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Word Problems Quiz 22

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

1. In Champions league, Rohit scored an average of 120 runs per match in the first 3 match and an average of 140 runs per match in the last four match. What is Rohit's average runs for the first match and the last two match if his average runs per match for all the five match is 122 and total number of matches are 5?

A. 100   B. 200   C. 150   D. 50   E. None of these

2. Ramesh kejriwal lent a sum of Rs.100 at simple interest of 6% p.a. for the first month, 12% p.a. for the second month, 24% p.a. for the third month and so on. What is the total amount of interest earned at the end of one year?

A. Rs. 5265   B. Rs. 5205   C. Rs. 2047.5   D. Rs. 4205.5   E. None of these

3. Virat can do a piece of work in 24 days and Sachin can do the same work in 36 days. If Virat works for three days and got Rs. 3600, and the remaining work will completed by Sachin, then how much rupee Sachin earned

A. Rs. 45220   B. Rs. 3600   C. Rs. 16520   D. Rs. 25200   E. None of these

4. Shanghai Maglev and Harmony CRH 380A are two fastest train in world. Train Harmony CRH 380A whose length is three-fifth of that of train Shanghai Maglev crosses it travelling in opposite direction in a time which is 3/7 th of the time taken by Shanghai Maglev to cross it when travelling in same direction. Calculate the ratio of the speeds of Shanghai Maglev and Harmony CRH 380A.

A. 2 : 7   B. 5 : 2   C. 3 : 2   D. 4 : 3   E. None of these

5. An internet service provider company Century link marks up the cost price of a plan by 60% and offers a discount of 20%. He asks the customer to pay a service tax of 15% on the selling price. The customer refuses to pay the tax due to which the shopkeeper himself pays the service tax. Find his profit percentage
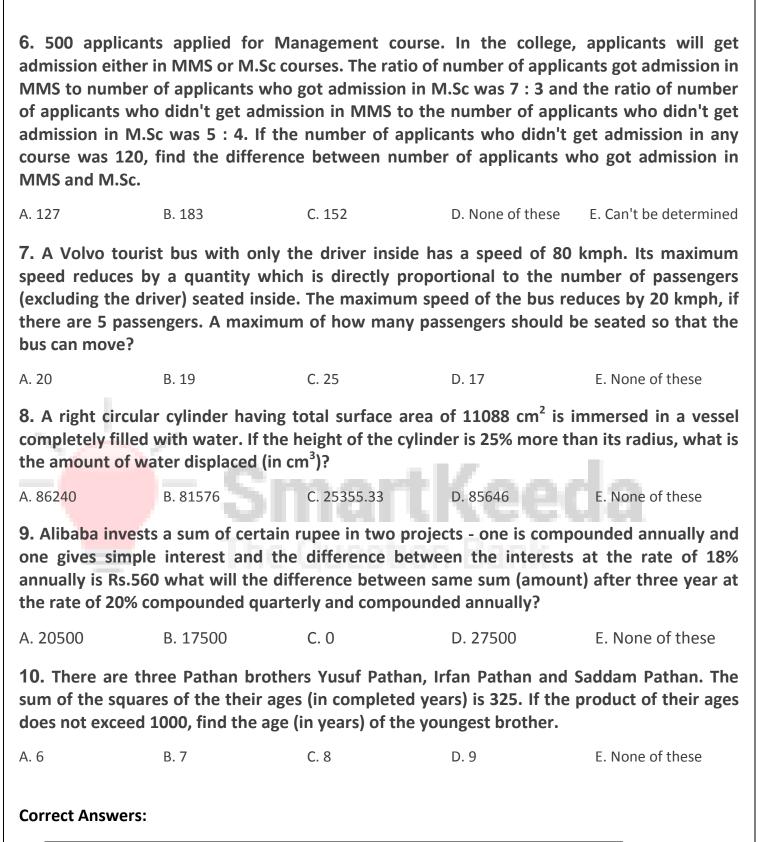
A. 8.8%   B. 22.5%   C. 5.6%   D. 10.5%   E. None of these

6. 500 applicants applied for Management course. In the college, applicants will get admission either in MMS or M.Sc courses. The ratio of number of applicants got admission in MMS to number of applicants who got admission in M.Sc was 7 : 3 and the ratio of number of applicants who didn't get admission in MMS to the number of applicants who didn't get admission in M.Sc was 5 : 4. If the number of applicants who didn't get admission in any course was 120, find the difference between number of applicants who got admission in MMS and M.Sc.

A. 127   B. 183   C. 152   D. None of these   E. Can't be determined

7. A Volvo tourist bus with only the driver inside has a speed of 80 kmph. Its maximum speed reduces by a quantity which is directly proportional to the number of passengers (excluding the driver) seated inside. The maximum speed of the bus reduces by 20 kmph, if there are 5 passengers. A maximum of how many passengers should be seated so that the bus can move?

A. 20   B. 19   C. 25   D. 17   E. None of these

8. A right circular cylinder having total surface area of 11088 cm^2 is immersed in a vessel completely filled with water. If the height of the cylinder is 25% more than its radius, what is the amount of water displaced (in cm^3)?

A. 86240   B. 81576   C. 25355.33   D. 85646   E. None of these

9. Alibaba invests a sum of certain rupee in two projects - one is compounded annually and one gives simple interest and the difference between the interests at the rate of 18% annually is Rs.560 what will the difference between same sum (amount) after three year at the rate of 20% compounded quarterly and compounded annually?

