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The hcf of 120 and 150 is

Greatest Common Factor Sponsors The instructions to find the GCF of 120, 135 and 150 are the next:1. Decompose all numbers into prime factors2. Write all numbers as the product of its prime factors3. Choose the common prime factors with the lowest exponentCommon prime factors: 3, 5Common prime factors with the lowest exponent: 31, 514. Calculate the Greatest Common Factor or GCFRemember, to find the GCF of several numbers you must multiply the common prime factors with the lowest exponent.GCF = 31, 51 = 15 Also calculates the: Least Common Multiple or LCM of 120, 135 and 150 1 Back to top Greatest Common Factor Sponsors The instructions to find the GCF of 90, 120 and 150 are the next:1. Decompose all numbers into prime factors2. Write all numbers as the product of its prime factors3. Choose the common prime factors with the lowest exponentCommon prime factors: 2, 3, 5Common prime factors with the lowest exponent: 21, 31, 514. Calculate the Greatest Common Factor or GCFRemember, to find the GCF of several numbers you must multiply the common prime factors with the lowest exponent.GCF = 21, 31, 51 = 30 Also calculates the: Least Common Multiple or LCM of 90, 120 and 150 1 Back to top Least Common Multiple Sponsors The instructions to find the LCM of 120, 150 and 180 are the next:1. Decompose all numbers into prime factors2. Write all numbers as the product of its prime factors3. Choose the common and uncommon prime factors with the greatest exponentCommon prime factors: 2, 3, 5Uncommon prime factors with the greatest exponent: 23, 32, 52Uncommon prime factors: NoneUncommon prime factors with the greatest exponent: None4. Calculate the Least Common Multiple or LCMRemember, to find the LCM of several numbers you must multiply the common and uncommon prime factors with the greatest exponent of those numbers.LCM = 23, 32, 52 = 1800 Also calculates the: Greatest Common Factor or GCF of 120, 150 and 180 1 Back to top HCF of 120 and 150 is the largest possible number that divides 120 and 150 exactly without any remainder. The factors of 120 and 150 are 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120 and 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150 respectively. There are 3 commonly used methods to find the HCF of 120 and 150 - Euclidean algorithm, long division, and prime factorization. What is HCF of 120 and 150? Answer: HCF of 120 and 150 is 30. Explanation: The HCF of two non-zero integers, x(120) and y(150), is the highest positive integer m(30) that divides both x(120) and y(150) without any remainder. Methods to Find HCF of 120 and 150 The methods to find the HCF of 120 and 150 are explained below. Prime Factorization Method Long Division Method Using Euclid's Algorithm HCF of 120 and 150 by Prime Factorization Prime factorization of 120 and 150 is $(2 \times 2 \times 2 \times 3 \times 5)$ and $(2 \times 3 \times 5 \times 5)$ respectively. As visible, 120 and 150 have common prime factors. Hence, the HCF of 120 and 150 is $2 \times 3 \times 5 = 30$. HCF of 120 and 150 by Long Division HCF of 120 and 150 is the divisor that we get when the remainder becomes 0 after doing long division repeatedly. Step 1: Divide 150 (larger number) by 120 (smaller number). Step 2: Since the remainder $\neq 0$, we will divide the divisor of step 1 (120) by the remainder (30). Step 3: Repeat this process until the remainder = 0. The corresponding divisor (30) is the HCF of 120 and 150. HCF of 120 and 150 by Euclidean Algorithm As per the Euclidean Algorithm, $HCF(X, Y) = HCF(Y, X \text{ mod } Y)$ where $X > Y$ and mod is the modulo operator. Here $X = 150$ and $Y = 120$ $HCF(150, 120) = HCF(120, 150 \text{ mod } 120) = HCF(120, 30)$ $HCF(120, 30) = HCF(30, 120 \text{ mod } 30) = HCF(30, 0)$ $HCF(30, 0) = 30$ ($\therefore HCF(X, 0) = |X|$, where $X \neq 0$) Therefore, the value of HCF of 120 and 150 is 30. **Also Check:** HCF of 120 and 150 Examples Example 1: Find the HCF of 120 and 150, if their LCM is 600. Solution: $\therefore LCM \times HCF = 120 \times 150 = HCF(120, 150) = (120 \times 150)/600 = 30$ Therefore, the highest common factor of 120 and 150 is 30. Example 2: Find the highest number that divides 120 and 150 exactly. Solution: The highest number that divides 120 and 150 exactly is their highest common factor, i.e. HCF of 120 and 150. = Factors of 120 and 150: Factors of 120 = 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120 Factors of 150 = 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150 Therefore, the HCF of 120 and 150 is 30. Example 3: For two numbers, HCF = 30 and LCM = 600. If one number is 120, find