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SBI PO PRE MATHS QUIZ 17

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

1. The average age of a family of 5 members was 32 years. 3 years later, the oldest member of the family died at the age of 60. On the same day, a child was born in the family. What would be the average age of the family 20 years after the death of the oldest member?

A. 52 years   B. 43 years   C. 47 years

D. 50 years   E. 55 years

2. Amit, Shubham, Rakesh and Ramesh are 4 brothers. Their father divided his property among his four sons such that Amit share is 40% more than Ramesh's share. Rakesh got 20% of the total property and his share is 5/8 times the share of Shubham. What percent of total property did Amit get?

A. 24%   B. 28%   C. 21%

D. 32%   E. 18%

3. A man deposited Rs. 40,000 in a bank at 10% per annum, compounded annually for two years. He wanted to keep the amount deposited at the end of the two years, but there was a new law in place that for any amount in the account that date onwards, any annual interest greater than Rs.2,500 would be taxed. Also, the rate of interest was reduced to 8% per annum.

What amount should he remove from his account to ensure that he just avoids paying the tax? Assume that his account had zero balance before he deposited Rs. 40,000.

A. Rs. 31,250   B. Rs. 24,000   C. Rs. 21,684

D. Rs. 18,050   E. Rs. 17,150

4. Find the height of equilateral triangle if its area is 36√3 m2?

A. 8√3 m   B. 5√3 m   C. 4√3 m

D. 6√3 m   E. 7√3 m

5. By selling a car for Rs 405000 a man gets 10% loss, and then at what price (in Rs) should he sell to gain 20%?

A. 525000   B. 480000   C. 540000

D. 490000   E. 600000

6. Two trains are running in same direction at speed of 72 km/h and 102 km/h, their lengths are 550 m and 350 m respectively. What is the time taken (in seconds) by faster train to cross the slower train?

A. 114   B. 96   C. 90

D. 108   E. 102

7. Samantha can do a piece of work in 22 days and Nimisha can do same work in 33 days. After work together for 4 days, Samantha stops working. How many days Nimisha will take to complete the work that is left?

A. 18 days   B. 23 days   C. 17 days

D. 19 days   E. 11 days

8. P and Q walk at average speed of 8 km/hr and 12 km/hr respectively. If P walks in West direction and Q in south direction beginning from the same position at the same time, what will be the minimum distance between the two after 5 hours?

A. 13 km   B. 8√13 km   C. 10√13 km

D. 20√13 km   E. 5√13 km

9. Paridhi scored an average marks of 62 in seven subjects – Signal & systems, Communication, Mathematics, Embedded systems, Microcontrollers, Networking and Microelectronics. If she scored 65, 73, 48, 56, 63 and 49 in Signal & systems, Communication, Mathematics, Embedded systems, Microcontrollers and Networking respectively, what was her score in Microelectronics?

A. 80   B. 82   C. 81

D. 83   E. 84

10. A shopkeeper sells 35% of his goods and recovers the cost price. If he continues to sell rest of the stock at the same price, what will be his profit percentage after selling the complete stock?

A. 148.55%   B. 157.45%   C. 144.28%

D. 156.67%   E. 185.71%

Correct answers:

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

Explanations:

1.

The average age of the family of 5 was 32 years. Hence, the sum of the ages of these 5 people must have been 32 × 5 = 160.

3 years later, each person will grow older by 3 years. Hence, the sum of the ages must be 160 + 15 = 175.

Now, the eldest member has died. So the sum of the ages of all the members of the family will become 175 – 60 = 115

20 years from now, each member will grow older by 20 years. Hence, the sum of the ages of 5 people will be 115 + 20 × 5 = 215

Hence, the average age of the family will be

$$\frac{215}{5} = 43 \text{ years}$$

Hence, option B is correct.

2.

Let the total property of their father be 100x

So, Rakesh will get 20x. Now Rakesh's share is 5/8 of the share of Shubham.

Hence, Shubham's share must be

$20x \times \dfrac{8}{5} = 32x$

Thus, their combined share is 52x

Hence, the combined share of Amit and Ramesh is 48x

Now we know that Amit's share is 40 % more than Ramesh's share

Thus, y + 1.4y = 48x

$\Rightarrow$ y = 20x

Hence, Amit's share will be 28x and Ramesh's share will be 20x

Thus, Amit gets 28% share in the property.

Hence, option B is correct.

3.

To just avoid paying tax, the interest for the third year should be exactly Rs. 2,500.

This interest is being calculated on the amount collected by the end of the second year i.e. just for one year.

