LCM and HCF Questions

Latest LCM and HCF MCQ Objective Questions

Question 1:

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The LCM of two numbers is 48. The numbers are in the ratio of 2 : 3. Find the sum of the number.

1. 40
2. 32
3. 28
4. 64
5. Not Attempted

Answer (Detailed Solution Below)

Option 1 : 40

LCM and HCF Question 1 Detailed Solution

Given:

The ratio of the two numbers = 2 : 3

LCM of the two numbers = 48

Calculation:

Let the two numbers be 2y and 3y.

LCM (2y, 3y) = 6y

⇒ 6y = 48

⇒ y = 8

Now, The sum of numbers = (2y + 3y)

⇒ 5y

⇒ 5y = 5 × 8

⇒ 40

∴ The sum of the number is 40.

Question 2:

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Three bells ring at intervals of 40 sec, 60 sec and 120 sec. If they ring simultaneously at 9:11 am at what time will the next ring together?

1. 9 :13
2. 9 : 20
3. 10 : 00
4. 9 : 25

Answer (Detailed Solution Below)

Option 1 : 9 :13

LCM and HCF Question 2 Detailed Solution

Given:

Interval of bells: 40 sec, 60 sec, 120 sec

Concept used:

LCM (LeastCommon Multiple) for timing

Calculation:

LCM of 40, 60, and 120 = 120 sec

Convert 120 sec to minutes:

120 sec = 2 min

Next simultaneous ring:

Starting time = 9 : 11 am

Next ring = 9 : 11 am + 2 min = 9 :13 am

∴ The bells will next ring together at 9 : 13 am.

Question 3:

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Find the H.C.F. of 27 and 45

1. 3
2. 6
3. 9
4. 15

Answer (Detailed Solution Below)

Option 3 : 9

LCM and HCF Question 3 Detailed Solution

Given Data:

First number: 27

Second number: 45

Concept:

The H.C.F. (also known as GCD, Greatest Common Divisor) of two numbers is the largest number that divides both of them without leaving a remainder.

Solution:

List the factors of 27 : 1, 3, 9, 27

List the factors of 27 ⇒ 1, 3, 9, 27

List the factors of 45 ⇒ 1, 3, 5, 9, 15, 45

The common factors ⇒ 1, 3, 9

The highest common factor ⇒ 9

Therefore, the H.C.F. of 27 and 45 is 9.

Question 4:

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Three numbers are in the ratio 3 : 5 : 7. If LCM of the numbers is 25200, then what is the sum of smallestand largest number?

1. 1200
2. 2400
3. 3600
4. 2880
5. Not Attempted

Answer (Detailed Solution Below)

Option 2 : 2400

LCM and HCF Question 4 Detailed Solution

Given:

The ratio of three numbers = 3 : 5 : 7

LCM = 25200

Concept used:

LCM or least common multiple is the simplest method to find out the smallest common multiples between two or more than two numbers.

Calculation:

Let the number be 3x, 5x and 7x.

LCM of (3x, 5x and 7x)

⇒ 3 × 5 × 7 × (x) = 105x

According to the question,

105x = 25200

⇒ x = 25200/105 = 240

Now, the sum of the smallest and the largest number.

⇒ 7x + 3x = 10x

⇒ 240 × 10 = 2400

∴ The answer is 2400.

Question 5:

View this Question Online >

Three bells ring every 12 minutes, 20 minutes and 36 minutes, respectively, If all of these bells ring together at 7 : 15 am, then at what time will they all ring together again?

1. 9:45 am

2. 10:15 am

3. 10:30 am

4. More than one of the above

5. None of the above

Answer (Detailed Solution Below)

Option 2 : 10:15 am

LCM and HCF Question 5 Detailed Solution

Given:

Bells ring at 12 min, 20 min and 36 min.

Calculation:

LCM of (12 min, 20 min, 36 min) = $3 \times 2^2, 5 \times 2^2, 3^2 \times 2^2$

LCM of (12 min, 20 min, 36 min) = $2^2 \times 3^2 \times 5 = 180$ min

According to question,

All of these bells ring together at 7 : 15 am,

Now, Time for bells to ring again = 7 : 15 am + 3 hr = 10 : 15 am

∴ The correct answer is 10 : 15 am.

Top LCM and HCF MCQ Objective Questions

Question 6 View this Question Online >

Four bells ring simultaneously at starting and an interval of 6 sec, 12 sec, 15 sec and 20

sec respectively. How many times they ring together in 2 hours?

