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Mixed Arithmetic Questions for IBPS Clerk Pre, SBI Clerk Pre and RRB Asst. Pre Exams.

Word Problems Quiz 1

Direction: Read the following questions carefully and choose the right answer.

1. A mixture contains mango juice and water in the ratio 9 : 5 respectively. 28 litres of the mixture is replaced by water. Now the ratio of Mango juice and water became 18 : 17. Find the quantity of mango juice in the initial mixture.

- A. 90 litres B. 80 litres C. 60 litres D. 70 litres E. None of these

2. A and B together can complete a piece of work in 12 days, B and C together can complete a piece of work in 16 days, A and C together can complete a piece of work in 24 days. Find the number of days in which A, B and C together can complete the work.

- A. $\frac{31}{5}$ B. $\frac{32}{3}$ C. $\frac{32}{5}$ D. $\frac{31}{3}$ E. None of these

3. A shopkeeper marks his article in such a way that even after allowing 18% discount on marked price, he gains 28%. If the cost price of the article is Rs.246, find the marked price of the article.

- A. Rs. 342 B. Rs. 384 C. Rs. 348 D. Rs. 324 E. None of these

4. In how many different ways letters of the word "EDUCATION" can be arranged such that all the consonants come together?

- A. 18720 B. 18270 C. 17280 D. 12780 E. None of these

5. Average of a set of five consecutive even numbers is 48. Average of another set of five consecutive odd numbers is 49. Find the product of smallest even number of the first set and largest odd number of the second set.

- A. 3223 B. 2323 C. 3232 D. 2332 E. None of these

6. Ratio of the present ages of Rohan and Raj is 5 : 4. After six years ratio of their ages will be 17 : 14. After how many years, ratio of their ages will become 6 : 5 ?

- A. 9 years B. 7 years C. 8 years D. 5 years E. None of these

7. Simple interest on a sum at the rate of 8% per annum for 8 years is Rs.46080. Find the compound interest on that sum at the rate of 12% per annum for 2 years.

- A. Rs. 18816.8 B. Rs. 18616.8 C. Rs. 18316.8 D. Rs. 18416.8 E. None of these

8. A, B and C start running around a circular field having circumference 150 metre at the same time from the same point. Speeds of A, B and C are 5 m/minute, 10 m/minute and 15 m/minute. Find after how much time, they will meet again at the same point for the first time.

- A. 25 minutes B. 10 minutes C. 30 minutes D. 20 minutes E. None of these

9. A train can cross another train of equal length coming from the opposite direction with the speed of 108 km/h in 3 minutes. The speed of the other train is 90 km/h. Find the length of the train.

- A. 5940 m B. 5490 m C. 4950 m D. 4590 m E. None of these

10. Two dice are thrown simultaneously. Find the probability that sum of the numbers on both the dice is a prime number.

- A. 14 h B. 15 h C. 16.9 h D. 14.4. h E. None of these

Correct Answers:

1	2	3	4	5	6	7	8	9	10
A	B	B	C	D	A	C	C	C	B

Explanations:

1. Let the quantity of mango juice and water in the initial mixture is $9x$ litres and $5x$ litres respectively.

$$\text{Quantity of mango juice in 28 litres mixture} = \frac{9}{14} \times 28 = 18 \text{ litres}$$

$$\text{Quantity of water in 28 litres mixture} = \frac{5}{14} \times 28 = 10 \text{ litres}$$

$$\frac{9x - 18}{5x - 10 + 28} = \frac{18}{17}$$

$$\Rightarrow \frac{9x - 18}{5x + 18} = \frac{18}{17}$$

$$\Rightarrow 153x - 306 = 90x + 324$$

$$\Rightarrow 63x = 324 + 306$$

$$\Rightarrow x = \frac{630}{63}$$

$$\Rightarrow x = 10$$

Quantity of mango juice in initial mixture = $9x = 9 \times 10 = 90$ litres.

Hence, option (A) is correct.

2. Traditional approach:

$$\frac{1}{A} + \frac{1}{B} = \frac{1}{12}$$

$$\frac{1}{B} + \frac{1}{C} = \frac{1}{16}$$

$$\frac{1}{A} + \frac{1}{C} = \frac{1}{24}$$

Adding all the above equations, we get

$$2 \left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} \right) = \frac{1}{12} + \frac{1}{16} + \frac{1}{24}$$

$$\Rightarrow 2 \left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} \right) = \frac{4 + 3 + 2}{48}$$

$$\Rightarrow \frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{9}{96}$$

$$\Rightarrow \frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{3}{32}$$

Hence, A, B and C together can complete the work in $32/3$ days.

