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SBI PO PRE MATHS QUIZ 15

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

1. In a state examination, 35% of the total numbers of students received first division and the rest of the students received second division, third division and failed in the ratio of 5 : 6 : 2 respectively. The number of students who received the first division was 400 more than the students who failed. How many of the students had received third division?
A. 455   B. 540   C. 400
D. 480   E. None of these

2. The ratio of the cost price to the selling price of an article is 5 : 7 and the ratio of marked price to the selling price of the same articleis 4 : 3. A shopkeeper marked 32 units of such articles at the rate of Rs. 140 each. If all the articles were sold out then how much profit (in Rs.) did he earn?
A. Rs. 1120   B. Rs. 960   C. Rs. 1024
D. Rs. 896   E. None of these

3. Two friends A and B can complete a piece of work in 20 days and 30 days respectively. They started working on alternate days. Once exactly half of the work was completed, they started working together. In this manner, how many days did they take to complete the work?
A. 12 days   B. 18 days   C. 20 days
D. 16 days   E. None of these

4. The length of a rectangular shaped field is 14 m and, its width is 21 m. A 5 meters dip right cylindrical shaped pond was dig in the field. What can be the maximum volume (in m3) of the pond?
A. 660   B. 770   C. 880
D. 710   E. None of these

5. At present, when the age of Chotu was added with that of Motu then the sum of their age is equal to the age of their grandfather's age. 6 years before, Motu's age was one – third of his grandfather age and 2 years hence, Chotu's age become three- fifth of his grandfather's age. At present, Chotu is how many years younger/elder than Motu?
A. 4 years younger   B. 4 years elder   C. 8 years younger

D. 8 years elder	E. None of these

6. A private bank promised to lend money under simple interest but the bank included the interest every 6 months for calculating principal. If the bank had promised the rate of interest as 20% per annum nad if a person took Rs. 5000 loan from the bank then how much interest he would have paid at the end of 1.5 years?
A. Rs. 1615	B. Rs. 1655	C. Rs. 1675
D. Rs. 1775	E. None of these

7. The average weight of N students was 52 kg. When one fat student of 68 kg joined with them then the average weight was increased by 1 kg. In N number of students, the ratio of boys to girls is 2 : 3. If the average weight of girls is 42 kg, then what was the average weight of boys?
A. 67 kg	B. 65 kg	C. 69 kg
D. 64 kg	E. None of these

8. A milkman has 100 litres of milk. He sells 20 litres of milk and add the same quantity of water. He again sells 20 litres of the solution and add 20 litres of water he does this process for one more time. Now how many litres of water he must add in that solution to get the ratio of milk and water as 1 : 1?
A. 48.8 litre	B. 2.4 litres	C. 1 litre
D. 3.4 litres	E. None of these

9. Five times of the monthly income of Ram is equal to eight times of the monthly income of Shyam. If the monthly expenditure of Shyam is 40% less than that of Ram's monthly expenditures. If at the end of the month Ram and Shyam save Rs. 12,000 and Rs. 10,000 respectively then the monthly income of Ram is how much more than that of Shyam's monthly income?
A. Rs. 51000	B. Rs. 41000	C. Rs. 60000
D. Rs. 22000	E. None of these

10. If 5 men and 5 women work together then they can finish a work in 5 days but if 5 women work alone then they take 40/3 more days than the time required by 5 men. Find efficiency of one woman is how much percentage less than one man?
A. 60%	B. 66.66%	C. 40%
D. 62.5%	E. None of these

Correct answers:

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

Explanations:

1.

Let the total number of students = 100x

The number of students who received 1st division = 35% of 100x = 35x

Remaining number of students = 100x − 35x = 65x

The number of students who failed in the examination

$$= \frac{2 \times 65x}{13} = 10x$$

According to the question,

35x − 10x = 25x = 400

x = 16

The number of students who received third division

$$= \frac{6 \times 65x}{13} = 30x = 30 \times 16 = 480$$

Hence, option D is correct.

2.