1. 120
2. 60
3. 121
4. 112

Answer (Detailed Solution Below)

Option 3 : 121

LCM and HCF Question 6 Detailed Solution

GIVEN:

Four bells ring simultaneously at starting and an interval of 6 sec, 12 sec, 15 sec and 20 sec respectively.

CONCEPT:

LCM: It is a number which is a multiple of two or more numbers.

CALCULATION:

LCM of (6, 12, 15, 20) = 60

All 4 bells ring together again after every 60 seconds

Now,

In 2 Hours, they ring together = [(2 × 60 × 60)/60] times + 1 (at the starting) = 121 times

∴ In 2 hours they ring together for 121 times

Mistake Points

In these type of question we assume that we have started counting the time after first ringing. Due to this when we calculate the LCM it gives us the ringing at 2nd time not the first time. So, we needed to add 1.

Question 7 View this Question Online >

Four bells ringing together and ring at an interval of 12 sec, 15 sec, 20 sec, and 30 sec respectively. How many times will they ring together in 8 hours?

1. 481
2. 480
3. 482
4. 483

Answer (Detailed Solution Below)

Option 1 : 481

LCM and HCF Question 7 Detailed Solution

Given:

Four bells ringing timing is 12 sec, 15 sec, 20 sec,30 sec

Calculation:

Four bells ringing timing is 12 sec, 15 sec, 20 sec,30 sec

Now we have to take LCM of time interval

⇒ LCM of (12, 15, 20, 30) = 60

Total seconds in 8 hours = 8 × 3600 = 28800

Number of times bell rings = 28800/60

⇒ Number of times bell rings = 480

If four bells ring together in starting

⇒ 480 + 1

∴ The bell ringing 481 times in 8 hours.

⚠ Mistake Points

The bells start tolling together, the first toll also needs to be counted, that is the number of times of tolling since the first time.

Question 8 View this Question Online >

The HCF and LCM of two numbers are 24 and 168 and the numbers are in the ratio 1 : 7. Find the greater of the two numbers.

1. 168
2. 144
3. 108
4. 72

Answer (Detailed Solution Below)

Option 1 : 168

LCM and HCF Question 8 Detailed Solution

Given:

HCF = 24

LCM = 168

Ratio of numbers = 1 : 7.

Formula:

Product of numbers = LCM × HCF

Calculation:

Let numbers be x and 7x.

$x \times 7x = 24 \times 168$

$\Rightarrow x^2 = 24 \times 24$

$\Rightarrow x = 24$

$\therefore$ Larger number = $7x = 24 \times 7 = 168$.

Question 9 View this Question Online >

How many multiples of both 3 or 4 are there from 1 to 100 in total?

1. 55
2. 50
3. 58
4. 33

Answer (Detailed Solution Below)

Option 2 : 50

LCM and HCF Question 9 Detailed Solution

LCM and HCF Question 9 Detailed Solution

Formula used:

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$

Calculation:

On dividing 100 by 3 we get a quotient of 33

The number of multiple of 3, $n(A) = 33$

On dividing 100 by 4 we get a quotient of 25

The number of multiple of 4, $n(B) = 25$

LCM of 3 and 4 is 12

On dividing 100 by 12 we get a quotient of 8

The number of multiple of 12, $n(A \cap B) = 8$

The number which is multiple of 3 or 4 = $n(A \cup B)$

Now, $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$\Rightarrow 33 + 25 - 8$

$\Rightarrow 50$

$\therefore$ The total number multiple of 3 or 4 is 50

Question 10 View this Question Online >

The LCM and HCF of 2 numbers are 168 and 6 respectively. If one of the numbers is 24, find the other.

1. 36
2. 38

3. 40

4. 42

Answer (Detailed Solution Below)

Option 4 : 42

LCM and HCF Question 10 Detailed Solution

We know that,

product of two numbers = L.C.M × H.C.F of those numbers

Let the second number be x.

$24 \times x = 168 \times 6$

$x = 6 \times 7$

$x = 42$

Question 11 View this Question Online >

The product of two numbers is 1521 and the HCF of these numbers is 13. Find the number of such pairs?

1. 2

2. 3

3. 1

4. 0

Answer (Detailed Solution Below)

Option 3 : 1

LCM and HCF Question 11 Detailed Solution

GIVEN:

The product of two numbers is 1521 and the HCF of these numbers is 13.

