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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 28

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

1. A cuboidal container having length, breadth and volume as 16 m, 13 m and 2080 m^3 respectively is completely filled with water. A rod which has the shape of cylinder is immersed completely into the container in 55 sec due to which water flows out at the rate of 7 m^3 per sec through an outlet pipe present in the container. Find the radius of the rod, if height of the rod is same as the height of cuboidal container.

A. 5.6 m   B. 4.2 m   C. 3.5 m   D. 2.1 m   E. None of these

2. Two pipes P and Q together can fill a tank in 35/6 minutes. Another two pipes i.e. pipe R having efficiency twice of pipe P and pipe S having efficiency half of pipe Q can together fill the same tank in 140/33 minutes. Find the ratio of the time taken by pipe P and the time taken by pipe Q alone to fill the tank.

A. 7 : 9   B. 3 : 4   C. 5 : 7   D. Can't be determined   E. None of these

3. Harish and Shivam together started a business with total investment of Rs. 2 lakh. The amount invested by Harish is 50% more than that of Shivam. If both Harish and Shivam increased their investments by 20% and 30% respectively in the next year and there is profit of Rs. 33600 at the end of second year, then find the profit of Shivam.

A. Rs. 13800   B. Rs. 19200   C. Rs. 12000   D. Rs. 18200   E. Rs. 14900

4. A container contains mixture of water and alcohol in the ratio 9 : 4 respectively. A person sold some mixture at Rs. 15 per litre and earned Rs. 390 and then added 4 litres of alcohol in the mixture and the ratio of water and alcohol became 2 : 1 respectively. Find the amount of water present in the container initially.

A. 90 litres   B. 180 litres   C. 45 litres   D. 120 litres   E. 100 litres

5. Satyam and Shubham together can do the twice of a work in 12 days and Pawan alone can do the same work in 5 days. Pawan is thrice as efficient as Satyam and Satyam takes 5 more days than Shubham to do the work alone. In how many days can Shubham alone do the work?

A. 15 days   B. 8 days   C. 5 days   D. 7 days   E. 10 days

6. The present average age of five members of a family is 32 years. One of the male member of the family get married and age of his wife is 26 years. What will be average age of the family after 6 years if a baby was born after one year of marriage?

A. 32.43 years   B. 28.56 years   C. 29.43 years   D. 37 years   E. 30 years

7. One year ago, the ratio of cost price of article A to article B was 10 : 9. The ratio of cost price of last year to present year of both articles A and B are 25 : 29 and 9 : 11, respectively. If the total cost price of both articles in present year is Rs. 113000, then find the present cost price of article B.

A. Rs. 55000   B. Rs. 48000   C. Rs. 42600   D. Rs. 58000   E. None of these

8. Preety gave equal amount of money to Sweety and Mousami at simple interest and at compound interest respectively having same rate of interest. After two years, the interest received by Preety from Sweety and Mousami was in the ratio 25:27, respectively. At what rate of interest, the amount of money was given by Preety?

A. 24%   B. 20%   C. 15%   D. 16%   E. 12%

9. P and Q are two points which are 120 km apart. A boat having speed 25 km/h in still water was going against the stream from point P to point Q. After travelling 80 km, the speed of the stream was increased by 4 km/h due to flood and due to this, the boat had reached point Q 30 minutes later. What was the initial speed of the stream?

A. 4 km/h   B. 3 km/h   C. 5 km/h   D. 6 km/h   E. 2 km/h

10. P and Q together can do a work in 15/2 days while P and R together can complete the same work in 21/4 days. P works 'x' days with B and 'y' days with C. If in (x + y) days, double work has been completed, then find the value of 'x'. [Given (x + y) = 12]

A. 5 days   B. 8 days   C. 4 days   D. 7 days   E. 3 days

Correct Answers:

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

Explanations:

1. Height of cuboidal container

$$= \frac{2080}{16 \times 13} = 10 \text{ m} = \text{height of rod}$$

Volume of water flowed out = 7 × 55 = 385 m³ = volume of cylinder

So, $\pi r^2 h = 385$

$$\Rightarrow \frac{22}{7} \times r^2 \times 10 = 385$$

$$\Rightarrow r^2 = \frac{385 \times 7}{22 \times 10}$$

$\Rightarrow r^2 = 12.25$

$\Rightarrow r = 3.5 \text{ m}$

Hence, option C is correct.

2. Let time taken by pipe P and pipe Q alone to fill the tank be 'x' minutes and 'y' minutes, respectively.

Part of the tank filled by pipe P and pipe Q together in one minute $= \frac{1}{x} + \frac{1}{y} = \frac{x + y}{xy}$

Capacity of tank $= \frac{(35/6) \times (x + y)}{xy} = \frac{35 \, (x + y)}{6xy}$

Part of tank filled by R and S together in one minute $= \frac{2}{x} + \frac{1}{2y} = \frac{4y + x}{2xy}$

Capacity of tank $= \frac{(140/33) \times (x + 4y)}{2xy} = \frac{140 \, (x + 4y)}{66xy}$

So, $\frac{35 \, (x + y)}{6} = \frac{140 \, (x + 4y)}{66}$

$\Rightarrow 11(x + y) = 4(x + 4y)$

$\Rightarrow 11x - 4x = 16y - 11y$

$\Rightarrow 7x = 5y$

$\Rightarrow \frac{x}{y} = \frac{5}{7}$

$\Rightarrow x : y = 5 : 7$

Hence, option C is correct.