For one year, simple and compound interest give the same value.

Hence, let the amount that gives exactly Rs. 2,500 as interest for 1 year at 8% be Rs. x.

$\therefore$ x = 2500 $\times$ $\dfrac{100}{8}$ = Rs. 31,250

Actual amount collected at 10% compounded annually for 2 years = 40000 $\times (1.1)^2$ = Rs. 48,400
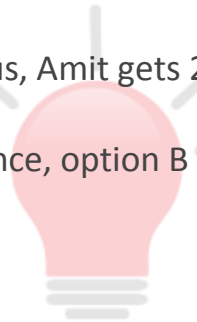
Hence, the amount that he should remove = 48000 − 31250 = Rs. 17,150

Hence, option E is correct.

4.

We know that,

Area of an equilateral triangle of side 'a' = $\dfrac{\sqrt{3}a^2}{4}$

$\Rightarrow 36\sqrt{3} = \dfrac{\sqrt{3}a^2}{4}$

$\Rightarrow a^2 = 144$

$\Rightarrow a = 12$ m

We know that,

Height of an equilateral triangle = $\dfrac{\sqrt{3}a}{2}$

$\Rightarrow$ Height of the equilateral triangle = $\dfrac{\sqrt{3} \times 12}{2}$ = 6 $\sqrt{3}$ m

∴ Height of the equilateral triangle = 6$\sqrt{3}$ m

Hence, option D is correct.

5.

Given Selling Price = 405000

Let us assume Cost Price of car is X

We know, Selling Price = Cost Price − Cost Price x loss

$\therefore$ 405000 = X $-$ (X $\times$ 10 %) = $\dfrac{9X}{10}$

$\therefore$ X = 450000

Cost Price = Rs. 450000

So, Selling Price to get 20% profit = 450000 + (450000 $\times$ 20%)

= 450000 + $\dfrac{450000 \times 20}{100}$ = 540000

Hence, option C is correct.

6.

Total distance to be covered = 550 + 350

= 900 m = $\dfrac{900}{1000}$ km.

Relative Speed = 102 $-$ 72 km/hr = 30 km/hr

$\therefore$ Time taken by train to cross = $\dfrac{\text{Distance}}{\text{Speed}}$

= $\dfrac{(900/1000)}{30}$ hr = $\dfrac{9}{300}$ $\times$ (60 $\times$ 60) sec = 108sec.

Hence, option D is correct.

7.

$\Rightarrow$ Samantha can do a piece of work in 22 days

$\Rightarrow$ Samantha's 1 day work = $\dfrac{1}{22}$ ....(i)

⇒ Nimisha can do a piece of work in 33 days

⇒ Nimisha's 1 day work = $\dfrac{1}{33}$ **............(ii)**

⇒ Now Samantha and Nimisha's 1 day work
= $\dfrac{1}{22} + \dfrac{1}{33} = \dfrac{5}{66}$

⇒ Samantha and Nimisha's 4day work
= $\dfrac{5}{66} \times 4 = \dfrac{10}{33}$

⇒ Remaining work = $1 - \dfrac{10}{33} = \dfrac{23}{33}$

⇒ Nimisha can do 1 piece of work in 33 days

∴ Nimisha can do $\dfrac{23}{33}^{th}$ work in $33 \times \dfrac{23}{33} = 23$ days

Hence, option B is correct.

8.

⇒ In two hours,

⇒ Distance travelled by A by going in west direction = 5 × 8 = 40 km

⇒ Distance travelled by B by going to south direction = 5 × 12 = 60 km

⇒ Now by using Pythagoras theorem,

⇒ Minimum distance = √ (40² + 60²) = √5200 = 20√13

Hence, option D is correct.

9.

⇒ Let number in Microelectronics be x

⇒ Average = $\dfrac{\text{sum of marks}}{\text{number of subjects}}$

⇒ 62 = $\dfrac{65 + 73 + 48 + 56 + 63 + 49 + x}{7}$

⇒ 434 = 354 + x

⇒ x = 80

∴ Paridhi scored 80 in Microelectronics

Hence, option A is correct.

10.

⇒ Given: 35% of SP = 100% of CP

⇒ 1% of SP = $\dfrac{100\%}{35\% \text{ of CP}}$

⇒ 100% of SP = $\dfrac{100}{35}$ × 100% of CP

⇒ 100% of SP = $\dfrac{2000\ \% \text{ of CP}}{7}$

∴ Profit = SP − CP = $\dfrac{2000}{7}$ − 100 = $\dfrac{1300}{7}$ % = 185.71%

Hence, option E is correct.