Mphasis Aptitude Questions & Answers

448 ml of mixture A containing milk and water in the ratio of 9:5, respectively is mixed with ‘x’ ml of mixture B containing milk and water in the ratio of 11:10, respectively. If the ratio of milk to water in the final mixture is 3:2, then find the value of x.

a) 252
b) 210
c) 336
d) 294

Correct Choice: a

Solution

Quantity of milk in mixture A = 9/14 × 448 = 288 ml

Quantity of water in mixture A = 448 – 288 = 160 ml

Let amount of milk and water in mixture B is 11y and 10y respectively.

So, (288 + 11y)/(160 + 10y) = 3/2

Or, 576 + 22y = 480 + 30y

Or, 8y = 96

Or, y = 12

So, x = 21y = 21 × 12 = 252

Hence, option a.

2.A and B together can complete 75% of a work in 33 days while A, B and C together can complete the whole work in 26 days. If ‘C’ is 12.5% more efficient than B then find the time taken by A and C together to complete 70% of the work.

a) 29.2 days
b) 28.4 days
c) 27.8 days

d) None of these

Correct Choice: d

Solution

Total time taken by A and B together to complete the whole work = 33/0.75 = 44 days

Let total amount of work = 572 units (LCM of 44 and 26)

Efficiency of (A + B) = 572/44 = 13 units per day

Efficiency of (A + B + C) = 572/26 = 22 units per day

Efficiency of C = 22 – 13 = 9 units per day

Efficiency of B = 9/1.125 = 8 units per day

Efficiency of A = 13 – 8 = 5 units per day

Desired Time = (0.70 × 572)/14 = 28.6 days

Hence, option d.

3. A certain sum of money at a certain rate of compound interest compounded annually becomes Rs. 12500 after 2 years and Rs. 19531.25 after 4 years. Find the rate of compound interest.

a) 20%
b) 15%
c) 17.5%
d) 25%

Correct Choice: d

Solution

Let the principal amount is Rs. P and the rate of compound interest is R% p.a.

So, $P(1 + R/100)^2 = 12500$……..(1)

And, $P(1 + R/100)^4 = 19531.25$……..(2)

On dividing equation (2) by equation (1), we get

$(1 + R/100)^2 = 19531.25/12500 = 1.5625$

Or, $(1 + R/100) = 1.25$

Or, $R/100 = 0.25$

Or, $R = 25\%$

Hence, option d.

4. Ratio of speed of a boat in still water to speed of stream is 9:2. The boat travels a distance of (D + 40) km in downstream and D km in upstream. If the ratio of time taken by the boat to travel in upstream and in downstream is 4:3, respectively then find the value of D.

a) 220
b) 240
c) 212
d) 224

Correct Choice: d

Solution

Let speed of boat in still water and speed of stream is 9x km/h and 2x km/h respectively.

So, Upstream speed = 9x – 2x = 7x km/h

And, downstream speed = 9x + 2x = 11x km/h

According to question;

{D/7x}/{(D + 40)/11x} = 4/3

Or, 33D = 28D + 1120

Or, 5D = 1120

Or, D = 224

Hence, option d.

5. Gunja marked an article 50% above the cost price and sold it after giving a discount of 20%. Had she bought the article for Rs. 150 less and sold it for Rs. 240 more then she would have made a profit of 60%. New selling price is how much percent more than original selling price.

a) 20%
b) 25%
c) 15%
d) None of these

Correct Choice: d

Solution

Let cost price of the article is Rs. x

Marked price of the article = 1.50 × x = Rs. 1.5x

Selling price of the article = 0.80 × 1.5x = Rs. 1.2x

According to question;

1.60 × (x – 150) = 1.2x + 240

1.6x – 240 = 1.2x + 240

Or, 0.4x = 480

Or, x = 1200

Original selling price = 1.2 × 1200 = Rs. 1440

Desired percentage = 240/1440 × 100 = 16.67%

Hence, option d.

6. Ratio of ages of A and B, 8 years ago was 5:4 respectively. If present average age of B and C is 38 years and age of C after 24 years will be 20% more than age of A after 2 years. Find the ratio of present age of B to present age of C.

a) 9:10
b) 10:9
c) 9:8
d) 8:9

Correct Choice: b

Solution

Let age of A and B, 8 years ago was 5x years and 4x years respectively.

Present age of C = 'y' years

So, 4x + 8 + y = 38 × 2 = 76

Or, 4x + y = 68

And, y + 24 = 1.20 × (5x + 8 + 2)

Or, y + 24 = 6x + 12

Or, 68 – 4x + 24 = 6x + 12

Or, 10x = 80

Or, x = 8

So, present age of B = 8 × 4 + 8 = 40 years

Present age of C = 68 – 4 × 8 = 36 years

Desired ratio = 40:36 = 10:9

Hence, option b.

7. If $x^2 + 16x – 5 = 0$, then find the value of $5x/(x^2 – 9x – 5)$.

a) 1/7
b) 1/9
c) -1/3
d) -1/5

Correct Choice: d

Solution

$5x/(x^2 – 9x – 5)$

$= 5x/(x^2 + 16x – 5 – 25x)$

$= 5x/-25x = -1/5$

Hence, option d.

