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Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

Bank PO Maths Quiz 26

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

1. Prakash and Vikash together can do a work in $(120/7)$ days. Lokesh, who is 20% less efficient than Vikash does the work alone in 50 days. In how many days will Prakash alone do the work completely?

- A. 50 days B. 40 days C. 25 days D. 32 days E. None of these

2. A solid cone is cut perpendicularly from the middle. If the height and volume of the whole solid cone before cut was $4\sqrt{3}$ cm and $64\sqrt{3}$ cm³ respectively, then find the total surface area of one of the cut portion. [Use $\pi = 3$]

- A. $19\sqrt{3}(4\sqrt{3} + 1)$ cm² B. $16\sqrt{3}(3\sqrt{3} + 1)$ cm² C. $18\sqrt{3}(5\sqrt{3} - 2)$ cm² D. $16(3\sqrt{3} + 1)$ cm² E. None of these

3. Mixture A contains milk and water in the ratio of 7 : 2, while mixture B contains water and milk in the ratio of 1 : 4. If the quantity of milk in both the mixtures is same and the quantity of water in mixture A is 8 litres more than the quantity of water in mixture B, then find the total quantity of mixture A.

- A. 315 litres B. 243 litres C. 288 litres D. 360 litres E. 230 litres

4. P and Q can do a work alone in 28 days and 18 days. Q started working before 3 days of the completion of the work and P worked only for 7 days. Another person R worked for all days and total work done in 14 days. What would be the number of days taken by all three to complete the work if they start working together and do the work till completion?

- A. $8\frac{9}{67}$ days B. $7\frac{35}{67}$ days C. $6\frac{3}{11}$ days D. $8\frac{35}{72}$ days E. None of these

5. A bus reaches point Q from point P 30 minutes earlier than normal time if it travels with speed of 70 km/h. If the bus travels with speed of 50 km/h then it reaches point Q 42 minutes later than the normal time. Find the time taken by the bus to cover 440 km with normal speed.

- A. 7 hr 30 min. B. 7 hr 20 min C. 6 hr 45 min. D. 8 hr 50 min. E. 6 hr 40 min.

6. Time taken by pipe B to fill the tank is 1.5 times of the time taken by the pipe A to fill the tank. Pipe C empties the full tank in 20 minutes while tank is filled completely in $(45/4)$ minutes if all pipes are opened together. If pipe A is opened for first 5 minutes and then pipe B is opened and pipe C is opened after 7 minutes of pipe A, then find the time taken to fill the tank.

- A. $10\frac{9}{22}$ minutes B. $12\frac{9}{22}$ minutes C. $10\frac{7}{16}$ minutes D. $12\frac{7}{16}$ minutes E. $8\frac{14}{31}$ minutes

7. The average number of articles sold by a shopkeeper from Monday to Saturday was 118. The average number of articles sold by shopkeeper from Wednesday to Sunday was 109 and the number of articles sold on Sunday was 143. The number articles sold on Tuesday was twice the number of articles sold on Monday. What is the difference between the number of articles sold on Tuesday and number of articles sold on Sunday?

- A. 61 B. 74 C. 53 D. 67 E. 19

8. Mr. Prabhakar distributed 65% of the money he had between his daughter and son in the ratio 6:7 respectively. The son and the daughter deposited the amount received in a scheme offering 8% simple interest and 7% simple interest for five years respectively. Find the amount left with Mr. Prabhakar if the difference in the interests earned by the son and the daughter after five years is Rs. 630.

- A. Rs. 7000 B. Rs. 6300 C. Rs. 5600 D. Rs. 4900 E. None of these

9. Length of a rectangular park is 24 m more than the breadth of the park. A path of 3 m is made inside the park around the boundary of the park. If the area of the path is 468 m² then find the cost of fencing the inner and outer boundary of the path at Rs. 4 per m.

- A. Rs. 1272 B. Rs. 1248 C. Rs. 1374 D. Rs. 1360 E. None of these

10. 10 years ago, age of Ankur was thrice the age of Pankaj and 10 years hence the age of Ankur will be twice the age of Pankaj. Find by how many years is Ankur older than Pankaj?

- A. 42 years B. 45 years C. 38 years D. 35 years E. 40 years

Correct Answers:

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

Explanations:

1. Let, efficiency of Prakash = 'x' units per day

Total work = LCM of $\frac{120}{7}$ and 50 = 600 units

So, efficiency of Lokesh = $\frac{600}{50} = 12$ units per day

Therefore, efficiency of Vikash = $\frac{12}{0.8} = 15$ units per day

So, efficiency of Prakash and Vikash together = $\frac{600}{120/7} = 35$ units per day

Therefore, efficiency of Prakash = $35 - 15 = 20$ units per day

Required time = $\frac{600}{20} = 30$ days

Hence, option E is correct.

