I'm not a bot

Simplify definition in math

Numbers have factors: And expressions (like x2 + 4x + 3) also have factors: Factoring Factoring (called "Factorising" in the UK) is the process of finding the factors: Factoring: Finding what to multiply together to get an expression. It is like "splitting" an expression into a multiplication of simpler expressions. Both 2y and 6 have a common factor of 2: So we can factor the whole expression into: 2y+6 = 2(y+3) So 2y+6 has been "factored into" 2 and y+3 Factoring is also the opposite of Expanding: Common Factor In the previous example we saw that 2y and 6 had a common factor of 2 But to do the job properly we need the highest common factor, including any variables First, 3 and 12 have a common factor of 3. So we could have: 3y2 + 12y = 3(y2 + 4y) But we can do better! 3y2 and 12y also share the variable y. Together that makes 3y: 3y2 is 3y × y 12y is 3y × 4 So we can factor the whole expression into: 3y2 + 12y = 3y(y + 4) Check: 3y(y+4) = 3y × y + 3y × 4 = 3y2 + 12y More Complicated Factoring Factoring Can Be Hard ! The examples have been simple so far, but factoring can be very tricky. Because we have to figure what got multiplied to produce the expression we are given! It is like trying to find which ingredients went into a cake to make it so delicious. It can be hard to figure out! Experience Helps With more experience factoring becomes easier. Hmmm... there don't seem to be any common factors. But knowing the Special Binomial Products gives us a clue called the "difference of squares": Because 4x2 is (2x)2, and 9 is (3)2, So we have: 4x2 − 9 = (2x)2 − (3)2 And that can be produced by the difference of squares formula: (a+b)(a−b) = a2 − b2 Where a is 2x, and b is 3. So let us try doing that: (2x+3)(2x−3) = (2x)2 − (3)2 = 4x2 − 9 Yes! So the factors of 4x2 − 9 are (2x+3) and (2x−3): Answer: 4x2 − 9 = (2x+3)(2x−3) How can you learn to do that? By getting lots of practice, and knowing "Identities"! Here is a list of common "Identities" (including the "difference of squares" used above). It is worth remembering these, as they can make factoring easier. a2 − b2 = (a+b)(a−b) a2 + 2ab + b2 = (a+b)(a+b) a2 − 2ab + b2 = (a−b)(a−b) a3 + b3 = (a+b)(a2−ab+b2) a3 − b3 = (a−b)(a2+ab+b2) a3+3a2b+3ab2+b3 = (a+b)3 a3−3a2b+3ab2−b3 = (a−b)3 There are many more like those, but those are the most useful ones. Advice The factored form is usually best. When trying to factor, follow these steps: "Factor out" any common terms See if it fits any of the identities, plus any more you may know Keep going till you can't factor any more There are also Computer Algebra Systems (called "CAS") such as Axiom, Derive, Macsyma, Maple, Mathematica, MuPAD, Reduce and others that can do factoring. More Examples Experience does help, so here are more examples to help you on the way: An exponent of 4? Maybe we could try an exponent of 2: w4 − 16 = (w2)2 − 42 And it is now the difference of squares w4 − 16 = (w2+ 4)(w2− 4) And "(w2− 4)" is another difference of squares w4 − 16 = (w2+ 4)(w+ 2)(w− 2) That is as far as we can go (unless we use imaginary numbers) Remove common factor "3u": 3u4 − 24uv3 = 3u(u3 − 8v3) Then a difference of cubes: 3u4 − 24uv3 = 3u(u3 − (2v)3) = 3u(u−2v)(u2+2uv+4v2) That is as far as we can go. Try factoring the first two and second two separately: z2(z−1) − 9(z−1) Wow, (z-1) is on both, so let us use that: (z2−9)(z−1) And z2−9 is a difference of squares (z−3)(z+3)(z−1) That is as far as we can go. Now get some more experience: 338, 339, 2047, 2048, 2049, 178, 2050, 3177, 3178, 3179 Copyright © 2025 Rod Pierce /en/algebra-topics/writing-algebraic-expressions/content/ Simplifying expressions Simplifying an expression is just another way to say solving a math problem. When you simplify an expression, you're basically trying to write it in the simplest way possible. At the end, there shouldn't be any more adding, subtracting, multiplying, or dividing left to do. For example, take this expression: 4 + 6 + 5 If you simplified it by combining the terms until there was nothing left to do, the expression would look like this: 15 In other words, 15 is the simplest way to write 4 + 6 + 5. Both versions of the expression equal the exact same amount; one is just much shorter. Simplifying algebraic expressions is the same idea, except you have variables (or letters) in your expression. Basically, you're turning a long expression into something you can easily make sense of. So an expression like this... (13x + -3x) / 2 ...could be simplified like this: 5x If this seems like a big leap, don't worry! All you need to simplify most expressions is basic arithmetic -- addition, subtraction, multiplication, and division -- and the order of operations. The order of operations Like with any problem, you'll need to follow the order of operations when simplifying an algebraic expression. The order of operations is a rule that tells you the correct order for performing calculations. According to the order of operations, you should solve the problem in this order: ParenthesesExponentsMultiplication and divisionAddition and subtraction Let's look at a problem to see how this works. In this equation, you'd start by simplifying the part of the expression in parentheses: 24 - 20. 