3. Let amount invested by Shivam is Rs. x

Then, amount invested by Harish will be Rs. 1.5x

So, x + 1.5 x = 200000

$\Rightarrow$ x = 80000

Amount invested by Shivam = Rs. 80000

Amount invested by Harish = Rs. 120000

Ratio of investment of Harish and Shivam at the end of 2 year

= 120000 + 120% of 120000: 80000 + 130% of 80000

= 264000 : 184000 = 33 : 23

Profit of Shivam = $\dfrac{23}{56}$ × 33600 = Rs. 13800

Hence, option A is correct.

4. Let amount of water and alcohol initially was 9x litres and 4x litres

Total amount of mixture sold = $\dfrac{390}{15}$ = 26 litres

So, amount of water sold = $\dfrac{9}{13}$ × 26 = 18 litres

And, amount of alcohol sold = 8 litres

According to question,

$\dfrac{9x - 18}{4x - 4} = \dfrac{2}{1}$

$\Rightarrow$ 9x – 18 = 8x – 8

$\Rightarrow$ x = 10

So, amount of water present initially = 90 litres

Hence, option A is correct.

5. Time taken by Satyam and Shubham together to do the work = 6 days.(In the question it is given twice the work is done in 12 days so one work will be done in 6 days)

Let time taken by Shubham to do the work be x days

Then, time taken by Satyam to do the work = (x + 5) days

Part of work done by Satyam and Shubham together in one day

$$= \frac{1}{x} + \frac{1}{x + 5} = \frac{2x + 5}{x(x + 5)}$$

Total work = $6 \times \dfrac{2x + 5}{x(x + 5)}$

Part of work done by Pawan in one day = $\dfrac{3}{x + 5}$

Total work = $5 \times \dfrac{3}{x + 5}$

So, $6 \times \dfrac{2x + 5}{x(x + 5)} = 5 \times \dfrac{3}{x + 5}$

$\Rightarrow 12x + 30 = 15x$

$\Rightarrow x = 10$

So, Shubham alone can do the work in 10 days

Hence, option E is correct.
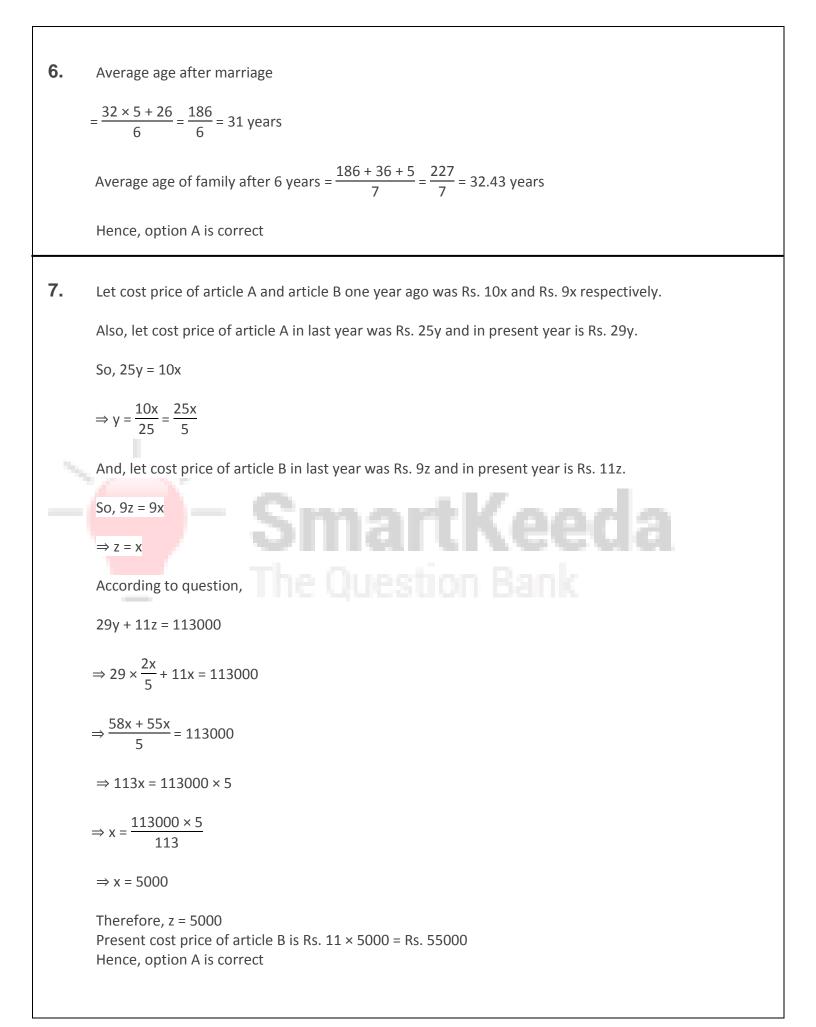
Alternate Solution:-

Pawan can alone do the work in 5 days.

