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| **PROBLEMS ON NUMBERS** |

1. **Three-fourth of a number exceeds its one-third by 60. The number is:**
2. **108 (b) 144 (c) 184 (d) 224**

**Let the number be x. Then (3/4) x – (1/3) x = 60.**

**LCM of 4 and 3 is 12. Then, it becomes 9x – 4x = 60 x 12**

**5x = 720. This implies x = (720/5) = 144**

1. **A number whose fifth part increased by 4 is equal to its fourth part reduced by 10, is:**
2. **240 (b) 260 (c) 280 (d) 300**

**Let the number be x. Then (x/5) + 4 = (x/4) – 10. This implies (x/4) – (x/5) = 4 + 10.**

**LCM of 4 and 5 is 20. Then it becomes 5x – 4x = 14 x 20. Therefore x = 280**

1. **Of the three numbers, the sum of the first two is 45; the sum of the second and the third is 55 and the sum of the third and thrice the first is 90. The third number is:**
2. **20 (b) 25 (c) 30 (d) 35**

**Let the numbers be x, y and z. Then x + y = 45, y + z = 55 and z + 3x = 90.**

**By adding all, we get 4x + 2y + 2z = 90 + 55 + 45 or 2(2x + y + z) = 190**

**or 2x + y + z = (190/2) = 95 or 2x + 55 = 95 or 2x = 40 or x = 20.**

**By introducing x value in z + 3x = 90 we get z + 3(20) = 90 or z = 30**

1. **The sum of two numbers is twice their difference. If one of the numbers is 10, the other one is:**
2. **30 or (10/3) (b) 30 or –(10/3) (c) 30 (d) (10/3)**

**Let the numbers be x and y. Then x + y = 2(x – y) or x + y = 2x – 2y or x = 3y.**

**Here we consider two cases: If y = 10, x becomes 30 (or) if x = 10, y becomes (10/3).**

**Therefore the answer is 30 or (10/3)**

1. **Which of the following can be a product of two 3-digit numbers \* \* 3 and \* \* 8?**
2. **1010024 (b) 991014 (c) 9124 (d) None**

**When two 3-digit numbers are multiplied, the product carries a 5-digit number or 6- digit number.**

**Ex: (103 x 108) = 11124 (minimum value and 5 –digit number)**

**(993 x 998) = 991014 (maximum value and 6 –digit number)**

1. **A bag contains 20 gumballs. If there are 8 red, 7 white and 5 green, what is the minimum number of gumballs one must pick from the bag to be assured of one of each colour?**
2. **3 (b) 8 (c) 9 (d) 16**

Correct option (b) 16

Explanation: A bag contains 20 balls. 8 balls are green,7 are white and 5 are red. We have to pick at least one ball of each colour.  Now consider this: Even if we pick 8 balls, there’s a probability that all of them may be green. Hence, we must pick more than 8 balls for sure.  Now, even if we pick 8 + 7 balls, i.e. 15 balls, there’s a probability that all of them may be green and white only, with no red ball picked at all.  Hence, taking the worst possible scenario in consideration we must pick 15 + 1 = 16 balls to be sure that atleast one ball of all the three colours is picked.  Read more on Sarthaks.com - https://www.sarthaks.com/491898/bag-contains-balls-balls-are-green-are-white-and-what-minimum-number-balls-that-must-picked

1. **Gasoline varies in cost from $1.92 to $2.24 per gallon. If a car’s mileage varies from 16 to 24 miles per gallon, what is the difference between the most and the least that the gasoline for a 480-mile trip will cost?**
2. **$10.24 (b) $14.08 (c) 23.04 (d) $28.80**

**Maximum Cost = (Trip /Less mileage) x High price = (480/16) x 2.24 = 30 x 2.24 = $67.20**

**Minimum Cost = (Trip/More mileage) x Low price = (480/24) x 1.92 = 20 x 1.92 = $38.4**

**Difference = 67.20 – 38.40 = $28.80**

1. **The sum of three numbers is 68. If the ratio between first and second be 2 : 3 and that between second and third be 5 : 3, then the second number is:**
2. **20 (b) 30 (c) 48 (d) 58**

