HCF & LCM - மீ.பெ.வ. மற்றும் மீ.சி.ம

மீப்பெரு பொது வகுத்தி - மீ. பெ.வ
மீச்சிறு பொது மடங்கு - மீ.சி.ம

Hcf means Highest common factor.

Find the Hcf of 10, 25 ?

மீ.பெ.வ காண்க 10, 25?

10 ---> 5 × 2

25 ---> 5 × 5

Here common factor is 5. So Hcf is 5.

Lcm means Least common multiple.

Find the Lcm of 10, 25 ?

மீ.சி.ம காண்க 10, 25?

10 , 25 = 5 × 2 × 5 = 50

Multiply all the multiples. So Lcm is 50.

Product of two numbers = Product of their H.C.F. and L.C.M.

இரு எண்களின் பெருக்கற்பலன் = மி.பெ.வ x மி.சி.ம

The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is:

A. 276

B. 299

C. 322

D. 345

Answer: Option C

Explanation:

Clearly, the numbers are (23 x 13) and (23 x 14).

Larger number = (23 x 14) = 322.

H.C.F. and L.C.M. of Fractions

1. HCF = HCF Of Numerators / LCM Of Denominators

Find the HCF of 2/5, 6/7, 8/3.

HCF = HCF of (2,6,8) / LCM of (5,7,3).

HCF = 2/105.

2. LCM = LCM Of Numerators / HCF Of Denominators

Find the LCM of 2/5, 6/7, 8/3.

LCM = LCM of (2,6,8) / HCF of (5,7,3).

LCM = 24/1.

LCM = 24.

General Questions and Answers

1. Find the HCF of

$$2^4 \text{ X } 5^2 \text{ X } 7^3 \text{ X } 11^2,$$

$$7^6 \text{ X } 5^4 \text{ X } 2^7 \text{ X } 13,$$

$$5^6 \text{ X } 2^2 \text{ X } 7^4 \text{ X } 17.$$

For this question we need to take common factors first, and then lowest powers.

Here common factors are 2, 5, 7.

Then write their lowest powers.

Answer = 2^2 x 5^2 x 7^3.

2. Find the LCM of

$$2^4 \text{ X } 5^2 \text{ X } 7^3 \text{ X } 11^2,$$

$$7^6 \text{ X } 5^4 \text{ X } 2^7 \text{ X } 13,$$

$$5^6 \text{ X } 2^2 \text{ X } 7^4 \text{ X } 17.$$

For this question we need to write all the given numbers , and then write their Highest powers.

All the numbers are 2, 5, 7, 11, 13, 17.

Then write their Highest powers.

Answer = 2^7 x 5^6 x 7^6 x 11^2 x 13 x 17.

3. The LCM and HCF of two numbers are 45 and 3 respectively, their sum is 24, what is their difference?

இரு எண்களின் மிசிம மற்றும் மிபெவ முறையே 45, 3. மேலும் அவற்றின் கூடுதல் 24 எனில் அவற்றின் வித்தியாசம் என்ன?

a. 2 b. 4 c. 6 d. 8

Answer: c

Explanation:

LCM =45

HCF =3

Let the numbers be x & y:

x + y = 24…(1)

We know that,

x.y = HCF . LCM

xy = 45.3 = 135

y = 135/ x…(2)

Substituting 2 in 1:

x + 135/x = 24

x² + 135 - 24 x = 0

Thus x= 15 or 9

Thus y = 9 or 15

Thus the numbers are 9, 15

Their difference is 6

4. The greatest number of 4 digit which is divisible by 20, 25, 60 and 100 is

20, 25, 60 மற்றும் 100 ஆல் வகுப்படக்கூடிய பெரிய நான்கு இலக்க எண் எது?

a. 2000 b. 4000 c. 5000 d. 6000

Answer: d

Explanation:

The lcm is 300.

if we divide greatest 4 digit no. (9999) with 300, we get a remainder . By subtracting the remainder from 9999 we get the required answer. The required answer is 9900

5. Three numbers are in the ratio 1:2:3. Their highest common factor is 12. Find the numbers.

மூன்று எண்கள் 1:2:3 என்ற விகிதத்தில் உள்ளன. அவற்றின் மிபெவ 12 எனில் அந்த எண்கள்?

a. 12, 24, 36   b. 24, 48, 72   c. 12, 24, 48   d. 48, 60, 72

Answer: a

Explanation:

Since, the numbers are given in the form of ratio that means their common factors have been cancelled.

