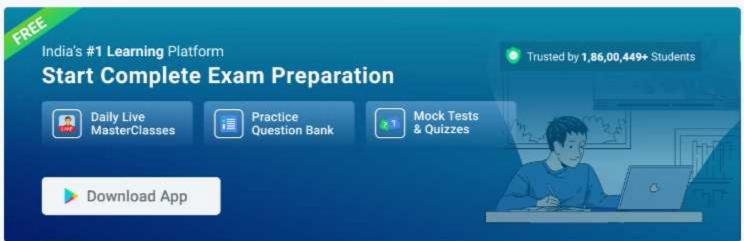
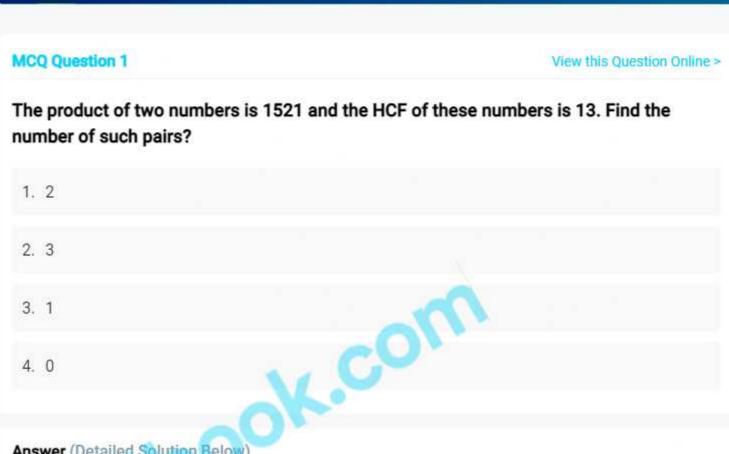
# **HCF Questions**





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 × 13b = 1521

 $\Rightarrow$  ab = 9

.. Only possible pair is 13, 117



## Mistake Points

According to question,

ab = 9

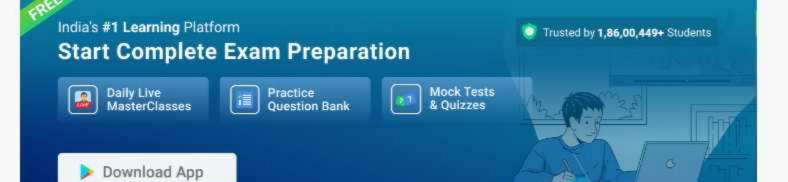
For a = 1 and b = 9

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 satisfy the given condition.



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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

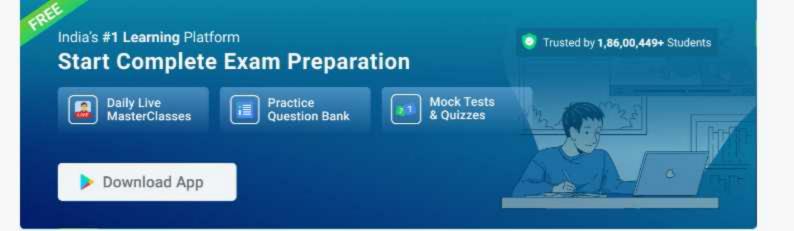
#### Calculation:

$$\Rightarrow$$
 (x<sup>3</sup> + x<sup>2</sup> + x + 1) = x<sup>2</sup>(x + 1) + 1(x + 1)

$$\Rightarrow$$
 (x + 1) (x<sup>2</sup> + 1)

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

$$\Rightarrow$$
 (x + 1) (x - 1) (x<sup>2</sup> + 1)



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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

## 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. estipor

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)

.. Total possible pairs is 4.



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



MCQ Question 4

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

#### 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:

 $\Rightarrow$  7x + 11x

⇒ 18x

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

.: The sum of two number is 504.



#### 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

## 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

Let, those numbers be 4x and 4y where x and y are prime to each other Accordingly, 4x + 4y = 36  $\Rightarrow 4/x + 36$ 

$$4x + 4y = 36$$

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

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

Now,

$$9 = 8 + 1$$

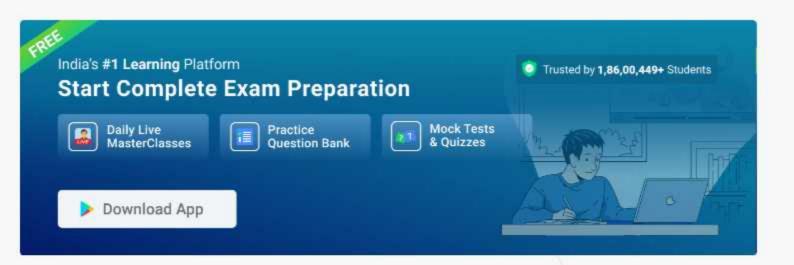
$$9 = 7 + 2$$

$$9 = 6 + 3$$

$$9 = 5 + 4$$

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

.. Such three pair of number is possible.



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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. 2

4

## 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

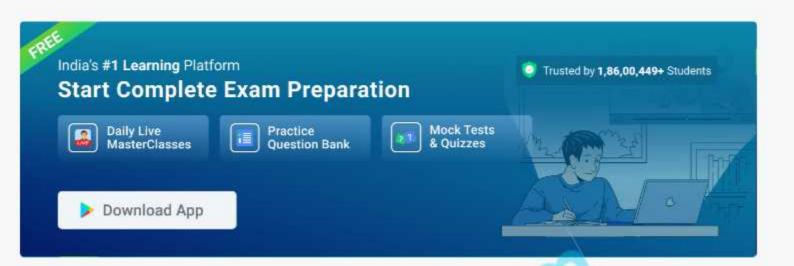
The product of the two numbers = 1083

 $\Rightarrow$  a × b = 1083/361

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

Possible pairs is (1, 3)

.. The number of such possible pairs is 1.



## 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<sup>19</sup> + 1)

## **HCF MCQ Question 7 Detailed Solution**

#### Given:

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

Concept Used:

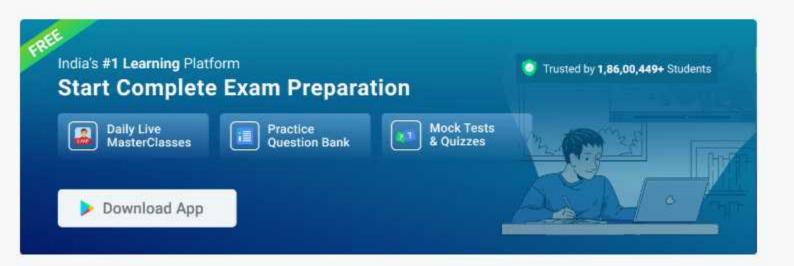
HCF 
$$(a^m + 1)$$
 and  $(a^n + 1) = a^{hcf(m, n)} + 1$ 

Where, m and n are odd natural number

#### Calculation:

H.C.F {(7<sup>57</sup> + 1), (7<sup>133</sup> + 1)}

According to he formula,



#### 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 × HCF = Product of numbers

#### Calculation:

Let HCF of the number be 'H'

Now,

LCM × HCF = Product of numbers

$$\Rightarrow$$
 H<sup>2</sup> = 1440/40 = 36

$$\Rightarrow H = 6$$



#### 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

## 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

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#### 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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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-

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

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

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