Smart approach:

Total work = LCM of 12, 16 and 24 = 48

$$\text{Efficiency}(A + B) = \frac{48}{12} = 4$$

$$\text{Efficiency}(B + C) = \frac{48}{16} = 3$$

$$\text{Efficiency}(A + C) = \frac{48}{24} = 2$$

$$2 \times \text{Efficiency}(A + B + C) = 9$$

$$\text{Efficiency}(A + B + C) = \frac{9}{2}$$

$$\text{Required number of days} = \frac{48}{9/2} = \frac{96}{9} = \frac{32}{3} \text{ days}$$

Hence, option (B) is correct.

3. $mp \times (100 - \%d) = cp \times (100 + \%p)$

$$\Rightarrow mp \times (100 - 18) = 246 \times (100 + 28)$$

$$\Rightarrow mp = \frac{246 \times 128}{82}$$

$$\Rightarrow mp = \text{Rs.}384$$

Hence, option B is correct.

4. Number of consonants = 4

Consonants can be arranged among themselves in 4! Ways.

E, U, A, I, O and (DCTN) can be arranged in 6! Ways

$$\text{Required number of ways} = 6! \times 4! = 720 \times 24 = 17280$$

Hence, option (C) is correct.

5. Average of n consecutive even/odd numbers

$$\Rightarrow a = \text{first number} + (n - 1)$$

$$\Rightarrow 48 = \text{first number} + (5 - 1)$$

$$\Rightarrow \text{first number} = 44$$

Even numbers are: 44, 46, 48, 50, 52

And

$$a = \text{first number} + (n - 1)$$

$$\Rightarrow 49 = \text{first number} + (5 - 1)$$

$$\Rightarrow \text{first number} = 45$$

Odd numbers are: 45, 47, 49, 51, 53

Required product = $44 \times 53 = 2332$

Hence, option (D) is correct.

6. Let the present ages of Rohan and Raj are $5x$ and $4x$ respectively.

$$\frac{5x + 6}{4x + 6} = \frac{17}{14}$$

$$\Rightarrow 70x + 84 = 68x + 102$$

$$\Rightarrow 2x = 18$$

$$\Rightarrow x = 9$$

Present age of Rohan = $5x = 5 \times 9 = 45$ years

Present age of Raj = $4x = 4 \times 9 = 36$ years

Let after y years ratio of their ages will be $6 : 5$.

$$\frac{45 + y}{36 + y} = \frac{6}{5}$$

$$\Rightarrow 225 + 5y = 216 + 6y$$

$$\Rightarrow y = 225 - 216$$

$$\Rightarrow y = 9$$

Hence, option (A) is correct.

7.

$$\frac{P \times 8 \times 8}{100} = 46080$$

$$\Rightarrow P = \frac{4608000}{64}$$

$$\Rightarrow P = \text{Rs.}72000$$

$$CI = 72000 \times \frac{112}{100} \times \frac{112}{100} - 72000$$

$$= \text{Rs.}18316.8$$

Hence, option (C) is correct.

8.

$$\text{Time taken by A to complete one round} = \frac{150}{5} = 30 \text{ minutes}$$

$$\text{Time taken by B to complete one round} = \frac{150}{10} = 15 \text{ minutes}$$

$$\text{Time taken by C to complete one round} = \frac{150}{15} = 10 \text{ minutes}$$

$$\text{LCM of } 30, 15, 10 = 30$$

Hence, they will meet after 30 minutes.

Hence, option (C) is correct.

9.

$$\text{Speed of the train} = 90 \text{ km/h} = 90 \times \frac{5}{18} = 25 \text{ m/s}$$

$$\text{Speed of another train} = 108 \text{ km/h} = 108 \times \frac{5}{18} = 30 \text{ m/s}$$

Let the length of the train = l metre

According to the question :

$$(l + l) = (25 + 30) \times 3 \times 60$$

$$\Rightarrow 2l = 55 \times 180$$

$$\Rightarrow l = \frac{9900}{2}$$

$$\Rightarrow l = 4950 \text{ metres.}$$

Hence, option (C) is correct

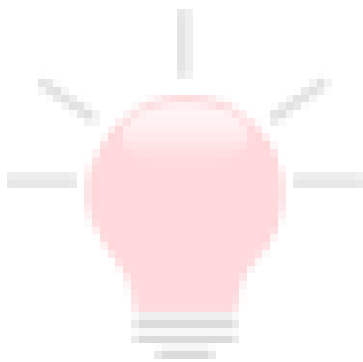
10. Total number of outcomes = $6 \times 6 = 36$

Favourable outcomes = $\{(1,1), (1,2), (1,4), (1,6), (2,1), (2,3), (2,5), (3,2), (3,4), (4,1), (4,3), (5,2), (5,6), (6,1), (6,5)\}$

Total number of favourable outcomes = 15

$$\text{Reqd. Probability} = \frac{15}{36} = \frac{5}{12}$$

Hence, option (B) is correct.



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