

All Correct Answers Wrong Answers Not Attempted Questions

Q.1)

R's salary was decreased by 50% and subsequently increased by 50%. He has a loss of

Max Marks: 1

- A 0%
- B 2.5%
- C 0.25%
- D 25%

Correct Option

Solution: (D)

Solution: Single percentage change = $(a + b + \frac{ab}{100})\%$
 $= (-)50 + 50 + \frac{(-50)*50}{100} = (-)25\%$

Therefore, he has a loss of 25%.

Q.2)

Two liquids are mixed in the ratio 3:5 and the mixture is sold at Rs. 120 with a profit of 20%. If the second liquid is costlier than the first by Rs. 2 per liter, find the cost of the costlier liquid per liter.

Max Marks: 1

- A ₹ 92.30
- B ₹ 74.10
- C ₹ 101.25
- D ₹ 99.25

Correct Option

Solution: (C)

Solution: Cost price of the mixture = ₹ 100
 Therefore, $\frac{100}{(3+5)} = \frac{3}{5}$
 $\Rightarrow x = ₹ 99.25$
 Hence, the cost of the costlier liquid = ₹ 99.25 + ₹ 2 = ₹ 101.25

Q.3)

Find out the wrong number in the series: 2, 3, 10, 38, 172

Max Marks: 1

- A 172
- B 10
- C 38
- D 3

Correct Option

Solution: (C)

Solution: $2 * 1 + 1^2 = 3$
 $3 * 2 + 2^2 = 10$
 $10 * 3 + 3^2 = 39$
 $39 * 4 + 4^2 = 172$

Q.4)

Three rings complete 60, 36 and 24 revolutions in a minute. They start from a certain point in their circumference downwards. By what time they come together again in the same position?

Max Marks: 1

- A 5 s
- B 10 s
- C 15 s
- D 20 s

Correct Option

Solution: (A)

Solution: Time taken by each ring in one revolution are $\frac{60}{60}s$, $\frac{60}{36}s$ and $\frac{60}{24}s$ respectively.
 i.e., $1, \frac{5}{3}, \frac{5}{2}s$.
 Required time = LCM of $1, \frac{5}{3}, \frac{5}{2} = 5s$

B

6 s

C

8 s

D

1 s

Q.5)

A person travelled 25km by streamer, 40km by train and 30km by horse. It took 7h. If the rate of the train is 4 times that of the horse and 2 times that of the streamer. Find the rate of the horse.

Max Marks: 1

A

15 km/h

B

7½ km/h

Correct Option

Solution: (B)

Solution: Let the speed of steamer be $x \text{ km/h}$, then the speed of train = $2x \text{ km/h}$ and speed of horse = $\frac{x}{2} \text{ km/h}$.

Now, $\frac{25}{x} + \frac{40}{2x} + \frac{30}{\frac{x}{2}} = 7$

or $14x = 210$ and $x = 15 \text{ km/h}$

Hence, rate of horse = $\frac{15}{2} = 7\frac{1}{2} \text{ km/h}$

C

30 km/h

D

16 km/h

Q.6)

A train of length 150 m takes 10 s to pass over another train 100 m long coming from opposite direction. If the speed of the first train be 30 km/h, the speed of the second train is

Max Marks: 1

A

54 km/h

B

60 km/h

Correct Option

Solution: (B)

Solution: Relative Speed = $\frac{150+100}{10} \text{ m/s} = 25 \text{ m/s} = \frac{25 \times 60 \times 60}{1000} = 90 \text{ km/h}$

Therefore, the speed of the second train = $90 - 30 = 60 \text{ km/h}$

C

72 km/h

D

36 km/h

Q.7)

Out of three numbers, the first is twice the second and is half of the third. If the average of the three numbers is 56, the three numbers in order are

Max Marks: 1

A

48,96,24

B

48,24,96

Correct Option

Solution: (B)

Solution: Let the first number be x .

Second number = $\frac{x}{2}$, third number = $2x$

Therefore, Average of three numbers will be

$$\Rightarrow \frac{x+\frac{x}{2}+2x}{3} = 56$$

$$\Rightarrow \frac{7x}{6} = 56$$

$$\Rightarrow x = 48$$

Numbers are 48, 24, 96

C

96,24,48

D

96,48,24

Q.8)

On a certain sum of money the simple interest for 2 years is ₹ 200 at the rate of 7% per annum. The difference in Compound Interest (CI) and Simple Interest

Max Marks: 1

(SI) will be

A

₹ 7

Correct Option

Solution: (A)

Solution: The difference in CI and SI is given by $\left(\frac{P}{100}\right)^2$ for 2 years
Therefore, Difference = $\left(\frac{200 \times 1}{100}\right) = ₹ 7$

B

₹ 6

C

₹ 3.5

D

None of these

Q.9)

A man buys oranges at ₹ 5 a dozen and an equal number at ₹ 4 a dozen. He sells them at ₹ 5.50 a dozen and makes a profit of ₹ 50. How many oranges does he buy?

Max Marks: 1

A

30 dozens

B

40 dozens

C

50 dozens

Correct Option

Solution: (C)

Solution: Let he buys x dozen of oranges of each type.