8. The average of 50 observations is 42. Later it was found that 46 was misread as 64. Find the correct average.

a) 41.64
b) 40.58
c) 39.88
d) 40.36

Correct Choice: a

Solution

Correct average = $\{(50 \times 42) – 64 + 46\}/50 = 41.64$

Hence, option a.

9. Find the value of $\{(2744)^{1/3} \times 25\} \div 7$.

a) 20
b) 30
c) 40
d) 50

Correct Choice: d

Solution

$\{(2744)^{1/3} \times 25\} \div 7$

$= (14 \times 25) \div 7 = 50$

Hence, option d.

10. Sourav invested Rs. 2500 on 30% p.a. compound interest, compounded annually for 2 years. He then gave 20% of the amount received at 40% p.a. simple interest for 3 years. Find the simple interest received.

a) Rs. 1242
b) Rs. 1014
c) Rs. 972
d) Rs. 1146

Correct Choice: b

Solution

Amount received at compound interest = $2500(1 + 30/100)^2$ = Rs. 4225

Interest received at simple interest = $(0.20 \times 4225 \times 40 \times 3)/100$ = Rs. 1014

Hence, option b.

11. For what least value of x, the number 203x88 is divisible by 36

a) 4
b) 6
c) 3

d) 2

Correct Choice: b

Solution

Since the number is divisible by 36 therefore, it has to be divisible by 9 and 4 both

The number formed by the last two digits is 88, therefore, the whole number is divisible by 4

For the number to be divisible by 9, the sum of the numbers should be divisible by 9

(2 + 0 + 3 + x + 8 + 8) = (21 + x)

Therefore, least number which will make the number divisible by 9 is 6.

Hence, option b.

12. The ratio of the perimeters of a rectangular and squared field is 7:6. Each side of the squared field is equal to the breadth of the rectangle. Find the length of the rectangular field if the area of the rectangular field is 4800 m^2.

a) 60 metres
b) 80 metres
c) 40 metres
d) 120 metres

Correct Chocie: b

Solution

Let the perimeters of the rectangular and squared field be 7x metres and 6x metres respectively

Therefore, breadth of the rectangular field = 6x/4 = 1.5x metres

Or, 2(l + b) = 7x

Or, l = 3.5x – 1.5x = 2x metres

According to the question,

2x × 1.5x = 4800

Or, x^2 = 1600

Or, x = 40 metres

Therefore, length of the rectangular field = 2x = 80 metres

Hence, option b.

13. The value (cos37° – sin53°) + (sec41° – cosec49°) + (tan78° – cot12°) + ($tan^2$56° – $sec^2$56°) is

a) 1
b) 0
c) -1
d) 2

Correct Choice: c

Solution

(cos37° – sin53°) + (sec41° – cosec49°) + (tan78° – cot12°) + ($tan^2$56° – $sec^2$56°)

= {cos37° – sin(90 – 37°)} + {sec41° – cosec(90 – 41°)} + {tan78° – cot(90 – 78°) + (-1)

= (cos37° – cos37°) + (sec41° – sec41°) + (tan78° – 78°) – 1

= -1

Hence, option c.

14. An article is marked up by 120% above its cost price and then sold for Rs. 1320 after giving 20% discount. Find the cost price of the article.

a) Rs. 600
b) Rs. 750
c) Rs. 960
d) Rs. 840

Correct Choice: b

Solution

Let the cost price of the article be Rs. ‘x’

According to the question,

2.2 × 0.8x = 1320

Or, x = 1320/1.76 = Rs. 750

Hence, option b.

15. Amar is 4 times more efficient than Amish. Both working together can complete the work in 12 days. Find the number of days taken by Amar to complete the work alone.

a) 16 days
b) 15.8 days
c) 12.5 days
d) 14.4 days

Correct Choice: d

Solution

Let the efficiency of Amish be x units/day

Therefore, efficiency of Amar = 4x + x = 5x units/day

Total work = (5x + x) × 12 = 72x units

Time taken by Amar to complete the whole work alone = 72x/5x = 14.4 days

Hence, option d.

16. In a bag there are coins of Rs. 1, Rs. 2, 25 paise and 50 paise in the ratio 4:2:5:3, respectively. If the total amount in the bag is Rs. 172. Find the difference between the number of Rs. 1 coins and 50 paise coins.

a) 16
b) 12
c) 18
d) 14

Correct Choice: a

Solution

Let the number of coins of Rs. 1, Rs. 2, 25 paise and 50 paise be 4x, 2x, 5x and 3x respectively

According to the question,

$4x + (2 \times 2x) + (5x/4) + (3x/2) = 172$

Or, $16x + 16x + 5x + 6x = 172 \times 4$

Or, $x = (172 \times 4)/43$

Or, $x = 16$

Required difference = $(4x – 3x) = x = 16$

Hence, option a.