**First ratio = 2 : 3 = 10 : 15 Second ratio = 5 : 3 = 15 : 9**

**Ratio = 10 : 15 : 9**

**Total parts must be equal to total given value. That means 34 parts = 68**

**Second number = 15 parts = (15 x 68)/34 = 30**

1. **How many figures (digits) are required to number a book containing 200 pages?**
2. **200 (b) 372 (c) 492 (d) 600**

**Figures (digits) required = 1 (9) + 2 (90) + 3 (101) = 9 + 180 + 303 = 492**

**9 pages from 1 to 9 will require 9 digits**

**90 pages from 10 to 99 require 90\*2=180 digits**

**200-(90+9)=101 pages will require 101\*3 =303 digits**

**Therefore total no of digits required is 9+180+303=492**

1. **How many key strokes (pressings) are required to type numbers from 1 to 1000? (Company Question)**

**Ans is 2893 key strokes ex till 10 9 key strokes,for 2 digits num’s 90\*2=180…**

1. **A number ‘a’ when divided by 75 leaves a remainder 30. What will be the remainder if ‘5a’ is divided by 75?**
2. **45 (b) 30 (c) 15 (d) 0**

**Minimum number for value ‘a’ = 75 + 30 = 105 5a = 5(105) = 525**

**When 525 divided by 75, remainder is zero.**

1. **In operation a\* = 2a – 1 and a\*\* = 2a + 1, then what is (9\*)\*\*?**
2. **33 (b) 35 (c) 37 (d) 39**

**9\* = 2 (9) – 1 = 17**

**17\*\* = 17 (2) + 1 = 35**

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| **COMPANY QUESTIONS** |

1. **In a group of 25 girls, it was found that everyone liked at least one of the two brands of cola – Mr. Cola, Dr. Cola. 20 girls liked Dr. Cola, and 20 liked Mr. Cola. How many liked both the colas?**
2. **5 (b) 10 (c) 15 (d) 20**

**No. of people who liked both the colas = 20 + 20 – 25 = 15**

1. **In a hotel, 60% had vegetarian lunch while 30% had non-vegetarian lunch and 15% had both types of lunch. If 96 people were present, how many did not eat either lunch?**
2. **20 (b) 24 (c) 25 (d) 76**

**Out of 100 people, persons who take veg only = 60 – 15 = 45**

**Persons who take non-veg only = 30 – 15 = 15**

**Persons who take both veg & non-veg = 15**

**Persons who did not either lunch = 100 – 45 – 15 – 15 = 25**

**For 96 people given, who did not eat either lunch = 96(25/100) = 24**

1. **An iron water-tank with a capacity of 10,000 gallons has a water-supply inlet, which feeds water at the rate of 300 gallons per hour. This water inlet starts automatically when the water level goes below the 5000-gallon mark. There is a hole formed at the bottom of the tank due to rusting. When the water-tank is full, how long will take for the whole tank to be emptied if the water goes out of the hole at the rate of 500-gallons per hour? Assume that there is no other loss/usage of water?**
2. **10 hours (b) 20 hours (c) 25 hours (d) 35 hours**

**Ans is 35 hours because after emptying the 5000 gallons water starts to fetch in and going at rater of 500 gallons per hour and in with rate of 300 gallons per hour,then the net rate will be 500-300-🡪5000/200🡪25+10(previously for 5000/500)**

**Company Question**

1. **A lake has a rare breed of lotuses that triple in number every minute. If one-third of the lake is full of flowers in 30 minutes, what is the total time taken for the whole lake to be full?**
2. **1 min (b) 31 min (c) 60 min (d) 90 min**
3. **A boy was asked to multiply a certain number by 27. He multiplied it by 72 and got an answer which was 270 more than the correct answer. Find the number?**
4. **5 (b) 6 (c) 9 (d) 18**

**72x – 27x = 270 implies 45x = 270 x = 6**

1. **In an examination, a student was asked to find (3/14) of a certain number. By mistake, he found (3/4) of it. His answer was 150 more than the correct answer. The given number is:**
2. **290 (b) 280 (c) 240 (d) 180**

