Mixed Maths Questions for SBI Clerk Pre and IBPS Clerk Pre Exams.

SBI Clerk Pre Maths Quiz 3

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

1. The speed of a passenger train is 25% less than that of the express train. 4 hours after the passenger train starts from a station, the express train starts from the same station and completely crossed the passenger in another R hours. What is the value of R ?

A. 10 B. 12 C. 15 D. 8 E. None of these

2. Pipe P can fill an empty tank in 4 hours but pipe Q can completely empty the same tank in 8 hours. Both the pipes were opened alternately after every two hours starting with pipe P then in how many hours, the tank was completely filled?

A. 6 hours B. 5 hours C. 10 hours D. 12 hours E. None of these

3. At the end of 2 years, the difference between the simple interest and compound interest received on a sum of money is Rs. 500. At the end of 5 years under simple interest, double the sum of money become seven times the sum of money then what was the sum of money? (the rate of interest per annum was same in all the cases)

A. Rs. 40000 B. Rs. 20000 C. Rs. 2000 D. Rs. 10000 E. None of these

4. Ram can complete a piece of work in 20 days. Ram started working alone but at the end of 5 days from starting Mohan joined him and they together complete remaining piece of work in 6 days less than Ram would have taken alone. In how many days, Ram and Mohan together can complete double of the work?

A. 12 days B. 8 days C. 20 days D. 24 days E. None of these

5. The cost price of an article is Rs. 400. A shopkeeper marked the price 2x percentage above the cost price and gave x% discount on the marked price and earned a profit of Rs. 48. If he had not given discount and had sold the article on the marked price then how much more profit he would have earned?

A. Rs. 160 B. Rs. 152 C. Rs. 112 D. Rs. 124 E. None of these

6. A boy went from his house to school and covered half of the distance between his house and school at 25% more than the usual speed and the remaining half of the distance at 25% less than the usual speed thereby took 1 hours more than the usual time. What was the ratio of the numerical value of total distance and that of his usual speed?

A. 1 : 30 B. 15 : 1 C. 30 : 1 D. 60 : 1 E. None of these

7. A water tank X can be filled by an inlet pipe in some hours. The same inlet pipe can fill another water tank Y of capacity 8000 litre in 16 hours. If the inlet pipe and an outlet pipe are opened together to fill the water tank X then they together take 7.5 hours but the outlet pipe alone can empty the water tank Y in 24 hours. What is the capacity of the water tank X?

A. 750 litres B. 1200 litres C. 1250 litres D. 1500 litres E. None of these

8. Three dice are thrown together. Find the probability of getting a total of at least 6 ?

A. $\frac{103}{216}$ B. $\frac{103}{208}$ C. $\frac{103}{108}$ D. $\frac{36}{103}$ E. None of these

9. The discount series of 15%, 20% and 30% is equal to a single discount of:

A. 50% B. 52.80% C. 52.40% D. 53.40% E. None of these

10. A farmer has some number of cows and n number of cattle houses. He can tie 12 cows with equal number of cows in each cattle house or 8 cows with equal number of cows in each cattle house. What is the minimum possible number of cows the farmer has?

A. 36 B. 48 C. 60 D. 24 E. None of these

Correct Answers:

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

Explanations:

1. Let the speed of express train = 4x km per hour

The speed of passenger train = 75% of 4x = 3x km per hour

4 hours after the passenger train start from a station, the express train start from the same station

The distance between the passenger train and express train = 3x × 4 = 12x km

The relative speed of passenger train and express train = 4x – 3x = x km per hour

The time taken by the express train to completely cross the passenger train

$= \frac{12x}{x} = 12$ hours

Hence, option B is correct.

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2. Let the capacity of the water tank = lcm of 4 and 8 = 16 units

The efficiency of pipe P = $\frac{16}{4}$ = 4 units per hour

The efficiency of pipe q = $\frac{16}{8}$ = 2 units per hour

In the first 2 hours, the units of water filled = 4 × 2 = 8 units

In the next 2 hours, the units of water withdraws = 2 × 2 = 4 units

It means, in one cycle i.e. 4 hours, the total quantity of water filled = 4 units

In the next cycle, the total quantity of water will be filled = 4 × 2 = 8 units

The remaining quantity = 16 – 8 = 8 units

In the next 2 hours, pipe P can fill 8 units of water

Therefore, the total time = 8 + 2 = 10 hours

Hence, option C is correct.

3. Let the sum of money = Rs. x

Double the sum of money = 2x

The amount received at the end of 5 years = 7x

The total interest = 7x – 2x = 5x

We know that, $SI = \frac{P \times R \times T}{100}$

$5x = \frac{2x \times R \times 5}{100}$

By solving, R = 50%

The SI at the end of 2 years on Rs. x @ 50% per annum

$= \frac{x \times 50 \times 2}{100}$ = Rs. x

The CI at the end of 2 years on Rs. x @ 50% per annum

$= x \times \left(1 + \frac{50}{100}\right)^2 - x = \frac{5}{4x} = 1.25x$

According to the question,

1.25x – x = Rs. 500

0.25x = 500

x = 2000

Hence, option C is correct.