2 · (24 - 20)2 + 18 / 6 - 30 24 minus 20 is 4. According to the order of operations, next we'll simplify any exponents. There's one exponent in this equation: 42, or four to the second power. 2 · 42 + 18 / 6 - 30 42 is 16. Next, we need to take care of the multiplication and division. We'll do those from left to right: 2 · 16 and 18 / 6. 2 · 16 + 18 / 6 - 30 2 · 16 is 32, and 18 / 6 is 3. All that's left is the last step in the order of operations: addition and subtraction. 32 + 3 - 30 32 + 3 is 35, and 35 - 30 is 5. Our expression has been simplified—there's nothing left to do. 5 That's all it takes! Remember, you must follow the order of operations when you're performing calculations—otherwise, you may not get the correct answer. Still a little confused or need more practice? We wrote an entire lesson on the order of operations. You can check it out here. Adding like variables To add variables that are the same, you can simply add the coefficients. So 3x + 6x is equal to 9x. Subtraction works the same way, so 5y - 4y = 1y, or just y. 5y - 4y = 1y You can also multiply and divide variables with coefficients. To multiply variables with coefficients, first multiply the coefficients, then write the variables next to each other. So 3x · 4y is 12xy. 3x · 4y = 12xy The Distributive Property Sometimes when simplifying expressions, you might see something like this: 3(x+7)-5 Normally with the Order of Operations, we would simplify what is inside the parentheses first. In this case, however, x+7 can't be simplified since we can't add a variable and a number. So what's our first step? As you might remember, the 3 on the outside of the parentheses means that we need to multiply everything inside the parentheses by 3. There are two things inside the parentheses: x and 7. We'll need to multiply them both by 3. 3(x) + 3(7) - 5 3 · x is 3x and 3 · 7 is 21. We can rewrite the expression as: 3x + 21 - 5 Next, we can simplify the subtraction 21 - 5. 21 - 5 is 16. 3x + 16 Since it's impossible to add variables and numbers, we can't simplify this expression any further. Our answer is 3x + 16. In other words, 3(x+7) - 5 = 3x+16. /en/algebra-topics/solving-equations/content/ simplify, simplest form 1. To simplify a fraction to its simplest form: to reduce the numerator and denominator in a fraction to the smallest numbers possible. 2. To simplify an expression: to remove brackets, unnecessary terms and numbers. EXAMPLES: Download Article A straightforward guide on simplifying expressions and equations Download Article Math students are often asked to give their answers in "the simplest terms"—in other words, to write answers in their smallest, shortest possible way. And, a math problem isn't considered "done" until the answer has been reduced to its simplest form. We'll show you how to simplify basic expressions first, then move on to complex equations. Solve any parenthetical expressions first. Multiply your exponents, then multiply your factors. Divide, add, and subtract—in that order. Combine any remaining like terms. 1 Use the order of operations. When simplifying, you can't go from left to right. You must follow the order of operations. Doing operations out of order can give you the wrong answer. A handy acronym you can use to remember this is "Please excuse my dear Aunt Sally," or "PEMDAS".[1] The order of operations are: 1. Parentheses (please) 2. Exponents (excuse) 3. Multiplication (my) 4. Division (dear) 5. Addition (aunt) 6. Subtraction (sally) 2 Solve all of the terms in parentheses. In math, parentheses indicate that the terms inside should be calculated separately from the surrounding expression. Tackle the terms in parentheses before doing anything else. Note that the order of operations still applies inside of each pair of parentheses. For instance, within parentheses, you should multiply before you add, subtract, etc.[2] As an example, let's try to simplify the expression 2x + 4(5 + 2) + 32 - (3 + 4/2). In this expression, we would solve the terms in parentheses, 5 + 2 and 3 + 4/2, first. 5 + 2 = 7. 3 + 4/2 = 3 + 2 = 5. The second parenthetical term simplifies to 5 because, owing to the order of operations, we divide 4/2 as our first act inside the parentheses. If we simply went from left to right, we might instead add 3 and 4 first, then divide by 2, giving the incorrect answer of 7/2. Note on multiple parentheses: if there are multiple parentheses inside one another, solve the innermost terms first, then the second-innermost, and so on. Advertisement 3 Multiply to solve any exponents. After tackling parentheses, solve your expression's exponents. Exponents are the little numbers located right next to the normal sized number (called base numbers). Find the answer to each exponent problem by multiplying, then substitute the answers back into your equation in place of the exponents themselves.