2. Given, volume of the solid cone = $64\sqrt{3} \text{ cm}^3$

Height of cone = $4\sqrt{3}$

So, $\frac{1}{3} \times \pi r^2 h = 64\sqrt{3}$

$$\Rightarrow \frac{1}{3} \times 3 \times r^2 \times 4\sqrt{3} = 64\sqrt{3}$$

$$\Rightarrow r^2 = 16$$

$$\Rightarrow r = 4 \text{ cm}$$

Radius of solid cone = 4 cm

Diameter of base circular part of solid cone = 8 cm

Slant height of solid cone = $\sqrt{4^2 + 4\sqrt{3}^2} = \sqrt{16 + 48} = 8$ cm

So, total curved surface area of the cut portion = $(\pi r l \div 2) + (\pi r^2 \div 2) + (\text{Area of the equilateral triangle with side 8 cm})$

$$= \{(3 \times 4 \times 8) \div 2\} + \{(3 \times 4^2) \div 2\} + \left(\frac{\sqrt{3}}{4} \times 8^2\right)$$

$$= 96 + 48 + 16\sqrt{3} = (144 + 16\sqrt{3}) \text{ cm}^2$$

$$= 16\sqrt{3}(3\sqrt{3} + 1) \text{ cm}^2$$

Hence, option B is correct.

3. Let the quantity of milk and water in mixture A be $7x$ liters and $2x$ liters, respectively. And, let the quantity of milk and water in mixture B be $4y$ liters and y liters, respectively.

According to question,

$$7x = 4y$$

$$y = \frac{7x}{4} \dots\dots(i)$$

$$\text{And, } 2x - y = 8$$

$$\Rightarrow 2x - \frac{7x}{4} = 8 \text{ (using eq. (i))}$$

$$\Rightarrow 8x - 7x = 32$$

$$\Rightarrow x = 32$$

So, the quantity of mixture A = $7x + 2x = 9x$

$$= 9 \times 32 = 288 \text{ litres}$$

Therefore, the quantity of mixture A is 288 litres.

Hence, option C is correct.

- 4.

$$\text{Work done by P in one day} = \frac{1}{28}$$

$$\text{Work done by P in 7 days} = \frac{7}{28} = \frac{1}{4}$$

$$\text{Work done by Q in one day} = \frac{1}{18}$$

$$\text{Work done by Q in 3 days} = \frac{3}{18} = \frac{1}{6}$$

$$\text{Work done by R in 14 days} = 1 - \left(\frac{1}{4} + \frac{1}{6}\right) = 1 - \frac{6+4}{24} = \frac{14}{24}$$

$$\text{Work done by R in one day} = \frac{1}{24}$$

Time taken by R alone to do the work = 24 days

$$\text{Work done by all three in one day} = \left(\frac{1}{28} + \frac{1}{18} + \frac{1}{24}\right) = \frac{18 + 28 + 21}{504} = \frac{67}{504}$$

$$\text{Reqd. time} = \frac{504}{67} = 7 \frac{35}{67} \text{ days}$$

Hence, option B is correct.

5. Let, the normal time taken = 't' hrs

And, distance between point P to point Q = 'd' km

$$\text{So, } 70 \times \left(t - \frac{1}{2}\right) = d \text{(i)}$$

$$\text{And, } 50 \times \left(t + \frac{7}{10}\right) = d \text{(ii)}$$

From (i) and (ii)

$$70 \times \left(t - \frac{1}{2}\right) = 50 \times \left(t + \frac{7}{10}\right)$$

$$\Rightarrow 70t - 35 = 50t + 35$$

$$\Rightarrow 70t - 50t = 70$$

$$\Rightarrow 20t = 70$$

$$\Rightarrow t = 3.5 \text{ hours}$$

$$\text{Distance} = 70 \times \left(t - \frac{1}{2}\right) = 210 \text{ km}$$

$$\text{Normal speed of bus} = \frac{210}{3.5} = 60 \text{ km/h}$$

$$\text{Reqd. time} = \frac{440}{60} = 7 \text{ hr } 20 \text{ min}$$

Hence, option B is correct.