Let the CP = 5x then, SP = 7x

Let MP = 4y then SP = 3y = 7x
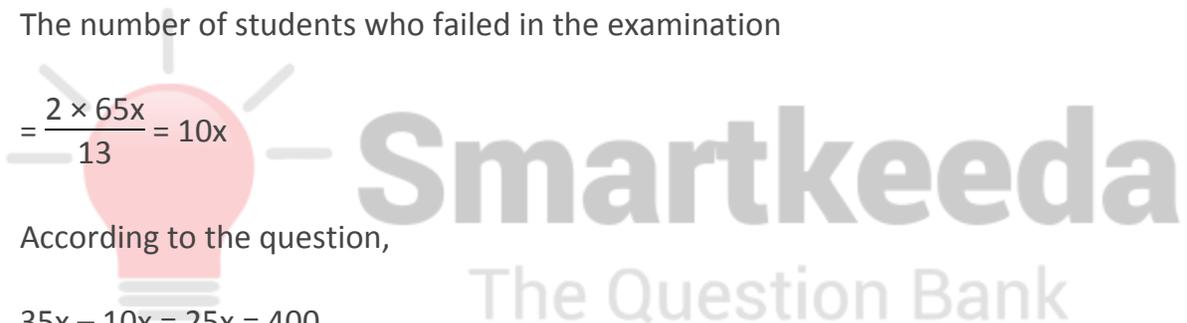
$y = \dfrac{7x}{3}$

The ratio of CP : SP : MP = 5x : 7x : 4 × $\dfrac{7x}{3}$ = 15 : 21 : 28

When MP = 28x then profit = 21x − 15x = 6x

When MP = 28 × 5 = 140 Then Profit = 6 × 5 = Rs. 30

The total profit by selling 32 such article = Rs. 32 × 30 = Rs. 960

Hence, option B is correct.

3.

Let the total units of work = lcm of 20, 30 = 60 units

The efficiency of A = $\dfrac{60}{20}$ = 3 units per day

The efficiency of B = $\dfrac{60}{30}$ = 2 units per day

Half of total work = $\dfrac{60}{2}$ = 30 units

If they work on alternate days then, in the first 2 days, the total units of work done = 3 + 2 = 5 units

The total time taken to complete 30 units of work
= $\dfrac{30}{5}$ = 6 cycles = 12 days

The number of days taken by them to complete the remaining half of the work
= $\dfrac{30}{2 + 3}$ = 6 days

The total number of days, they took t complete the work = 12 + 6 = 18 days

Hence, option B is correct.

4.

The diameter of the largest right cylindrical shaped pond can be length of the field

Radius = $\dfrac{14}{2}$ = 7 meters

Pond is 5 meters dip then h = 5 m

Volume of a right circular cylinder = $\pi r^2 h$

= $\dfrac{22}{7}$ × 7 × 7 × 5 = 22 × 7 × 5 = 770 m^3

Hence, option B is correct.

5.

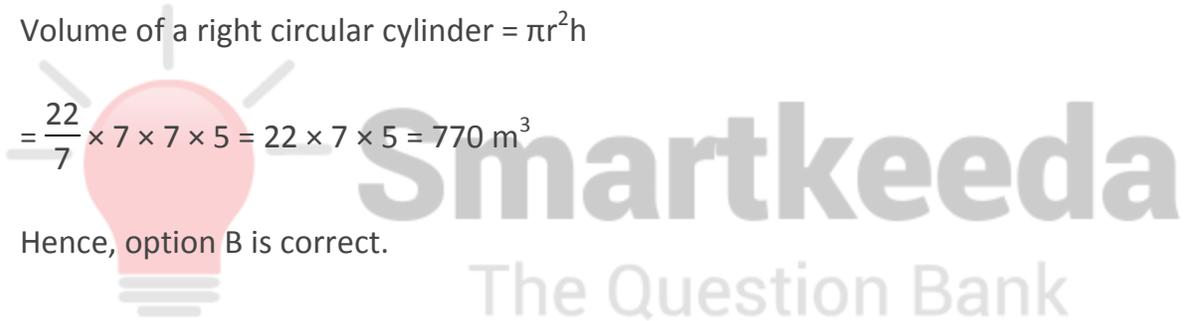6 years before, let the age of Motu = x years, then the age of grandfather = 3x years

2 years hence, let the age of Chotu = 3y years, then the age of grandfather = 5y years = 3x + 6 + 2 years

5y – 3x = 8 years ----- (i)

At present, the age of Chotu = 3y – 2 years and the age of Motu = x + 6 years

According to the question, 3y – 2 + x + 6 = 3x + 6

3y – 2x = 2 ---------- (ii)
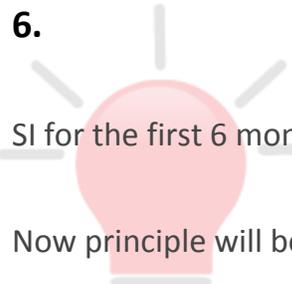
By solving equation (i) and (ii)

x = 14

y = 10

At present, Chotu's age = 3y – 2 = 28 years

Motu's age = x + 6 = 20 years

The required difference = 8 years

Hence, option D is correct.