**(3/4) x – (3/14) x = 150 LCM = 28**

**21x – 6x = (150)(28) implies 15x = (150)(28) x = 280**

1. **The sum of the first 63 terms of the series: 5 – 3 + 2 – 5 + 3 - 2 + 5 – 3 + 2 – 5 ……… is**
2. **5 (b) 4 (c) 3 (d) 2**
3. **A shopkeeper knows that the price of a cigarette packet will increase by Rs3 in the next budget. He bought some packets of cigarette for Rs2700. If he bought the cigarette packets on new price, he would get 10 packets less. What is the number of packets bought by him?**
4. **80 (b) 90 (c) 100 (d) 120**
5. **A sequence of numbers is such that multiplying the previous term by 2 and adding 1 obtains each term, except the first term. If the fourth term in the series is 31, what is the first term?**
6. **63 (b) 15 (c) 7 (d) 3**
7. **Maria plans to make sandwiches for a picnic. She has three types of bread from which to choose (rye, sourdough and white), four types of meat from which to choose (salami, bologna, ham and pastrami), and three types of cheese from which to choose (Swiss, cheddar and jack). If Maria will use only one type of bread, one type of meat and one type of cheese on each sandwich, how many different kinds of sandwiches can Maria make?**
8. **3 (b) 4 (c) 10 (d) 36**
9. **The amount of time it takes to consume a buffalo carcass is inversely proportional to the number of vultures. If it takes 12 vultures 3 days to consume a buffalo, how many fewer hours will it take if there are 4 more vultures?**
10. **6 (b) 12 (c) 18 (d) 24**

**Inverse proportional means ‘when one value increases, the other value decreases’.**

**12 vultures ……… 72 hours**

**16 vultures ………? (12 x 72)/16 = 54 hours**

**Hours less = 72 – 54 = 18**

1. **The sum of all the possible factors of 500 (including 1 and 500 itself) equals:**
2. **784 (b) 980 (c) 1092 (d) 1350**

**Sum of possible factors are 500 = 1 + 2 + 4 + 5 + 10 + 20 + 25 + 50 + 100 + 125 + 250 + 500 = 1092**

1. **A boy multiplies 987 by a certain number and obtains 559981 as his answer. If in the answer, both 9’s are wrong but the other digits are correct, then the correct answer will be:**
2. **553681 (b) 555181 (c) 555681 (d) 556581**
3. **Four children A, B, C and D divide a bag of sweets. A takes (1/3) of them, B (2/5)th of the remainder and the rest is equally shared between C and D. What fraction of the sweets did C or D get?**
4. **(1/4) (b) (1/5) (c) (1/6) (d) (1/17)**

**A’s share = (1/3)(15x) = 5x Remaining = 15x – 5x = 10x**

**B’s share = (2/5)(10x) = 4x Remaining = 10x – 4x = 6x**

**C or D will get 3x shares each. Fractional part = (3x/15x) = (1/5)**

1. **A train starts full of passengers. At the first station, it drops one-third of passengers and takes 280 more. At the second station, it drops one-half of the new total and takes 12 more. On arriving at the third station, it is found to have 248 passengers. The number of passengers in the beginning was:**
2. **156 (b) 288 (c) 564 (d) 608**

**After leaving first station the train has (4x + 280)**

**After leaving second station the train has (2x + 140 + 12) = 2x + 152**

**Therefore 2x + 152 = 248 …………… x = 48**

**Total passengers at the starting point = 48 x 6 = 288**

1. **A man is employed for 30 days on the condition that he receives Rs1000 for each day he works and loses Rs250 for each day he is absent. He gets Rs20,000 in all. For how many days was he absent?**
2. **4 (b) 6 (c) 8 (d) 10**

**Let the no. of days absent is x**

**1000 (30 – x) – 250 (x) = 20000 30000 – 1000 x – 250 x = 20000**

**10000 = 1250x x = (10000/1250) = 8 days absent**

**Company Questions**

1. **The cost of 2 mangoes is equal to the cost of 10 oranges. If the total cost of 4 mangoes and 20 oranges is Rs80, then find the cost of one mango?**
2. **Rs10 (b) Rs15 (c) Rs20 (d) Rs25**
3. **If (a – b) is 6 more than (c + d) and (a + b) is 3 less than (c – d), then (a – c) is:**
4. **0.5 (b) 1 (c) 1.5 (d) 2**