Then, Cost Price of $2x$ dozen of oranges = ₹ $(5x + 4x) = ₹ 9x$
and selling price of $2x$ dozen of oranges = ₹ $5.5 * 2x = ₹ 11x$
Profit = $2x \Rightarrow 2x = 50$
Hence, he purchased 50 dozen oranges.

D

60 dozens

Q.10)

An employer reduces the number of his employees in the ratio 7:5 and increases their wages in the ratio 10:9. State whether his bill of total wages increases or decreases and in what ratio?

Max Marks: 1

A

Decrease 13:9

B

Decrease 14:9

Correct Option

Solution: (B)

Solution: Previous wage bill = $10 * 7 = 70$

New wage bill = $5 * 9 = 45$

Therefore, Wage bill will decrease in the ratio $70 : 45 = 14 : 9$

C

Increase 9:14

D

Increase 9:13

Q.11)

D sells his Laptop to G at a loss of 20% who subsequently sells it to H at a profit of 25%. H, after finding some defect in the laptop, returns it to G but could recover only ₹ 4.50 for every ₹ 5 he had paid. Find the amount of H's loss if D had paid ₹ 1.75 lakh for the laptop.

Max Marks: 2

A

₹ 3,500

B

₹ 2,500

C

₹ 17,500

Correct Option

Solution: (C)

Solution: Let the price of Laptop be ₹ 100.

D sells laptop to G at 20% loss, i.e., at ₹ 80.

Subsequently G sold it to H at a profit of 25%, i.e., at ₹ 100

H returns it to G at 90% ($\frac{9}{10} * 100$) of the amount at which he purchased, i.e., at ₹ 90.

So the loss for H corresponds to ₹ 10 when D buys the laptop at ₹ 100

Hence, H's loss would be ₹ 17,500 when D buys the laptop for ₹ 1,75,000.

D None of these

Q.12)

A cone, a hemisphere and a cylinder stand on equal bases and have the same height. What is the ratio of their volumes?

Max Marks: 2

A 2:1:3

B 2.5:1:3

C 1:2:3

Correct Option

Solution: (C)

Solution: As they stand on the same base so their radius is also the same.

$$\text{Then, volume of cone} = \frac{\pi r^2 h}{3}$$

$$\text{Volume of hemisphere} = \frac{2\pi r^3}{3}$$

$$\text{Volume of cylinder} = \pi r^2 h$$

$$\text{Ratio} = \frac{\pi r^2 h}{3} : \frac{2\pi r^3}{3} : \pi r^2 h$$

$$\Rightarrow \frac{1}{3} : \frac{2}{3} : 1$$

$$\Rightarrow h : 2r : 3h$$

Radius of hemisphere = Its height

So, $h : 2h : 3h \Rightarrow 1 : 2 : 3$

D 1.5:2:3

Q.13)

A dishonest grocer promises to sell pure butter at cost price, but he mixes it with adulterated fat and thereby gains 25%. Find the percentage of adulterated fat in the mixture assuming that the adulterated fat is freely available.

Max Marks: 2

A 20%

Correct Option

Solution: (A)

Solution: Let the cost price be ₹ 100 for the pure butter. He gains 25%, i.e., ₹ 25 by mixing the adulterated fat (which is free of cost). So we can say that the ratio of mixing is 1 : 4. Hence the percentage of adulterated fat is 20%.

B 25%

C 33.33%

D 40%

Q.14)

A rectangular pool 20 m wide and 60 m long is surrounded by a walkway of uniform width. If the total area of the walkway is 516 sq m, how wide, in metres, is the walkway?

Max Marks: 2

A 43

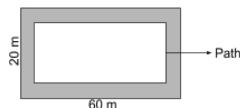
B 4.3

C 3

Correct Option

Solution: (C)

Solution:



Let the width of path be x metre.

Then, area of the path = 516 sq m

$$\Rightarrow (60 + 2x)(20 + 2x) - 60 * 20 = 516$$

$$\Rightarrow 1200 + 120x + 40x + 4x^2 - 1200 = 516$$

$$\Rightarrow 4x^2 + 160x - 516 = 0$$

$$\Rightarrow x^2 + 40x - 129 = 0$$

Using the answer choices, we get $x = 3$.

Q.15)

Max Marks: 2

The Bubna dam has four inlets. Through the first three inlets, the dam can be filled in 12 minutes; through the second, the third and the fourth inlet, it can be filled in 15 minutes; and through the first and the fourth inlet, in 20 minutes. How much time will it take all the four inlets to fill up the dam?

A 8 min

B 10 min

Correct Option

Solution: (B)**Solution:** Let the inlets be A, B, C and D.

$$\frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{1}{12}$$

$$\frac{1}{B} + \frac{1}{C} + \frac{1}{D} = \frac{1}{15}$$

$$\frac{1}{A} + \frac{1}{D} = \frac{1}{20}$$

On adding all the above equations we get,

$$2\left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}\right) = \frac{1}{12} + \frac{1}{15} + \frac{1}{20}$$

$$\Rightarrow 2\left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}\right) = \frac{5+4+3}{60}$$

$$\Rightarrow \left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}\right) = \frac{1}{10}$$

Therefore, Time taken by all the four inlets to fill up the dam is 10 min.

