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Prime factorization worksheet pdf

Welcome to our Prime Factorization Worksheets page. Here you will find our selection of worksheets involving finding prime factorizations for a range of numbers, and for solving prime factor problems. We have a range of sheets at different levels of difficulty. There is also a quick quiz at the bottom of the page where you can test your skill at prime factorization and get immediate feedback! Using these factor tree worksheets will help your child to practice prime factorization of a range of numbers; solve problems involving prime factorization; use and understand exponential notation. These sheets are aimed at students from 6th grade and upwards. We also have a link to our Prime Factorization Calculator which will quickly and easily show you all the prime factors of any number. To find out more about prime factorization, including how it works and to look at some worked examples, take a look at our prime factorization support page. What is Prime Factorization support page Example 1) Find the prime factorization of 40. 40 is even, so we know that 2 is a factor (as well as being prime) $40 = 2 \times 20$. Now we move on to the number 20. Again 20 is even, so 2 is a factor. $20 = 2 \times 10$ So $40 = 2 \times 20 = 2 \times 2 \times 10$ Now we factorize 10 into 2×5 (both prime numbers) and we cannot go any further, as all the numbers are prime. So $40 = 2 \times 20 = 2 \times 2 \times 10 = 2 \times 2 \times 2 \times 5$ Our final answer is $40 = 2 \times 2 \times 2 \times 5 = 2^3 \times 5$ Example 2) Find the prime factorization of 45. 45 is odd, so 2 is not a factor. As the number ends in a 5 we know that 5 is a factor. $45 = 5 \times 9$. Now we have to factorize 9. $9 = 3 \times 3$ (which is a prime number). This gives us: $45 = 5 \times 9 = 5 \times 3 \times 3$ Our final answer is $45 = 3 \times 3 \times 5 = 3^2 \times 5$ Example 3) Find the prime factorization of 126. 126 is even, so 2 is a factor. $126 = 2 \times 63$ Now we need to factorize 63. $63 = 7 \times 9$. 7 is prime, but 9 is not Now we have to factorize 9. $9 = 3 \times 3$ (which is a prime number). This gives us: $126 = 2 \times 63 = 2 \times 7 \times 9 = 2 \times 7 \times 3 \times 3$ Our final answer is $126 = 2 \times 3 \times 3 \times 7 = 2 \times 3^2 \times 7$ All the worksheets have answers provided. The answers are given with the factors in ascending order. The sheets get gradually harder in each section. We have split the sheets into 3 different sections: Our first section involves straightforward prime factorization of different numbers. Our next group of sheets involves solving prime factorization riddles. Our final group of sheets involves finding all possibilities in our prime factorization challenges. The two sheets just has straightforward prime factorization of a range of numbers. The third sheet is harder, and involves using exponential notation and looking at prime factorization from different starting points These sheets involve solving prime factorization riddles. There are 2 riddles on each sheet and 8 possible answers. By correctly working out the clues in each riddle, all the incorrect answers are eliminated leaving just one correct answer. Our prime factorization challenges are a great way to stretch more able students. The challenges involve finding all possible numbers that have certain features involving prime factors. This short video walkthrough shows several problems from our Prime Factorization Worksheet 3 being solved and has been produced by the West Explains Best math channel. If you would like some support in solving the problems on this page, check out the video! Take a look at some more of our worksheets similar to these. We have worksheets to help you understand more about factors and multiples. They are aimed at a 4th/5th grade level. Factors and Multiples Worksheets Our prime factorization calculator will help you factor any number into a product of its prime factors. It will show the answer in exponential form as well as standard form. You can use this calculator to check that your prime factors in your factor trees are correct. Prime Factorization Calculator Using factor trees is a great visual way to understand prime factorization. The worksheets on the link below are at an easier level to the sheets on this page and help children learn all about factor trees and prime factors. As well as our calculator, we also have a range of greatest common factor worksheets. These sheets have been designed for 6th and 7th grade students. They will help students learn and practice finding the greatest common factor of numbers up to 100. Greatest Common Factor Worksheets We have a range of worksheets on how to find the least common multiple of two or three numbers. The sheets vary in difficulty, and are suitable for 6th grade and up. Least Common Multiple Worksheets The Sieve of Eratosthenes is a method for finding what is a prime numbers between 2 and any given number. Eratosthenes was a Greek mathematician (as well as being a poet, an astronomer and musician) who lived from about 276BC to 194BC. If you want to find out more about his sieve for finding primes, and print out some Sieve of Eratosthenes worksheets, use the link below. Sieve of Eratosthenes page Take a look at our Prime Number page which clearly describes what a prime numbers is and what they are not. There are also many different questions about prime numbers answered, as well as information about the density of primes. We have a range of charts which can help you determine whether a number between 1 and 10 is a factor of a number. Divisibility Rules 1-10 Charts Here you will find a range of printable mental math 6th grade quizzes for your child to enjoy. Each worksheet tests the children on a range of math topics from number facts and mental arithmetic to geometry, fraction and measures questions. A great way to revise topics, or use as a weekly math quiz! Mental Math Worksheets 6th Grade This quick quiz tests your knowledge of prime factorization with numbers up to 120. How to Print or Save these sheets Need help with printing or saving? Follow these 3 steps to get your worksheets printed perfectly! How to Print or Save these sheets Need help with printing or saving? Follow these 3 steps to get your worksheets printed perfectly! Sign up for our newsletter to get free math support delivered to your inbox each month. Plus, get a seasonal math grab pack included for free! The Math Salamanders hope you enjoy using these free printable Math worksheets and all our other Math games and resources. If you have any questions or need any information about our site, please get in touch with us using the 'Contact Us' tab at the top and bottom of every page. You are here: Home → Worksheets → Factoring Create an unlimited supply of free worksheets for prime factorization or for finding all the factors of the given numbers. The worksheets are available in both html and PDF formats (both are easy to print), and they come with an answer key on the second page of the file. Each worksheet is randomly generated and thus unique. You can customize the worksheets by choosing the difficulty level, limits for the numbers to be factored, font size, spacing, border, and the number of problems. The answer key will list the factorization using exponential notation: each prime factor is raised to the appropriate power. For extra tips and practice problems, check out IXL's prime factorization lesson! Example worksheets Note: The largest number to be factored allowed is 10,000, because I don't want people to try such enormous factoring feats that it would crash the server. Just to be safe. Additional title & instructions (HTML allowed): Home » Arithmetic » Prime Factorization Worksheets