Each one's common factor is HCF.

And here HCF = 12,

hence, the numbers are 12, 24 and 36.

6. The smallest 6 digit number which is exactly divisible by 111 is

111 ஆல் முழுவதும் வகுப்படக்கூடிய மிக சிறிய 6 இலக்க எண்?

a. 1,00,111 b. 1,00,000 c. 1,00,011 d. 1,11111

Answer: c

Explanation:

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 The smallest 6-digit number 100000.

  111) 100000 (900
         99900
       -----
          100
       ---

  Required number = 100000 + (111 - 100)
                  = 100011.
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7.

. The HCF of $x^3 + 1$ and $x^4 - 1$ is
a. $x^3 - 1$ b. $x^3 + 1$ c. $x + 1$ d. $x - 1$

Answer: c

Explanation:

The factors of (X^3 + 1) = (X + 1) (X^2 + 1^2 + 2 X)

The factors of (X^4 – 1) = (X^2 – 1) (X^2 + 1) = (X + 1) (X – 1)

Common Factor is = (X + 1)

HCF = (X + 1)

8. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together ?
ஆறு மணிகள் முறையே 2,4,6,8,10,12 வினாடிகளுக்கு ஒரு முறை

ஒலி எழுப்புகின்றன. 30 நிமிடங்களில் அந்த மணிகள் எத்தனை முறை சேர்ந்து ஒன்றாக ஒலித்திருக்கும்?

A. 4

B. 10

C. 15

D. 16

Answer: Option D

Explanation:

L.C.M. of 2, 4, 6, 8, 10, 12 is 120.

So, the bells will toll together after every 120 seconds (2 minutes).

In 30 minutes, they will toll together $\dfrac{30}{2} + 1 = 16$ times.

9. The ratio of two numbers is 3 : 4 and their H.C.F. is 4. Their L.C.M. is:
இரண்டு எண்கள் முறையே 3:4 விகிதத்தில் இருக்கின்றன. அவற்றின் மீபெவ 4 எனில் மிசிம என்ன?

A. 12

B. 16

C. 24

D. 48

Answer: Option D

Explanation:

Let the numbers be $3x$ and $4x$. Then, their H.C.F. = x. So, x = 4.

So, the numbers 12 and 16.

L.C.M. of 12 and 16 = 48.

10. Which of the following fraction is the largest ?
கீழ்கண்ட பின்னங்களில் பெரிய எண் எது?

A. $\dfrac{7}{8}$

B. $\dfrac{13}{16}$

C. $\dfrac{31}{40}$

D. $\dfrac{63}{80}$

Answer: Option A

Explanation:

L.C.M. of 8, 16, 40 and 80 = 80.

$\dfrac{7}{8} = \dfrac{70}{80}$; $\dfrac{13}{16} = \dfrac{65}{80}$; $\dfrac{31}{40} = \dfrac{62}{80}$

Since, $\dfrac{70}{80} > \dfrac{65}{80} > \dfrac{63}{80} > \dfrac{62}{80}$, so $\dfrac{7}{8} > \dfrac{13}{16} > \dfrac{63}{80} > \dfrac{31}{40}$

So, $\dfrac{7}{8}$ is the largest.

Previous Tnpsc Questions

1. The least common multiple of 24, 36 and 40 is

a. 340 b. 360 c. 230 d. 400

Answer: b

2. The LCM of 148 and 185 is

a. 690 b. 760 c. 740 d. 1010

Answer: c. 740

3. Find the LCM of 8, 15, 24 and 72

a. 350 b. 360 c. 720 d. 735

Answer: b

4. HCF of 513 and 1134 is

a. 9 b. 81 c. 27 d. 31

Answer: c

5. The HCF of 3556 and 3444 is

a. 28 b. 32 c. 43 d. 18

Answer: a

6. The LCM and HCF of two numbers are 45 and 3 respectively, their sum is 24, what is their difference?

a. 2 b. 4 c. 6 d. 8

Answer: c

7. The product of two numbers is 4107 and their HCF is 37. The larger number is

a. 185 b. 111 c. 107 d. 101

Answer: b

8. The LCM of two numbers is 495 and their HCF is 5. If the sum of the two numbers is 100, then find the difference of the two numbers