A. 20500   B. 17500   C. 0   D. 27500   E. None of these

10. There are three Pathan brothers Yusuf Pathan, Irfan Pathan and Saddam Pathan. The sum of the squares of the their ages (in completed years) is 325. If the product of their ages does not exceed 1000, find the age (in years) of the youngest brother.

A. 6   B. 7   C. 8   D. 9   E. None of these

Correct Answers:

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

Explanations:

1. Rohit's average score in the first 3 exams = 120
Let the scores in the 5 exams be denoted by M1, M2, M3, M4, and M5

M1 + M2 + M3 = 120 × 3 = 360   **.......(i)**

Average of last 4 match = 140

$$\Rightarrow \frac{M2 + M3 + M4 + M5}{4} = 140$$

⇒ M2 + M3 + M4 + M5 = 560   **......(ii)**

Average of all the exams

$$\Rightarrow \frac{M1 + M2 + M3 + M4 + M5}{5} = 122$$

∴ M1 + M2 + M3 + M4 + M5 = 122 × 5 = 610   **.......(iii)**

From solving above equation, we get M1 + M4 + M5 = 300

Required average runs = $\frac{300}{3}$ = 100

Hence correct option (A) is correct.

2. Principal= Rs.100
Rate of interest for first month = 6%
Interest = Rs. 6/12
Interest for second month = Rs. 12/12
The interest earned for the successive months is in the form of geometric progression.
Rs. 6/12, Rs. 12/12, Rs. 24/12 …………

a = Rs.6/12, r = (12/12)/ (6/12) = 2, where a is the first term and r is the common ratio of the series.

Sum of series = $\dfrac{a\ (r^n - 1)}{r - 1}$

$$= \frac{\frac{6}{12}(2^{12} - 1)}{2 - 1} = \frac{6}{12}(4096 - 1)$$

$$= \frac{6}{12} \times 4095 = Rs.2047.5$$

Hence correct option (C) is correct.

3. Assume total work = LCM (24, 36) = 72

If the entire work is 72 units, Virat can complete 3 unit per day, and Sachin can complete 2 unit per days

In 3 days, Virat completes 9 units and got Rs.3600 i.e. Rs.400 per unit.

Remaining work = (72 – 9)unit = 63 unit

∴ Sachin earning = Rs.63 × 400 = Rs.25200

Hence correct option (D) is correct.

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4. Let L1, and L2 be the lengths of the trains Shanghai Maglev and Harmony CRH 380A respectively

Distance covered in each case = L1 + L2.

Let the speed of the train Shanghai Maglev = S1

Speed of the train Harmony CRH 380A = S2

$$\frac{L1+L2}{S1+S2} = \frac{3}{7}\left(\frac{L1 + L2}{S1 - S2}\right) \Rightarrow \frac{S1 + S2}{S2 - S1} = \frac{7}{3}$$

∴ $\frac{S1}{S2} = \frac{5}{2}$ (by componendo and dividendo)

∴ The ratio of the speeds of the two trains 5 : 2

Hence correct option (B) is correct.

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5. Let the cost price of the plan be P

Marked price = 1.6 P

Selling price = 0.8 (1.6P) = 1.28 P

Service tax = 0.15(1.28P) = 0.192P

Profit % = $\frac{(1.28P - 0.192P) - P}{P}$ × 100% = 8.8%

Hence, option A is correct.

6. As given in question, out of 500, 120 applicants full rejected.

Thus, 380 applicants will get admission in either in MMS or in M.Sc.

Now, the ratio of any course indicate that the total will be 380.

Thus, in case of MMS, number of applicants who got admission = 380 × (7/10) = 266

In case of M.Sc, number of applicants who got admission = 380 - 266 = 114

Thus, required difference = 266 – 114 = 152

Hence, option C is correct.

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7. If R is the reduction in maximum speed and N is the number of passengers, then R is proportional to N

$\Rightarrow$ R = NK where K is constant of proportionality,

Given data: R = 20, when N = 5, hence K = 4

Maximum number of passenger that bus can't move = (80 − N × K) = 80 − N × 4 $\Rightarrow$ N = 20

So number of passenger for bust just move = 20 – 1 = 19

Hence correct option (B) is correct.

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8. Let the radius and height of the cylinder be r and h cm respectively.

$\therefore$ h = 1.25r

Total surface area of the cylinder = 11088 = $2\pi r(h + r)$

$\therefore$ 11088 = $2\pi r(1.25r + r) = 2\pi r(2.25r) = 4.5\pi r^2$.

$\therefore$ 11088 = (9/2) × (22/7) × r^2

$\therefore r^2$ = 784.
$\therefore$ r = 28 and h = 35

Amount of water displaced = Volume of the right circular cylinder = $\pi r^2 h$

= (22/7) × $(28)^2$ × (35) = 86240 cm^3.

Hence, option A is correct.

9. The difference between the simple interest and compounded interest at the end of two years is given by

$$P\left(\frac{r}{100}\right)^2 = 560$$

where r = 18% thus P = 17500

Reqd. diff. = $17500\left(1 + \frac{20}{400}\right)^{12} - 17500\left(1 + \frac{20}{100}\right)^{3}$

= Rs. 1085

Hence correct option (E) is correct.

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10. Let the ages of the 3 brothers in completed years be x, y, z.

$$x^2 + y^2 + z^2 = 325 \qquad ....(i)$$

Clearly, the three numbers have to be less than 18 since the square of 18 itself is 324.

By trial, we see that $325 = 15^2 + 8^2 + 6^2$ or $12^2 + 10^2 + 9^2$

As the product of the ages is less than 1000, the ages have to be 6, 8, 15

The youngest is 6.

Hence correct option (A) is correct.