6.

SI for the first 6 months = $\dfrac{5000 \times (1/2) \times 20}{100}$ = Rs. 500

Now principle will become Rs. (5000 + 500) = Rs. 5500

SI for the next 6 months, $\dfrac{5500 \times (1/2) \times 20}{100}$ = Rs. 550

Now, principal will become Rs. (5500 + 550) = Rs. 6050

SI for the next 6 months = $\dfrac{6050 \times (1/2) \times 20}{100}$ = Rs. 605

Amount = Rs. (6050 + 605) = Rs. 6655

The total interest he would have paid = Rs. (6655 – 5000) = Rs. 1655

Hence, option B is correct.

7.

According to the question,

$$\frac{N \times 52 + 68}{N + 1} = 53$$

52N + 68 = 53N + 53

N = 15

The number of girls = $3 \times \dfrac{15}{5}$ = 9

The number of boys = $2 \times \dfrac{15}{5}$ = 6

The sum of the weight of all the students = 15 × 52 = 780

The weight of all the girls = 42 × 9 = 378 kg

The weight of all the boys = 780 − 378 = 402 kg

The reqd average = $\dfrac{402}{6}$ = 67 kg

Hence, option A is correct.

8.

Remaining amount of milk

= initial quantity × $(1 - \dfrac{\text{quantity taken out}}{\text{initial quantity}})^n$

Where n = number of process

$100 \left(1 - \dfrac{20}{100}\right)^3 = 100 \times \left(\dfrac{80}{100}\right)^3 = 100 \times \dfrac{4}{5} \times \dfrac{4}{5} \times \dfrac{4}{5}$ = 51.2 litres

Quantity of water = 100 − 51.2 litres = 48.8 litres

Now he needs to get the ratio of milk and water as 1 : 1 it means he needs to add (51.2 − 48.8) = 2.4 litres of water to get the ratio as 1 : 1

Hence, option B is correct.

9.

Let Monthly income of Ram is Rs. R and the monthly income of Shyam is Rs. S then according to the question

5 × R = 8 × S , R : S = 8 : 5 (Ratio of their monthly income)

Let us assume it 8x and 5x then the difference between their monthly income = 8x – 5x = 3x……..(i)

Let the monthly expenditure of Ram is Rs. 100a then the monthly expenditure of Shyam will become 40% less than 100a
= Rs. 60a

Ratio of Ram's expenditure and Shyam's expenditures = 100a : 60a = 5 : 3

According to question :

$$\frac{8x - 12000}{5x - 10000} = \frac{5}{3}$$

24x – 36000 = 25x – 50000

X = 14,000

From the equation (i) difference = 3x = 3 × 14000 = 42,000

Hence, option E is correct.

10.

Total work done by 5 M and 5W in 5 days = (5M + 5W) × 5 Days = Total work

Time taken by 5M to this work

= [(5M + 5W) × 5] Days

5 M

Time taken by 5W to this work

$$= \frac{[(5M + 5W) \times 5]}{5W} \text{ Days}$$

According to question,

$$\frac{[(5M + 5W) \times 5]}{5W} - \frac{[(5M + 5W) \times 5]}{5M} = \frac{40}{3} \text{ Days}$$

$$(5M + 5W) \times 5 \times (\frac{1}{5W} - \frac{1}{5M}) = \frac{40}{3}$$

$$(M + W) \times (\frac{1}{W} - \frac{1}{M}) = \frac{8}{3}$$

Let M = 1

Then

$$(1 + W) (\frac{1}{W} - 1) = \frac{8}{3}$$

$$\frac{1}{W} - 1 + 1 - W = \frac{8}{3}$$

$$\frac{1}{W} - W = \frac{8}{3}$$

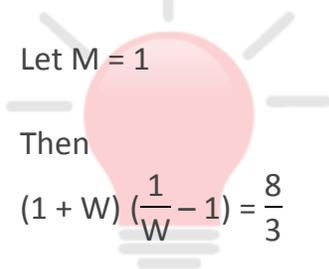By solving this,

$$W = \frac{1}{3}$$

$$M : W = 1 : \frac{1}{3} = 3 : 1 \text{ W is less than M by}$$

$$\frac{3 - 1}{3} \times 100\% = 66.66\%$$

Hence, option B is correct.