**PRACTICE EXERCISE**

1. **The unit’s digit in the product (274 x 318 x 577 x 313) is:**
2. **2 (b) 3 (c) 4 (d) 5**
3. **If the unit digit in the product (459 x 46 x 28\* x 484) is 2, the digit in place of \* is:**
4. **3 (b) 4 (c) 5 (d) 7**
5. **When ‘n’ is divided by 4, the remainder is 3. What is the remainder when ‘2n’ is divided by 4?**
6. **0 (b) 1 (c) 2 (d) 3**
7. **The price of 4 pens and 3 pencils is Rs23, the price of 3 pencils and 5 erasers is Rs13, and the price of 7 erasers and 4 pens is Rs34, find the cost of 1 eraser?**
8. **Rs5 (b) Rs2.50 (c) Rs2 (d) Re1**
9. **A certain geometry class has 36 students. If two-thirds of the students are boys and three-fourths of the boys are under six feet tall, how many boys in the class are under six feet tall?**
10. **6 (b) 12 (c) 18 (d) 24**
11. **A license number is of the type $nn, where $ is any one letter from A to Z and n is any one digit from 0 to 9. How many different license numbers can there be?**
12. **2600 (b) 2800 (c) 3600 (d) 4800**
13. **If (x + y) : (x – y) = 7 : 3, then (x2 + y2) : (x2 – y2) is equal to:**
14. **49 : 9 (b) 29 : 21 (c) 16 : 29 (d) 25 : 4**
15. **You are given two functions, which are defined as: f(x) = x2 + x + 1 and g(x) = f(x)/2**

**What is the value of g(10)?**

1. **21.5 (b) 51.5 (c) 55.5 (d) 111**
2. **750 times 45 equals P. Therefore, 750 times 44 equals**
3. **P – 45 (b) P – 750 (c) P – 1 (d) 44P**
4. **A man spent (3/5) of his savings and was still left with Rs20000. What was his initial saving?**
5. **Rs50000 (b) Rs55000 (c) Rs60000 (d) Rs72000**
6. **When Jack travelled 25 km, he found that (3/5) of his journey was still left. What is the total journey to be covered by Jack?**
7. **60 km (b) 62.5 km (c) 65 km (d) 67.5 km**
8. **A person went to a stationery shop and purchased a pen for Rs15. If he is still left with (2/5) of his total money, find the total amount of money he had initially?**
9. **Rs25 (b) Rs30 (c) Rs35 (d) Rs40**
10. **Ratio of the sum and the difference of the two numbers is 13 : 3. Find the ratio of those two numbers?**
11. **5 : 8 (b) 8 : 3 (c) 8 : 5 (d) 8 : 7**
12. **From 50 to 90, find the number of odd and even numbers?**
13. **20, 21 (b) 20, 20 (c) 21, 22 (d) 19, 20**
14. **If 0.7 times one number is equal to 0.075 times another number, then the ratio of the numbers is:**
15. **2 : 25 (b) 3 : 28 (c) 9 : 7 (d) 28 : 25**
16. **The sum of two numbers is (28/25) of the first number. The second number is ………………… of the first.**
17. **12% (b) 14% (c) 15% (d) 16%**
18. **In a school, (4/5) of the children are boys. If the number of girls is 200, find the number of boys?**
19. **600 (b) 750 (c) 800 (d) 1000**
20. **If 2s = 9, then the value of s2 + (s – 1)2 + (s– 3)2 + (s – 5)2 is**
21. **45 (b) 35 (c) 25 (d) 9**
22. **If a \* b = 2a – 3b + ab, then 3 \* 5 + 5 \* 3 is equal to:**
23. **22 (b) 24 (c) 26 (d) 28**
24. **A number of friends decided to go on a picnic and planned to spend Rs960 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs40 each extra. The number of those who attended the picnic was:**
25. **24 (b) 16 (c) 12 (d) 8**