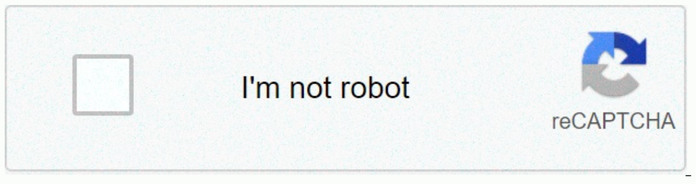

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Prime factors questions ks3

We define a prime number factor of any number as any factor that the number has, which is also a prime number. Each positive integer has a unique prime factorization—a list of prime numbers that, when multiplied, give you the original number. In more complicated cases, we use a so-called factor tree. Example: Determine the prime factorization of 60th Step 1: To construct a factor tree, think of 2 numbers that multiply to 60 – here we went with 10 and 6. Step 2: Draw two branches that come down from 60 and write the two factors you have chosen at the end of the twigs. Step 3: If a factor is prim, circle it. If a factor is not prim, repeat the process as shown in the factor tree below. Step 4: The prime factorization of 60 is therefore 60 = 2 x 2 x 2 x 3 ,5 step 5: We write this prime factorization in index form, whereif there are more than one of the same factors, we write it as power instead, where the performance is the number of times it occurs. The highest common factor (HCF) of two numbers is therefore the largest number to enter both. Example: Consider the numbers 12 and 20 The factors of 12 are: 1, 2, 3, 4, 6 and 12 The factors of 20 are: 1, 2, 4, 5, 10 and 20 They have a few factors in common, but the biggest factor they have in common is 4, so 4 is the HCF of 12 and 20. The lowest common multiple (LCM) of two numbers is the smallest number that is a multiple of both. Example: Consider the numbers 5 and 7 multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, 40, 45, ... Multiples of 7 are: 7, 14, 21, 28, 35, 42, ... And so on. So we can see that the first occurrence of a number that is a multiple of these two numbers is 35, so 35 is the LCM of 5 and 7. For large numbers, the easiest way is to find HCF and LCM charts. For example, locate the HCF and LCM of 60 and 27th step 1: We need first the prime factorization of both numbers, where we would use factor trees. However, we already have the prime factorization of 60, the 60 = 2 times 2 times 3 x 5 x 5 = 2x 3 x 5 and 27= 3 x 3 times 3 = 33 step 2: Now we draw a Venn diagram in which is a circle for prime factors of 60 and a circle for prime factors of 27. Step 3: If we look at the list of factors, if one of the two numbers is split, we put them in the intersection and cross them from both lists. textcolor{3} {60}
(''{3}'' we have the numbers at the intersection (these are the factors that are common between the two numbers). There is only one number here, so HCF = 3 step 6: 6: let's multiply all the numbers in the Venn chart. So LCM = 2 x 2 by 5 by 3 by 3 by 3 3 3 Find the LCM and HCF of 420 and 132. [4 markers] To do this method, we need the full Prime factorization of 420 and 132. So, we will use the factor tree method. The prime factor tree for 420 can be seen on the right, This is 2 times 2 times 3 times 5 times 7 = 2 x 2, times 3,05,5,07 When we go through the same process, we get that the full prime factorization of 132 is 2 times 2 times 3-times 11 = 2.2 x 3 x 11. , we need to draw a Venn diagram, where a circle is for prime factors of 420 and a circle for prime factors of 132. If we look at the lists of factors, if one of the two numbers is divided, we put them in the intersection and cross them from both lists. Then all factors that are not shared and have therefore not been crossed out are placed in their respective circles. To find the HCF, We multiply all the numbers now in the Venn chart: LCM =5 times7 times 2 times 2 times3 times11=4620 The prime factors of a number can be displayed with a prime factor tree. The prime factorization of 72 is, 72=2-times2-times3-times3-times3-times3 written in index notation, the answer is 72=2.3-by3-2 The prime factors of a number can be displayed with a prime factor tree. The prime factorization of 140 is: 140=2-times2-times7 written in index notation, the answer is: 140=2-by5-times7 First, we need to find the prime factorization of 24 and 40: Prime factors of 24: 2 times2 times3 Prime factors of 40: 2 times5 times5 To find the HCF, you will find all prime factors that are common between the two numbers. HCF = 2 x2 x2=8 Next, cross all the numbers used so far from the products. Prime factors of 24: 'cancel{2}'times{2}'times'cancel{2}'times3 Prime factors of 40: 'cancel{2}'times'cancel{2}'times{2}'times5 To find the LCM, multiply the HCF by all factors that have not been crossed out so far. The prime factors of 495 and 220 can be displayed with Prime Factor trees. So the factorization of 220 is 220=2-times2-times11 and the factorization is 495=3-times3-times5-times111 Now we will draw a Venn diagram with a circle containing the factors 495 and the other that contains the factors 220. All prime factors common to these two numbers must be set at the intersection. 