a. 10 b. 46 c. 70 d. 90

Answer: a

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

a. 35 b. 40 c. 60 d. 111

Answer: b

10. Three numbers are in the ratio 1:2:3 and their HCF is 12. The numbers are

a. 4, 8, 12 b. 5, 10, 15 c. 10, 20, 30 d. 12, 24, 36

Answer: d

11. The ratio of two numbers is 3:4 and their HCF is 4. Their LCM is

a. 12 b. 16 c. 24 d. 48

Answer: d

12. Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case

a. 4 b. 7 c. 9 d. 13

Answer: a

13. The greatest number of 4 digits which is divisible by 20, 25, 40 and 75 is

a. 9600 b. 3000 c. 9800 d. 8540

Answer: b

14. Find the greatest number of four digits which is divisible by 15, 25, 40 and 75. a. 9000 b. 9400 c. 9600 d. 9800 Answer: c

15. The greatest number of 4 digit which is divisible by 20, 25, 60 and 100 is

a. 2000 b. 4000 c. 5000 d. 6000

Answer: d

16. Find the smallest number which when diminished by 7, is divisible by 12, 16, 18, 21 and 28.

a. 1008 b. 1015 c. 1022 d. 1032

Answer: b

17. Six belles commence tolling together, afterwards they toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30minutes, how many times do they toll together?

a. 4 b. 10 c. 15 d. 16

Answer: d

18. LCM of two prime numbers x and y (x>y) is 161. The value of 3y-x is a. -2 b. -1 c. 1 d. 2 Answer: a 25. If the highest common factor of 65 and 117 is expressed in the form of 65m + 117n, then find the value of m and n.

a. 3, 2 b. 3, -1 c. 2, -1 d. 2, -3

Answer: c

19. Find least common multiple of 4/5, 3/10 and 7/15.

a. 84/5 b. 5/84 c. 2/15 d. 12/15

Answer: a

20. The LCM of 1/3, 5/6, 2/9, 4/27 is

a. 1/54 b. 10/27 c. 20/3 d. None of these

Answer: c

21. Find the HCF of 4/9, 2/5, 6/8, 2/5 a. 1/180 b. 2/481 c. 2/350 d. 1/142

Answer: a

22. The HCF of two numbers is 8, which one of the following can never be their LCM?

a. 24 b. 48 c. 56 d. 60

Answer: d

23. The product of the two numbers is 900. If the LCM of these two numbers is 300, then find HCF.

a. 3 b. 6 c. 9 d. 12

Answer: a

24. The product of two co-prime numbers is 117. Their least common multiple is

a. 351 b. 39 c. 234 d. 117

Answer: d

25. Two numbers are in the ratio 3:4 and the product of their LCM and HCF is 10800. The sum of the numbers is

a. 180 b. 210 c. 225 d. 240

Answer: b

26. Three numbers are in the ratio 1:2:3. Their highest common factor is 12. Find the numbers.

a. 12, 24, 36 b. 24, 48, 72 c. 12, 24, 48 d. 48, 60, 72

Answer: a

27. If the two numbers are in the ratio of 2:3 and the product of their highest common factor and least common multiple is 150, then find the sum of the numbers.

a. 5 b. 10 c. 20 d. 25

Answer: d

28. Find the least number which when divided by 5, 6, 7 and 8 leaving a remainder 3, but when divided by 9 leaves no remainder?

a. 1677 b. 1683 c. 2523 d. 3363

Answer: b

29. The greatest number that will divide 137, 182 and 422 leaving a remainder 2 in each case is,

a. 15 b. 21 c. 12 d. 22

Answer: a

30. The greatest number that will divide 137, 182 and 422 leaving a remainder 2 in each case is

a. 15 b. 21 c. 12 d. 22

Answer: a

31. The greatest number which on dividing 1657 and 2037 leaves remainders 6 and 5 respectively is

a. 123 b. 127 c. 235 d. 305

Answer: b

32. What is the largest number by which when 2109, 2790 and 3471 are divided then 1, 2 and 3 are obtained as remainders respectively?

