) 2 years (c) 3 years (d) 4 years
15. The ratio of two numbers is 1 : 5 and their product is 320. What is the difference between the squares of these two numbers?
    (a) 1024 (b) 1256 (c) 1536 (d) 1640
16. 25 kg of alloy X is mixed with 125 kg of alloy Y. If the amount of lead and tin in the alloy X is in the ratio 1 : 2 and the amount of lead and tin in the alloy Y is in the ratio 2 : 3, then what is the ratio of lead to tin in the mixture?
    (a) 1 : 2 (b) 2 : 3 (c) 3 : 5 (d) 7 : 11
17. The cost of a diamond varies directly as the square of its weight. A diamond broke into four pieces with their weights in the ratio of 1 : 2 : 3 : 4. If the loss in total value of the diamond was Rs.70,000, what was the price of the original diamond?
    (a) Rs 1,00,000 (b) Rs 1,40,000 (c) Rs 1,50,000 (d) Rs 1,75,000
18. In a class of 49 students, the ratio of girls to boys is 4:3. If 4 girls leave the class, the ratio of girls to boys would be
    (a) 11:7 (b) 8:7 (c) 6:5 (d) 9:8
19. Five year ago, Ram was three times as old as Shyam. Four years from now, Ram will be only twice as old as Shyam. What is the present age of Ram?
    (a) 30 years (b) 32 years (c) 36 years (d) 40 years
20. If 78 is divided into 3 parts which are proportional to 1, 1/3, 1/6, then what is the middle part
    (a) 28/3 (b) 13 (c) 52/3 (d) 56/3
21. There are 350 boys in the first three standards. The ratio of the number of boys in first and second standards is 2:3, while that of boys in second and third standards is 4:5. What is the total number of boys in the third standard?
    (a) 302 (b) 280 (c) 242 (d) 230
22. If A:B = 1:2, B:C = 3:4, C:D = 2:3 and D:E = 3:4, then what is B:E equal to?
    (a) 3:2 (b) 1:8 (c) 3:8 (d) 4:1
23. Rs.120 are divided among A, B, C such that A's share is Rs. 20 more than B's and Rs.20 less than C's. What is B's share?
    (a) ₹10 (b) ₹15 (c) ₹20 (d) ₹25
24. A, B, C, D and E start a partnership firm. Capital contributed by A is three times that contributed by D. E contributes half of A's contribution, B contributes one third of E's contribution and C contributes two third of A's contribution. If the difference between the combined shares of A, D and E and the combined shares of B and C in the total profit of the firm is Rs. 13500, what is the combined share of B, C and E? (The shares are supposed to be proportional to the contributions)
    (a) Rs. 135000 (b) Rs. 180000 (c) Rs. 19750 (d) Rs. 20250
25. An alloy A contains two elements, copper and tin in the ratio of 2 : 3, whereas an alloy B contains the same elements in the ratio of 3 : 4. If 20 kg of alloy A, 28 kg of alloy B and some more pure

copper are mixed to form a third alloy C which now contains copper and tin in the ratio of 6 : 7, then what is the quantity of pure copper mixed in the alloy C?

(a) 3 kg (b) 4 kg (c) 5 kg (d) 7 kg

26. The sum of ages of a father, a mother, a son and daughter Savita and Sonia is 96 years. Son is the youngest member of the family. The year Sonia was born, the sum of the ages of all the members of the family was 66 years. If the father's age now is six times that of Son's present age, then 12 years hence the father's age will be

(a) 44 years (b) 45 years (c) 46 years (d) 48 years

27. 10 years before the age of a mother and her daughter were in the ratio 3 : 1, another 10 years from now the ratio of their ages will be 13 : 7. What are their present ages?

(a) 39 yr, 21 yr (b) 55 yr, 25 yr (c) 75 yr, 25 yr (d) 49 yr, 31 yr

28. The ratio of the sum and difference of the ages of the father and the son is 11 : 3. Consider the following statements:

1. The ratio of their age is 8 : 5
2. The ratio of their ages after the son attains twice the present age will be 11 : 8

Which of the statements given above are correct?

(a) 1 only (b) 2 only (c) both 1 and 2 (d) neither 1 nor 2

29. If a : b − c : d = 1 : 6, then what is the value of

$$\frac{a^2 + c^2}{b^2 + d^2} ?$$

(a) 1/600 (b) 1/60 (c) 1/36 (d) 1/6

30. If (4a+7b)(4c−7d)=(4a−7b)(4c+7d), then which one of the following is correct?

(a) $\frac{a}{b} = \frac{c}{d}$ (b) $\frac{a}{d} = \frac{c}{b}$ (c) $\frac{a}{b} = \frac{d}{c}$ (d) $\frac{4a}{7b} = \frac{c}{d}$

31. Priya's age was cube of an integral number (different from 1) four years ago and square of an integral number after four years. How long should she wait so that her age becomes square of a number in the previous year and cube of a number in the next year?

(a) 7 yr (b) 12 yr (c) 14 yr (d) 21 yr

32. The monthly incomes of A and B are in the ratio 4 : 3. Each saves 600. If their expenditures are in the ratio 3 : 2, then what is the monthly income of A

(a) 1800 (b) 2000 (c) 2400 (d) 3600

33. Radha and Rani are sisters, five years back the age of Radha was 3 times the age of Rani, but one year back the age of Radha was 2 times that of Rani. What is age difference between them?