495=3 x3 times-times-cancel5-times-cancel11 220=2-times-cancel5 times-cancel11The HCF can be calculated by multiplying the numbers at the intersection together, text and HCF =5-by11=55 Finally, we find the LCM by multiplying all the numbers in the Venn diagram, First, we need to set the prime factorization of 32, Find 152 and 600: Prime factor of 32=2-times2-times2-times2-times2-times2-time2-prime-factors of 152= 2-times2-times19 prime factors of 600= 2-times2-times3-times5-times5-times5-times5-times Then we can place each prime factor in the correct circle in the Venn diagram. All general factors should be placed in the intersections of the circles. The highest common factor (HCF) is found by multiplying the numbers at the intersection of all three circles. HCF = 2-by2-times2=8 The lowest common multiple (LCM) is found by multiplying the numbers from all sections of the circles. LCM = 2-times2-times2-times2-times3-times5-times5-times19=45600 Try a revision card on this topic. Things to keep in mind: Learning the prime numbers below 30 is always helpful. A main factor decomposition is multiplied by all the prime numbers that make up the number. If you can first divide by a prime number, the process becomes faster. The number ending in a 0 can always be divided by 10. A factor is a number that divides another number and gives an integer. For example, because 32-div8=4, then 8 is a factor of 32. This means that 4 is also a factor of 32. We call these two numbers, 4 and 8, a factor pair. We can also think of the factor pairs as multiplication: 4-times8=32 factors of 32: 1 2 4 8 16 32 A prime factor decomposition is all prime numbers that multiply to form the original number. So, to find a prime factor decomposition, it is helpful to know your prime numbers. Prime numbers 2 3 5 7 11 13 17 19 Find the main factor decomposition of 420 We can find a prime factor decomposition into two. Method 1: Prime Factor Tree We can do this in four steps: Step 1: Start by writing your number in the top center of the page. Step 2: Think of two numbers that multiply to make your number, write them to the pages, connect to straight lines, and orbit all prime numbers. Tip: Try to split by a prime number to start with, as this will speed up the process! Tip: If your number is straight, you can divide by 2, which is prim. Step 3: Repeat step 2 on the numbers that have been circled only when the ends of each branch are circled. Step 4: Write all prime numbers (circled) together as multiplication. Tip: You can write the multiplication with Powers. 2-times2-times3-times5-times7=2-times3-times5-times7-times7 Method 2: Multiply. Instead of pulling out the prime factor tree, you can write it as a multiplication and split the number into factors until you are left with prime numbers. 420 420=6-mal70 420=2-times3-times70-mal70 420=2-times-times-times-5-times14 420=2-times3-times5-times7=2-times3-times3-times7-times7 212=2-times2-times3-times3-times3-times3-times3-times3-3-3-3 400 400=4-mal100 400=2-times 2-times 100 100 2-times 10-times 10-times 10-400=2-times 2-times 2-times 5-times 10-times 10-times 2-times 2-times 2-times 2-times 2-times 5 =2 All major KS2 maths SATs topics covered in practical questions and answers on each topic Detailed model solutions for each appropriate question for students of all abilities. Show product factors of a number are any numbers that are exactly subdivided into them. The multiples of a number are numbers that belong to their time table. Factors of a number are arbitrary numbers that are precisely divided into them. The multiples of a number are numbers that belong to their time table. Table.