a. 48 b. 68 c. 38 d. 86

Answer: b

33. The greatest possible length which can be used to measure exactly the lengths 4m 95cm, 9m 45cm and 16m 65cm is

a. 45cm b. 35cm c. 25cm d. 15cm

Answer: a

34. The greatest number that exactly divides 105, 1001 and 2436 is

a. 7 b. 3 c. 9 d. 5

Answer: a

35. The least number exactly divisible by 12, 15, 18, 21 is

a. 68040 b. 34020 c. 2510 d. 2520

Answer: d

36. The HCF and LCM of two numbers are 12 and 144 respectively. If one number is 36, find the other number.

a. 49 b. 50 c. 36 d. 48

Answer: d

37. LCM of two numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280 then the other number is

a. 40 b. 60 c. 80 d. 100

Answer: c

38. The product of HCF and LCM of two expressions is equal to the

a. Sum of two expressions b. square of HCF c. Product of expressions d. Square of LCM

Answer: c

39. The product of two co-prime numbers is 117. Their LCM should be

a. 1 b. 117 c. 1/117 d. None of these

Answer: b

40. Three numbers are in the ratio 3:4:5 and their LCM is 240. Then the HCF of these number is

a. 4 b. 8 c. 12 d. 20

Answer: a

41. Three numbers are in the ratio 1:2:3 and their HCF is 12. The numbers are

a. 4,8,12 b. 5,10,15 c. 12,24,36 d. 10,20,30

Answer: c

42. A number when divided by 2, 3, 4, 5 and 6 leaves remainder 1, 2, 3, 4 and 5, it is divisible by 7, then the least possible number is

a. 117 b. 119 c. 113 d. 121

Answer: b

43. The sum of two numbers is 187 and their HCF is 17. What is the number of such pairs of numbers satisfying the above conditions?

a. 1 b. 4 c. 5 d. 7

Answer: c

44. The smallest 6 digit number which is exactly divisible by 111 is

a. 1,00,111 b. 1,00,000 c. 1,00,011 d. 1,11111

Answer: c

45. The least number which when increased by 1 is divisible by 12, 18, 24, 32 is a. 278 b. 288 c. 287 d. 279

Answer: c

46. Find the greatest number which will divide 3322 and 3832 leaving the remainder 7?

a. 75 b. 255 c. 80 d. 81

Answer: b

47.

LCM of a^k, a^{k+3}, a^{k+5} for all $k \in N$ is

a. a^{k+9} b. a^k c. a^{k+6} d. a^{k+5}

Answer: d

48.

Find the Least common multiple of $(2x^2 - 8), (3x^2 - 9x + 6)$ and $(6x^2 + 18x + 12)$

a. 2(x+2) (x+1)(x-1)(x+3)
b. 3(x-2) (x+1)(x+3)(x-1)
c. 6 (x-2) (x+2)(x+1)(x-1)
d. 6(x+2) (x-1)(x-2)(x+3)

Answer: c

49.

. The HCF of $x^3 + 1$ and $x^4 - 1$ is

a. $x^3 - 1$ b. $x^3 + 1$ c. x + 1   d. x − 1

Answer: c

50.

Find the LCM of 4^5, 4^{-81}, 4^{12} and 4^7.

a. 4^{12} b. 4   c. 4^2 d. 4^{-2}

Answer: a

51.

The LCM of $a^3 + b^3$ and $a^4 - b^4$ is

a. $(a^3 + b^3)(a - b)$
b. $(a^2 + b^2)(a - b)$
c. $(a + b)^3$
d. $(a^3 + b^3)(a^2 + b^2))(a-b)$

Answer: d

52.

HCF of $2(x^2 - y^2)$, $5(x^3-y^3)$
a. X-y   b. 2(x-y)   c. 10(x-y)

Answer: a

53.

. The HCF of $x^2 + 4x - 12$, $x^3 + 6x^2 - 16x$
a. x + 2   b. x – 2   c. 2-x   d. x(x-2)

Answer: b

54.

HCF of $\dfrac{81}{576}, \dfrac{729}{288}, \dfrac{6561}{144}$

a. $\dfrac{81}{576}$ b. $\dfrac{81}{144}$ c. $\dfrac{81}{288}$ d. $\dfrac{81}{72}$

Answer: a

55.

Find the LCM of a^3b^4, ab^5 and a^2b^7
a. a^7b^3 b. a^3b^7 c. a^2b^5 d. ab^5

Answer: b