4. According to the question,

$\frac{5}{20} + \frac{15-6}{20} + \frac{15-6}{\text{mohan}} = 1$

$\frac{9}{\text{mohan}} = 1 - \frac{14}{20} = \frac{6}{20}$

The number of days, Mohan will take alone = $\frac{9 \times 20}{6}$ = 30 days

The number of days Ram and Mohan together will take to complete the same piece of work

$= \frac{1}{20} + \frac{1}{30} = \frac{50}{600}$ = 12 days

Therefore, the number of days they will take to complete double of the work = 12 × 2 = 24 days

Hence, option D is correct.

5. The marked price of the article = (100 + 2x)% of 400 = (100 + 2x) × 4

The SP = $(100 + 2x) \times 4 \times \frac{100 - x}{100} = (100 + 2x) \times 4 \times \left(1 - \frac{x}{100}\right)$

According to the question,

$(100 + 2x) \times 4 \times \left(1 - \frac{x}{100}\right) - 400 = 48$

$(100 + 2x) \times 4 \times \left(1 - \frac{x}{100}\right) = 448$

$(100 + 2x)(100 - x) = 11200$

By solving, x = 20

Therefore, the marked price = (100 + 2x) × 4 = 140 × 4 = 560

The profit = 560 – 400 = 160

The required answer = 160 – 48 = 112

Hence, option C is correct.

6. Let the total distance = 2p km

And his usual speed = 4s km per hour

Therefore, $\frac{p}{5s} + \frac{p}{3s} = \frac{2p}{4s} + 1$

$\frac{8p}{15s} = \frac{p}{2s} + 1$

$\frac{8p}{15s} - \frac{p}{2s} = 1$

$\frac{p}{30s} = 1$

$\frac{p}{s} = 30$ ..... (i)

The reqd. ratio = 2p : 4s = $\frac{p}{2s} = \frac{30}{2} = 15 : 1$

Hence, option B is correct.

7. The inlet pipe fill 8000 litres water in 16 hours

Therefore, the efficiency of the inlet pipe = $\frac{8000}{16}$ = 500 litres per hour

The outlet pipe empty 8000 litres water in 24 hours

Therefore, the efficiency of outlet pipe = $\frac{8000}{24} = \frac{1000}{3}$ litre per hour

When both the pipe work together then the quantity of water filled in 1 hour

$= 500 - \frac{1000}{3} = \frac{500}{3}$ litre per hour

They together take 7.5 hours to fill the tank X

Therefore, the capacity of the tank X

$= \frac{500 \times 7.5}{3}$ = 1250 litres

Hence, option C is correct.

8. Since one die can be thrown in six ways to obtain any one of the six numbers marked on its six faces

⇒ Total number of elementary events = 6 × 6 × 6 = 216

Let A be the event of getting a total of at least 6.Then $\bar{A}$ denotes the event of getting a total of less than 6 i.e. 3, 4, 5.

⇒ $\bar{A}$ = { (1,1,1), (1,1,2), (1,2,1), (2,1,1), (1,1,3),(1,3,1), (3,1,1), (1,2,2), (2,1,2), (2,2,1) }

So, favorable number of cases = 10

⇒ $P(\bar{A}) = \frac{10}{216}$

⇒ $1 - P(A) = \frac{10}{216}$

⇒ $P(A) = 1 - \frac{10}{216}$

$= \frac{103}{108}$

Hence, option (C) is correct.

9. For simplicity let us assume that the initial amount is Rs.100

Then 15% discount on this amount gives

$= \text{Rs.}100 - \left(\text{Rs.}100 \times \frac{15}{100}\right)$

$= \text{Rs.}100 - \text{Rs.}15 = \text{Rs.}85$

Further 20% discount on Rs.85 gives

$= \text{Rs.}85 - \left(\text{Rs.}85 \times \frac{20}{100}\right)$

$= \text{Rs.}85 - \text{Rs.}17 = \text{Rs.}68$

Again 30% discount on Rs.68 gives

$= \text{Rs.}68 - \left(\text{Rs.}68 \times \frac{30}{100}\right)$

= Rs.68 – Rs.20.4 =Rs.47.6 Now after discount series of 15%, 20% and 30% we are getting Rs.47.6

$\Rightarrow$ equivalent discount $= \frac{100 - 47.6}{100} \times 100 = 52.4\%$

Hence, option (C) is correct

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10. The minimum possible number of cows the farmer has = LCM of 8 and 12 = 24

Hence, option D is correct.