

HCF Questions

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MCQ Question 1

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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



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HCF MCQ Question 1 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:

$$13a \times 13b = 1521$$

$$\Rightarrow ab = 9$$

\therefore 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 satisfy the given condition.

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MCQ Question 2

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

HCF MCQ Question 2 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 $(x + 1)(x^2 + 1)$

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MCQ Question 3

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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

HCF MCQ Question 3 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

$$\Rightarrow 15x + 15y = 240$$

$$\Rightarrow x + y = 16$$

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

$\Rightarrow (1, 15) (3, 13) (5, 11) (7, 9)$

\therefore Total possible pairs is 4.

Confusion Points


We can't take $(2, 14), (4, 12), (6, 10), (8, 8)$ Because In these cases the pair should be co-prime.

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MCQ Question 4

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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

HCF MCQ Question 4 Detailed Solution

Given:

Ratio of numbers = 7 : 11

$$\text{HCF} = 28$$

Calculation:

Let the numbers be $7x$ and $11x$

HCF of $7x$ and $11x$ is x

$$\text{HCF} = x = 28$$

The numbers will be 7×28 and 11×28

\Rightarrow The numbers will be 196 and 308

Sum of numbers = $196 + 308$

\Rightarrow Sum of numbers = 504

\therefore **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:

$$\Rightarrow 7x + 11x$$

$$\Rightarrow 18x$$

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

\therefore **The sum of two number is 504.**

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MCQ Question 5

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HCF of two number is 4 and the sum of those two numbers is 36. Find how many such pair of number is possible.

1. 1

2. 2

3. 3

4. 4

Answer (Detailed Solution Below)

Option 3 : 3

HCF MCQ Question 5 Detailed Solution

Given:

HCF of two number is 4 and the sum of those two numbers is 36.

Concept Used:

Concept of HCF

HCF is the least common factor among two or more numbers.

Calculation:

HCF of two number is 4

Let, those numbers be $4x$ and $4y$ where x and y are prime to each other

Accordingly,

$$4x + 4y = 36$$

$$\Rightarrow 4(x + y) = 36$$

$$\Rightarrow (x + y) = 9$$

Now,

$$9 = 8 + 1$$

$$9 = 7 + 2$$

$$9 = 6 + 3$$

$$9 = 5 + 4$$

In all these cases only $(8,1)$; $(7,2)$; and $(5,4)$ are prime to each other. So, such three pair is possible

\therefore Such three pair of number is possible.

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MCQ Question 6

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If the product of two numbers is 1083 and their HCF is 19, then find the numbers of such possible pairs is:

1. 3

2. 5

3. 4

4. 1

Answer (Detailed Solution Below)

Option 4 : 1

HCF MCQ Question 6 Detailed Solution

Given:

The product of two numbers is 1083 and their HCF is 19

Concept:

The HCF of two or more numbers is the greatest factor that divides each of them exactly.

Calculation:

Let the number be $19a$ and $19b$

The product of the two numbers = 1083

$$\Rightarrow 19a \times 19b = 1083$$

$$\Rightarrow a \times b = 1083/361$$

$$\Rightarrow a \times b = 3$$

Possible pairs is (1, 3)

\therefore The number of such possible pairs is 1.

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MCQ Question 7

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Find the H.C.F of $(7^{57} + 1)$ and $(7^{133} + 1)$

1. $(7^{19} + 1)$

2. $(7^{57} + 1)$

3. $(7^{133} + 1)$

4. $(7^{91} + 1)$

Answer (Detailed Solution Below)

Option 1 : $(7^{19} + 1)$

HCF MCQ Question 7 Detailed Solution

Given:

Two numbers are $(7^{57} + 1)$ and $(7^{133} + 1)$

Concept Used:

$$\text{HCF } (a^m + 1) \text{ and } (a^n + 1) = a^{\text{hcf}(m,n)} + 1$$

Where, m and n are odd natural number

Calculation:

$$\text{H.C.F } \{(7^{57} + 1), (7^{133} + 1)\}$$

According to the formula,

$$\Rightarrow \text{H.C.F} = 7^{\text{hcf}(57, 133)} + 1$$

$$\therefore \text{H.C.F is } (7^{19} + 1).$$

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MCQ Question 8

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The LCM of two numbers is 40 times its HCF. If the product of the numbers is 1440, find their HCF.

1. 6

2. 12

3. 15

4. 8

Answer (Detailed Solution Below)

Option 1 : 6

HCF MCQ Question 8 Detailed Solution

Given:

LCM = 40 times HCF

The product of the numbers is 1440

Formula used:

LCM \times HCF = Product of numbers

Calculation:

Let HCF of the number be 'H'

\Rightarrow LCM = 40H

Now,

LCM \times HCF = Product of numbers

$\Rightarrow 40H \times H = 1440$

$\Rightarrow H^2 = 1440/40 = 36$

$\Rightarrow H = 6$

\therefore HCF = 6



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MCQ Question 9

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The greatest number which on dividing 384, 513, 769, 1020 leaves remainders 3, 5, 7, 4 respectively, is :

1. 123

2. 125

3. 129

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4. 127

Answer (Detailed Solution Below)

Option 4 : 127

HCF MCQ Question 9 Detailed Solution

Given:

Numbers = 384, 513, 769, 1020

Remainders = 3, 5, 7, 4

Concept used:

First, subtract the remainder from the number and then find H.C.F of that number

Calculation:

$(384 - 3), (513 - 5), (769 - 7), (1020 - 4)$

H.C.F of the number $(381, 508, 762, 1016) = 127$

∴ The required number is 127

Alternate Method

For finding H.C.F

H.C.F is always the difference between two nearest number or factor of that number

H.C.F of $(381, 508, 762, 1016)$

The difference between 508 and 381 is equal to 127

∴ The required number is 127

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**MCQ Question 10**[View this Question Online >](#)

What will be the HCF of 56, 216, 28 ?

1. 28

2. 2

3. 8

4. 4

Answer (Detailed Solution Below)

Option 4 : 4

HCF MCQ Question 10 Detailed Solution

Given-

Given numbers = 56, 216, 28

Concept Used-

The greatest number which divides a given set of numbers is the HCF of that given set of numbers.

Calculation-

$$56 = 7 \times 2^3$$

$$216 = 2^3 \times 3^3$$

$$28 = 2^2 \times 7$$

$$\therefore \text{HCF of } 56, 216, 28 = 2^2 = 4.$$