the other number. Solution: Given: HCF (z, 120) = 30 and LCM (z, 120) = 600 $\therefore HCF \times LCM = 120 \times (z) = z = (HCF \times LCM)/120 = z = (30 \times 600)/120 = z = 150$ Therefore, the other number is 150. Show Solution > go to slidego to slidego to slide The HCF of 120 and 150 is 30. To calculate the Highest common factor of 120 and 150, we need to factor each number (factors of 120 = 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120; factors of 150 = 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150) and choose the highest factor that exactly divides both 120 and 150, i.e., 30. What are the Methods to Find HCF of 120 and 150? There are three commonly used methods to find the HCF of 120 and 150. By Prime Factorization By Listing Common Factors By Long Division If the HCF of 150 and 120 is 30, Find its LCM. $HCF(150, 120) \times LCM(150, 120) = 150 \times 120$ Since the HCF of 150 and 120 = 30 = $30 \times LCM(150, 120) = 18000$ Therefore, LCM = 600 **▀** HCF Calculator How to Find the HCF of 120 and 150 by Prime Factorization? To find the HCF of 120 and 150, we will find the prime factorization of the given numbers, i.e. $120 = 2 \times 2 \times 2 \times 3 \times 5$; $150 = 2 \times 3 \times 5 \times 5$. = Since 2, 3, 5 are common terms in the prime factorization of 120 and 150. Hence, $HCF(120, 150) = 2 \times 3 \times 5 = 30$ **▀** What is a Prime Number? How to Find the HCF of 120 and 150 by Long Division Method? To find the HCF of 120, 150 using long division method, 150 is divided by 120. The corresponding divisor (30) when remainder equals 0 is taken as HCF. What is the Relation Between LCM and HCF of 120, 150? The following equation can be used to express the relation between Least Common Multiple (LCM) and HCF of 120 and 150, i.e. $HCF \times LCM = 120 \times 150$. Similar Questions Asked By Users Greatest common factor (GCF) of 120 and 126 is 6. $GCF(120,126) = 6$ We will now calculate the prime factors of 120 and 126, then find the greatest common factor (greatest common divisor (gcd)) of the numbers by matching the biggest common factor of 120 and 126. We will first find the prime factorization of 120 and 126. After we will calculate the factors of 120 and 126 and find the biggest common factor number. Step-1: Prime Factorization of 120 Prime factors of 120 are 2, 3, 5. Prime factorization of 120 in exponential form is: $120 = 2^3 \times 3^1 \times 5^1$ Step-2: Prime Factorization of 135 Prime factors of 135 are 3, 5. Prime factorization of 135 in exponential form is: $135 = 3^3 \times 5^1$ Step-3: Factors of 120 List of positive integer factors of 120 that divides 120 without a remainder. 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60Step-4: Factors of 135 List of positive integer factors of 135 that divides 120 without a remainder. 1, 3, 5, 9, 15, 27, 45 Final Step: Biggest Common Factor Number We found the factors and prime factorization of 120 and 135. The biggest common factor number is the GCF number. So the greatest common factor 120 and 135 is 15. Also check out the Least Common Multiple of 120 and 135 To approach a problem like this, we must first break down our number into a multiplication of prime factors (i.e. we can make our number by multiplying numbers 2,3,5,7 etc together). This is best done with a factor tree and gives the result below $120 = 2 \times 60 = 2 \times 2 \times 30 = 2 \times 2 \times 2 \times 15 = 2 \times 2 \times 2 \times 3 \times 5$ $150 = 3 \times 50 = 3 \times 2 \times 25 = 3 \times 2 \times 5 \times 5$ Now we have the number in prime factor form, we can find HCF (highest common factor) and the LCM (lowest common multiple)It's important to remember... a factor of a number is a number that when multiplied by an integer makes that number A multiple of a number is a number that can be made by multiplying the number by an integerHCFFor the HCF, we must multiply the prime factors appearing in both the prime factor forms of our numbers $120 = 2 \times 2 \times 2 \times 3 \times 5$ $150 = 3 \times 2 \times 5 \times 5$ So $HCF = 2 \times 3 \times 5 = 30$ note: we only have one 2 here as 150 only has one 2 as a prime factor can be useful to circle numbers pairs of numbers from both listsLCMFor the LCM, we must multiply the HCF by all the prime factors that couldn't be paired up in calculating the HCF This is easy to visualise if you circle pairs of numbers appearing in both the numbers prime factor form when you are calculating HCF $120 = 2 \times 2 \times 2 \times 3 \times 5$ $150 = 3 \times 2 \times 5 \times 5$ So $LCM = 2 \times 3 \times 5 \times 2 \times 2 \times 5 = 600$

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