(a) 8 (b) 9 (c) 10 (d) 11

34. The population of two villages is 1525 and 2600 respectively. If the ratio of male to female population in the first village is 27:34 and the ratio of male to female population in the second village is 6:7, then what is the ratio of male to female population of the two villages taken together?

(a) $\frac{33}{41}$ (b) $\frac{85}{82}$ (c) $\frac{71}{90}$ (d) $\frac{5}{6}$

35. If $\frac{a}{b} = \frac{1}{3}$, $\frac{b}{c} = 2$, $\frac{c}{d} = \frac{1}{2}$, $\frac{d}{e} = 3$and $\frac{e}{f} = \frac{1}{4}$, then what is the value of $\frac{abc}{def}$?

(a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{3}{8}$ (d) $\frac{27}{4}$

36. Three persons start a business with capitals in the ratio 1/3 : 1/4 : 1/5. The first person withdraws half his capital after 4 months. What is the share of profit of the first person if the business fetches an annual profit of Rs 96800?

(a) Rs 32000 (b) Rs 34500 (c) Rs 36000 (d) Rs 36800

37. Ena was born 4 years after her parents marriage. Her mother is 3 years younger than her father and 24 years older than Era, who is 13 years old. At what age did Rea's father get married?
(a) 25 years (b) 24 years (c) 23 years (d) 22 years
38. Mahesh is 60 years old. Ram is 5 years younger to Mahesh and 4 years elder to Raju. Babu is younger brother of Raju and he is 6 years younger. What is age difference between Mahesh and Babu?
(a) 18 years (b) 15 years (c) 13 years (d) 11 years
39. The income of A, B and C are in the ratio 7 : 9 : 12 and their expenditures are in the ratio 8 : 9 : 15. If A's saving is one-fourth of his income, then the ratio of savings of A, B and C is
(a) 56 : 99 : 69 (b) 99 : 56 : 69 (c) 69 : 56 : 99 (d) 99 : 69 : 56
40. If three positive numbers are in the ratio 2 : 3 : 5 and the sum of their squares is 1368, then what is the sum of the numbers?
(a) 30 (b) 45 (c) 60 (d) 75
41. If a = 3b, 4b = 5c, 6c = 7d, then what is $\frac{d+a}{d-a}$equal to?
(a) $\frac{27}{43}$ (b) $\frac{43}{27}$ (c) $-\frac{27}{43}$ (d) $-\frac{43}{27}$
42. Two glasses of equal volume are filled with a mixture of alcohol and water in the ratio 3:2 and 4:1, respectively. These glasses are emptied into a third glass. What is the ratio of alcohol and water in the third glass?
(a) 5:4 (b) 7:2 (c) 7:3 (d) 7:4
43. A, B, C, D and E enter into a business. They invest money in the ratio 2 : 3 : 4 : 5 : 6. However, the time invested by them is in the ratio 6 : 5 : 4 : 3 : 2. If the profit distributed is directly proportional to the time and money invested, then who receives the highest amount of profit?
(a) C (b) both B and D (c) both C and D (d) All get equal profit
44. If a, b, c, d, e and f satisfy 2a = 3b = 6c = 9d = 12e = 18f, then what is the value of $(a+b)/(c+d+e+f)$?
(a) 4/7 (b) 2 (c) 5/2 (d) 9/2
45. Three glasses P, Q and R have capacities in the ratio 1 : 2 : 3**.** All these glasses are completely filled with mixtures of milk and water. The ratio of milk to water in P is 1 : 2**,** in Q it is 2 : 3 and in R it is 3 : 1**.** If the content of all three glasses are put into a bigger container, what will be the ratio of milk to water in the container?
(a) 203 : 117 (b) 203 : 157 (c) 172 : 91 (d) 165 : 88
46. Rs 9400 is distributed among P, Q, R in such a way that if Rs 93, Rs 24, Rs 55 are deducted from their respective shares, then they have money in the ratio 3 : 4 : 5. What is the share of P?
(a) Rs 2307 (b) Rs 2376 (c) Rs 2508 (d) Rs 12896
47. If (a + b) : (b + c) : (c + a) = 5 : 7 : 6, then what is the value of (a − b + c) : (a + b − c)?
(a) 1 : 1 (b) 2 : 3 (c) 3 : 1 (d) 4 : 3
48. A bottle contains spirit and water in the ratio 1 : 4 and another identical bottle contains spirit and water in the ratio 4 : 1**.** In what ratio should the mixtures in the two bottles be mixed to get a new mixture in which the ratio of spirit to water is 1 : 3?
(a) 5 : 1 (b) 6 : 1 (c) 10 : 1 (d) 11 : 1
49. If a : b : c : d = $\sqrt{4}$: $\sqrt{3}$: $\sqrt{2}$: $\sqrt{1}$, then what is the value of
$$\frac{(-a^2+b^2+c^2+d^2)^2}{(a^2-b^2+c^2-d^2)^2}\ ?$$
(a) 1 (b) 2 (c) 3 (d) 6
50. If m : n = 1 : 2 and p : q = 3 : 4, then what is $\frac{(2m+4p)}{(n+3q)}$
equal to?
(a) 1 : 1 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3