Pawan is thrice as efficient as Satyam so time taken by Satyam to alone do the work = 15 days.

Satyam takes 5 days more than Shubham to complete the work alone .

So time taken by Shubham to complete the work alone = 15 - 5 = 10 days

Hence option E is correct.

6. Average age after marriage

$$= \frac{32 \times 5 + 26}{6} = \frac{186}{6} = 31 \text{ years}$$

Average age of family after 6 years $= \dfrac{186 + 36 + 5}{7} = \dfrac{227}{7} = 32.43$ years

Hence, option A is correct

7. Let cost price of article A and article B one year ago was Rs. 10x and Rs. 9x respectively.

Also, let cost price of article A in last year was Rs. 25y and in present year is Rs. 29y.

So, 25y = 10x

$$\Rightarrow y = \frac{10x}{25} = \frac{25x}{5}$$

And, let cost price of article B in last year was Rs. 9z and in present year is Rs. 11z.

So, 9z = 9x

$$\Rightarrow z = x$$

According to question,

29y + 11z = 113000

$$\Rightarrow 29 \times \frac{2x}{5} + 11x = 113000$$

$$\Rightarrow \frac{58x + 55x}{5} = 113000$$

$$\Rightarrow 113x = 113000 \times 5$$

$$\Rightarrow x = \frac{113000 \times 5}{113}$$

$$\Rightarrow x = 5000$$

Therefore, z = 5000
Present cost price of article B is Rs. 11 × 5000 = Rs. 55000
Hence, option A is correct

8. Let principle amount is Rs. p and rate of interest is r%

Amount returned by Sweety to Preety = $\dfrac{p \times r \times 2}{100} = \dfrac{pr}{50}$

And, amount returned by Mousami to Preety = $p \times \left\{\left(1 + \dfrac{r}{100}\right)^2 - 1\right\}$

According to question,

$\dfrac{pr}{50} : p \times \left\{\left(1 + \dfrac{r}{100}\right)^2 - 1\right\} = 25 : 27$

$\Rightarrow \dfrac{r}{50} : \left\{\left(1 + \dfrac{r}{100}\right)^2 - 1\right\} = 25 : 27$

$\Rightarrow \dfrac{r}{50} : \left(\dfrac{r^2}{10000} + 1 + \dfrac{2r}{100} - 1\right) = 25 : 27$

$\Rightarrow \dfrac{r}{50} : \dfrac{(r^2 + 200r)}{10000} = 25 : 27$

$\Rightarrow \dfrac{r}{50} : \dfrac{r(r + 200)}{10000} = 25 : 27$

$\Rightarrow 1 : \dfrac{r + 200}{200} = 25 : 27$

$\Rightarrow \dfrac{200}{r + 200} = \dfrac{25}{27}$

$\Rightarrow 216 = r + 200$

$\Rightarrow r = 16$

Hence, option D is correct.

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9. Let speed of stream be x km/h

Increased speed of stream = (x + 4) km/h

So, $\left\{\dfrac{80}{25 - x} + \dfrac{40}{25 - (x + 4)}\right\} - \dfrac{120}{25 - x} = \dfrac{1}{2}$

$\Rightarrow \dfrac{40}{21 - x} - \dfrac{40}{25 - x} = \dfrac{1}{2}$

$\Rightarrow \dfrac{25 - x - 21 + x}{(21 - x)(25 - x)} = \dfrac{1}{80}$

$\Rightarrow 320 = 525 - 46x + x^2$

$\Rightarrow x^2 - 46x + 205 = 0$

$\Rightarrow x^2 - 41x - 5x + 205 = 0$

$\Rightarrow x(x - 41) - 5(x - 41) = 0$

$\Rightarrow (x - 5)(x - 41) = 0$

$\Rightarrow x = 5, 41 \quad$ Since, $x \neq 41$

So, x = 5.

Hence, option C is correct.

10.   Part of work completed by A and B together in one day

$$= \frac{2}{15}$$

Part of work completed by A and C together in one day $= \frac{4}{21}$

Therefore, $\frac{2x}{15} + \frac{4y}{21} = 2$

$\Rightarrow$ 7x + 10y = 105 ....(i)

And, x + y = 12

y = (12 − x) ....(ii)

Substitute value of (ii) in (i), we get

7x + 10 × (12 − x) = 105

7x + 120 − 10x = 105

3x = 15

x = 5

Hence, option A is correct.