[3] After dealing with the parentheses, our example expression is now 2x + 4(7) + 32 - 5. The only exponent in our example is 32, so we multiply 3 by itself (i.e. 3 x 3), which equals 9. Add this back into the equation in the place of 32 to get 2x + 4(7) + 9 - 5. 4 Solve the multiplication problems in your expression. Next, do all of the multiplication in your expression. Remember that multiplication can be written in several ways. A times symbol (×), a dot (·), or an asterisk (*) are all ways to show multiplication. A number hugging parentheses or a variable (like 4(x)) also means you multiply.[4] There are two instances of multiplication in our problem: 2x (2x is 2 × x) and 4(7). We don't know the value of x, so we'll solve for 4(7) = 4 × 7 = 28. We can rewrite our equation as 2x + 28 + 9 - 5. 5 Complete any division you need to do. As you search for division problems in your expression, keep in mind that, like multiplication, division can be written multiple ways. The simple ÷ symbol is one, but also remember that slashes and bars in a fraction (like 3/4, for instance) indicate you need to divide.[5] Because we already solved a division problem (4/2) when we tackled the terms in parentheses, our example no longer has any division in it, so we will skip this step. This brings up an important point—you don't have to perform every operation in the PEMDAS acronym when simplifying an expression. You only need to complete the steps that are present in your problem. 6 Add any numbers that need to be combined. Next, do any addition you need to do. You can simply proceed from left to right through your expression, but you may find it easiest to add numbers that combine in simple, manageable ways first. For instance, in the expression 49 + 29 + 51 +71, it's easier to add 49 + 51 = 100, 29 + 71 = 100, and 100 + 100 = 200, rather than 49 + 29 = 78, 78 + 51 = 129, and 129 + 71 = 200.[6] Our example expression has been partially simplified to "2x + 28 + 9 - 5". Now, we must add what we can, so let's look at each addition problem from left to right. We can't add 2x and 28 because we don't know the value of x, so we move on to 28 + 9 = 37. Then, we can rewrite our expression as "2x + 37 - 5". 7 Subtract as needed. The very last step in PEMDAS is subtraction. Proceed through your problem, solving any remaining subtraction problems. You may address the addition of negative numbers in this step, or in the same step as the normal addition problems (it won't affect your answer).[7] In our expression, "2x + 37 - 5", there is only one subtraction problem. 37 - 5 = 32 8 Review your expression and combine any remaining terms. After proceeding through the order of operations, you're left with your expression in the simplest terms. However, if your expression contains one or more variables, the variable terms will remain largely untouched. Simplifying variable expressions requires you to find the values of your variables or to use specialized techniques to simplify the expression (see below). Our final answer is "2x + 32". We can't address this final addition problem until we know the value of x, but when we do, this expression will be much easier to solve than our initial lengthy expression. A note on combining terms: If you have an equation where there are like terms, now is when you combine them. Say we were left with "2x + 32 + 4x + 12 = y". We could combine 32 and 12 and 2x and 4x to get "6x + 44 = y" as our final simplified expression. Advertisement 1 Combine all of your like variable terms. When dealing with variable expressions, it's important to remember that terms with the same variable and exponent (aka like terms) can be added and subtracted like normal numbers. The terms must not only have the same variable, but also the same exponent. For example, 7x and 5x can be added to each other, but 7x and 5x2 can not.[8] This rule also extends to terms with multiple variables. For instance, 2xy2 can be added to -3xy2, but not -3x2y or -3y2. Let's look at the expression x2 + 3x + 6 - 8x. In this expression, we can add the 3x and -8x terms because they are like terms. Simplified, our expression is x2 - 5x + 6. 2 Simplify numerical fractions by dividing or "canceling out" factors. Fractions that have only numbers (and no variables) in both the numerator and denominator can be simplified in several ways. The easiest way to simplify here is to simply treat the fraction as a division problem and divide the numerator by the denominator. In addition, any multiplicative factors that appear both in the numerator and denominator can be "canceled out" because they divide to give the number 1. In other words, if both the numerator and denominator share a factor, this factor can be removed from the fraction, leaving a simplified answer.