6. Let, time taken by pipe A to fill the tank = x minutes

Then, time taken by pipe B to fill the tank = 1.5x minutes

$$\text{So, } \frac{1}{x} + \frac{1}{1.5x} - \frac{1}{20} = \frac{4}{45}$$

$$\Rightarrow \frac{1.5 + 1}{1.5x} = \frac{4}{45} + \frac{1}{20}$$

$$\Rightarrow \frac{2.5}{1.5x} = \frac{16 + 9}{180}$$

$$\Rightarrow x = \frac{180 \times 25}{25 \times 15}$$

$$\Rightarrow x = 12$$

Total capacity of tank = LCM of 12, 18 and 20 = 180 units

So, part of tank filled by pipe A in 5 minutes = $\frac{180}{12} \times 5 = 75$ units

And, part of tank filled by pipe A and pipe B in 2 minutes = $\frac{180}{12} \times 2 + \frac{180}{18} \times 2 = 30 + 20 = 50$ units

Total part of the tank which is filled = $75 + 50 = 125$ units

Remaining part = $180 - 125 = 55$ units

Part of tank emptied by pipe C in one minutes = $\frac{180}{20} = 9$ units

Time taken to fill 55 units of tank = $\frac{55}{15 + 10 - 9} = \frac{55}{16} = 3\frac{7}{16}$ minutes

So, total time taken to fill the tank = $7 + 3\frac{7}{16} = 10\frac{7}{16}$ minutes

Hence, option C is correct.

- 7.** Total number of articles sold from Monday to Saturday = $118 \times 6 = 708$
Total number of articles sold from Wednesday to Sunday = $109 \times 5 = 545$
Total number of articles sold on Sunday = 143
Total number of articles sold from Wednesday to Saturday = $545 - 143 = 402$
Total number of articles sold in Monday and Tuesday together = $708 - 402 = 306$
Let, total number of articles sold on Monday = x
Then, total number of articles sold on Tuesday = $2x$
So, $x + 2x = 306$
 $\Rightarrow 3x = 306$
 $\Rightarrow x = \frac{306}{3}$

 $\Rightarrow x = 102$
So, total number of articles sold on Tuesday = $2x = 204$
Required difference = $204 - 143 = 61$
Hence, option A is correct.

8. Let the amount of money Mr. Prabhakar had initially = Rs. x

Amount distributed between the son and the daughter = Rs. $0.65x$

$$\text{Amount received by the daughter} = \frac{0.65x \times 6}{13} = \text{Rs. } 0.3x$$

$$\text{Amount received by the son} = \frac{0.65x \times 7}{13} = \text{Rs. } 0.35x$$

$$\text{Interest earned by the son} = 0.35x \times 0.08 \times 5 = \text{Rs. } 0.14x$$

$$\text{Interest earned by the daughter} = 0.3x \times 0.07 \times 5 = \text{Rs. } 0.105x$$

$$\text{According to question: } 0.14x - 0.105x = 630$$

$$0.035x = 630$$

$$x = 18000$$

$$\text{So the amount left with Mr. Prabhakar} = 0.35 \times 18000 = \text{Rs. } 6,300$$

Hence, option B is correct.

9. Let, breadth of the park = x m

And, length of the park = $(x + 24)$ m

$$\text{So, } (x + 24) \times x - (x + 18) \times (x - 6) = 468$$

$$\Rightarrow x^2 + 24x - x^2 - 18x + 6x + 108 = 468$$

$$\Rightarrow 12x = 360$$

$$\Rightarrow x = 30$$

So, breadth of the park = 30 m

And, length of the park = 54 m

$$\text{Part which has to be fenced} = 2 \times (54 + 30) + 2 \times (48 + 24) = 168 + 144 = 312 \text{ m}$$

$$\text{Required cost} = 312 \times 4 = \text{Rs. } 1248$$

Hence, option B is correct.

10. Let, present age of Ankur = x years

And, present age of Pankaj = y years

$$\text{So, } x - 10 = 3 \times (y - 10)$$

$$\Rightarrow x = 3y - 20 \dots\dots\dots(i)$$

$$\text{And, } x + 10 = 2 \times (y + 10)$$

$$\Rightarrow 3y - 20 + 10 = 2y + 20$$

$$\Rightarrow y = 40 - 10$$

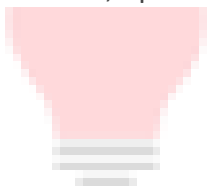
$$\Rightarrow y = 30$$

Present age of Pankaj = 30 years

Present age of Ankur = $x = 3y - 20 = 90 - 20 = 70$ years

So, Ankur is 40 years older than Pankaj.

Hence, option E is correct.



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