CONCEPT:
HCF: The **highest common factor** (**HCF**) is found by finding all common factors of two numbers and selecting the largest one.

CALCULATION:

Suppose the numbers are 13a and 13b as the HCF of these numbers is 13.

We can write:

$13a \times 13b = 1521$

$\Rightarrow ab = 9$

∴ Only possible pair is 13, 117

Mistake Points
According to question,

$ab = 9$

For $a = 1$ and $b = 9$

The numbers will be 13 and 117 and their HCF will be 13

Here we will not consider $a = 3$ and $b = 3$.

The numbers will be 39 and 39.

Here HCF would be 39 which does not satisfythe given condition.

Question 12 View this Question Online >

The H.C.F. of $(x^3 + x^2 + x + 1)$ and $(x^4 - 1)$ is

1. $(x^2 - 1)(x^2 + 1)$
2. $(x^2 + 1)(x + 1)(x^3 + 1)$
3. $(x + 1)(x^2 + 1)$
4. $(x + 1)(x^2 - 1)$

Answer (Detailed Solution Below)

Option 3 : $(x + 1)(x^2 + 1)$

LCM and HCF Question 12 Detailed Solution

Given:

The H.C.F. of $(x^3 + x^2 + x + 1)$ and $(x^4 - 1)$ is

Calculation:

$\Rightarrow (x^3 + x^2 + x + 1) = x^2(x + 1) + 1(x + 1)$

$\Rightarrow (x + 1)(x^2 + 1)$

$\Rightarrow x^4 - 1 = (x^2 - 1)(x^2 + 1)$

$\Rightarrow (x + 1)(x - 1)(x^2 + 1)$

$\therefore$ Required HCF is $(x + 1)(x^2 + 1)$

Question 13 View this Question Online >

Two numbers are in the ratio 7 : 11. If their HCF is 28, then sum of the two numbers is:

1. 112
2. 308
3. 504
4. 196

Answer (Detailed Solution Below)

Option 3 : 504

LCM and HCF Question 13 Detailed Solution

Given:

Ratio of numbers = 7 : 11

HCF = 28

Calculation:

Let the numbers be 7x and 11x

HCF of 7x and 11x is x

HCF = x = 28

The numbers will be 7 × 28 and 11 × 28

⇒ The numbers will be 196 and 308

Sum of numbers = 196 + 308

⇒ Sum of numbers = 504

∴ Sum of numbers is 504

Shortcut Trick

Note that the sum of two numbers is asked.

Let the numbers be 7x and 11x.

Add the numbers:

⇒ 7x + 11x

⇒ 18x

Now see, the final number must be the multiple of 18, so in options only 504 is multiple of 18.

∴ The sum of two number is 504.

Question 14 View this Question Online >

The sum of two positive numbers is 240 and their HCF is 15. Find the number of pairs of numbers satisfying the given condition.

1. 8
2. 2
3. 4
4. 5

Answer (Detailed Solution Below)

Option 3 : 4

LCM and HCF Question 14 Detailed Solution

Given:

The sum of two number positive number is 240 and their HCF is 15.

Calculation:

Let two positive number is 15x and 15y where **x and y should be coprime that means x and y should have HCH as 1.**

According to the question

The sum of the number is

⇒ 15x + 15y = 240

⇒ x + y = 16

Now, we have to find the number of pair in which sum of the two number is 16 but no common factor between them, such pair is

⇒ (1, 15) (3, 13) (5, 11) (7, 9)

∴ Total possible pairs is 4.

Confusion Points

We can't take (2, 14), (4, 12), (6, 10), (8, 8) BecauseIn these casesthe pair should be co-prime.

Question 15 View this Question Online >

Find the HCF of $(4^{315} - 1)$ and $(4^{25} - 1)$.

1. 1
2. $(4^{25} - 1)$
3. 1024
4. 1023

Answer (Detailed Solution Below)

Option 4 : 1023

LCM and HCF Question 15 Detailed Solution

Given:

$(4^{315} - 1)$ and $(4^{25} - 1)$

Concept used:

HCF of $(a^m - 1)$ and $(a^n - 1)$ is $(a^{HCF(m,n)} - 1)$.

Calculations:

HCF(315, 25) = 5

According to the concept,

HCF $\{(4^{315} - 1), (4^{25} - 1)\}$

$= (4^{HCF(315, 25)} - 1)$

$= (4^5 - 1)$

$= 1024 - 1$

$= 1023$

Hence, The Required value is 1023.