C Cannot be determined.

D None of these.

Q.16)

Max Marks: 2

The ratio of investments of two partners P and Q is 7:5 and the ratio of their profits is 7:10. If P invested the money for 5 months, find for how much time did Q invest the money?

A 7 months

B 10 months

Correct Option

Solution: (B)**Solution:** Let x be the no. of months for which Q invested the money.Then we can say that, $7 * 5 : 5 * x = 7 : 10$

$$\Rightarrow \frac{35}{5x} = \frac{7}{10}$$

$$\Rightarrow 35x = 350$$

$$\Rightarrow x = 10 \text{ months}$$

C 9 months

D 11 months

Q.17)

Max Marks: 2

Two types of milk having the rates of ₹ 8/kg and ₹ 10/kg respectively are mixed in order to produce a mixture having the rate of ₹ 9.20/kg. What should be the amount of the second type of milk if the amount of the first type of milk in the mixture is 20kg.

A 25kg

B 30kg

Correct Option

Solution: (B)**Solution:** Mixing ₹ 8/kg and ₹ 10/kg to get ₹ 9.20/kg we get the ratio of mixing is

$$(10 - 9.2) : (9.2 - 8) = 2 : 3$$

If the first milk is 20kg, then the total milk would be

$$\frac{20 \times 5}{2} = 50 \text{ kg}$$

Hence the second milk would be $50 - 20 = 30 \text{ kg}$.

C 40kg

D 20kg

Q.18)

Max Marks: 2

Two goats are tethered to the diagonally opposite vertices of a square field formed by joining the mid points of the adjacent sides of another square field of side $20\sqrt{2}$ meters. The inner square field is fenced on all sides and the goats are allowed to graze only inside the inner field. If their grazing ropes are of a length

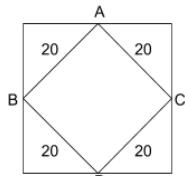
of $10\sqrt{2}$ meters each, find the total area grazed at by the two goats together.

A

$100\pi m^2$

Correct Option

Solution: (A)



Solution:

The length of rope of goat = $10\sqrt{2}$ m

Then the two goats will graze an area = Area of a semicircle with radius $10\sqrt{2}$ m.

So total area grazed = $\frac{\pi r^2}{2} = 100\pi m^2$

B

$50(\sqrt{2}-1)\pi m^2$

C

$100\pi(3-2\sqrt{2}) m^2$

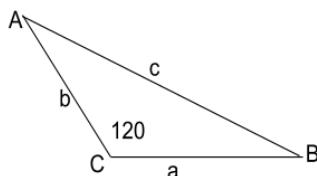
D

$200\pi(2-\sqrt{2}) m^2$

Q.19)

Max Marks: 2

Two people start walking on a road that diverge at an angle of 120° . If they walk at the rate of 3 km/h and 2 km/h respectively. Find the distance between them after 4 hours.



A

$4\sqrt{19}$ km

Correct Option

Solution: (A)

Solution: Distance after 4 hours = $AB = c$

$a = 3 * 4 = 12$; $b = 2 * 4 = 8$ and $\frac{a+b+c}{2} \Rightarrow \frac{12+8+c}{2} \Rightarrow (10 + \frac{c}{2})$

Area = $\sqrt{s(s-a)(s-b)(s-c)}$

Area = $\frac{1}{2}ab \sin 120^\circ$

Area = $48 * \frac{\sqrt{3}}{2} = 24\sqrt{3}$

As per question:

$$24\sqrt{3} = \sqrt{(10 + \frac{c}{2})(\frac{c}{2} - 2)(2 + \frac{c}{2})(10 - \frac{c}{2})}$$

On solving, we get $c = 4\sqrt{19}$ km

B

5 km

C

7 km

D

$8\sqrt{19}$ km

Q.20)

Max Marks: 2

If $f(n)$ = sum of all the digits of n , where n is a natural number, then what is the value of $f(101) + f(102) + f(103) + \dots + f(200)$?

A

1001

Correct Option

Solution: (A)

Solution: It simply asks, the no. of times each digit appears from 101 to 200

Unit digit :

Here numbers range from 1–9 . Here 1 comes 10 times
(101, 111, 121, 131, 141, 151...191)

2 comes 10 times (102, 112, 122, 132, 142, 152...192)

Similarly all the 9 digits comes 10 times in the unit digit from 101–200.

Hence $10(1+2+3+4+\dots+9) = 450$.

Tens digit :

Here 1 comes 10 times again (110, 111, 112, 113, 114, 115, 116, 117, 118, 119)

Similarly the rest of the digits also.

Hence again, $10(1 + 2 + 3\dots 9) = 450$

Hundreds digit:

Here only 1 comes 101...199

So $99 * 1 = 99$.

Also 2 comes in 200 once. So $2 * 1 = 2$.

Hence, $f(101) + f(102) + f(103)\dots + f(200) = 450 + 450 + 99 + 2 = 1001$.

B

1000

c

1210

D

1010

close