[9] For example, let's consider the fraction 36/60. If we have a calculator handy, we can divide to get an answer of .6. If we don't, however, we can still simplify by removing common factors. Picture 36/60 as (6 × 6)/(6 × 10). This can be rewritten as 6/6 × 6/10. 6/6 = 1, so our expression is actually 1 × 6/10 = 6/10. However, we're not done yet—both 6 and 10 share the factor 2. Repeating the above procedure, we are left with 3/5. You have to divide both the numerator and denominator by their greatest common factor (which in the example above is 12: (12 × 3)/(12 × 5)). 3 In variable fractions, cancel out any variable factors. Variable expressions in the form of fractions offer unique opportunities for simplification. Like normal fractions, variable fractions allow you to remove factors that are shared by both the numerator and denominator. However, in variable fractions, these factors can be both numbers and actual variable expressions.[10] Let's consider the expression (3x2 + 3x)/(-3x2 + 15x). This fraction can be rewritten as (x + 1)(3x)/(3x)(5 - x), because 3x appears both in the numerator and in the denominator. Removing these factors from the equation leaves (x + 1)/(5 - x). Similarly, in the expression (2x2 + 4x + 6)/2, every term is divisible by 2, so we can write the expression as (2(x2 + 2x + 3))/2 and thus simplify to x2 + 2x + 3. Note that you can't cancel just any term—you can only cancel multiplicative factors that appear both in the numerator and denominator. For instance, in the expression (x(x + 2))/x, the "x" cancels from both the numerator and denominator, leaving (x + 2)/1 = (x + 2). However, (x + 2)/x does not cancel to 2/1 = 2. 4 Multiply parenthetical terms by their constants. When dealing with variable terms in parentheses with an adjacent constant, sometimes, multiplying each term in the parentheses by the constant can result in a simpler expression. This holds true for purely numeric constants and for constants that include variables.[11] For instance, the expression 3(x2 + 8) can be simplified to 3x2 + 24, while 3x(x2 + 8) can be simplified to 3x3 + 24x. Note that, in some cases, such as in variable fractions, the constant adjacent to the parentheses gives an opportunity for cancellation and thus shouldn't be multiplied through the parentheses. In the fraction (3(x2 + 8))/3x, the factor 3 appears both in the numerator and the denominator, so we can cancel it and simplify the expression to (x2 + 8)/x. This is simpler and easier to work with than (3x3 + 24x)/3x, which would be the answer we would get if we had multiplied through. 5 Simplify by factoring. Factoring is a technique by which some variable expressions, including polynomials, can be simplified. Think of factoring as the opposite of the "multiplying through parentheses" step above—sometimes, an expression can be rendered more simply as two terms multiplied by each other, rather than as one unified expression. This is especially true if factoring an expression allows you to cancel part of it (as you would in a fraction). In special cases (often with quadratic equations), factoring even allows you to find answers to the equation.[12] Let's consider the expression x2 - 5x + 6 once more. This expression can factor to (x - 3)(x - 2). So, if x2 - 5x + 6 is the numerator of a certain expression with one of these factor terms in the denominator, like is the case with the expression (x2 - 5x + 6)/(2(x - 2)), we may want to write it in factored form so that we can cancel it with the denominator. In other words, with (x - 3)(x - 2)/(2(x - 2)), the (x - 2) terms cancel, leaving us with (x - 3)/2. Another reason you may want to factor your expression has to do with the fact that factoring can reveal answers to certain equations. Let's consider the equation x2 - 5x + 6 = 0. Factoring gets us (x - 3)(x - 2) = 0. Since any number times zero equals zero, we know that if we can get either of the terms of parentheses to equal zero, the whole expression on the left side of the equals sign will equal zero as well. Thus, 3 and 2 are two answers to the equation. Advertisement Add New Question Question I never heard of PEMDAS; in fact, we learned BODMAS, which says divide first, then multiply. Which is correct? There really is no difference to the final result based on which mnemonic method you use. PEMDAS is really the same thing. P stands for "parentheses," which is BODMAS refers to as brackets. The M and D are together and are to be evaluated left to right. The A and S are together and are to be evaluated left to right. Question How do I simplify -3(2a^2-5) + 3a(4a-5)? -3(2a² - 5) + 3a(4a - 5) = (-6a² + 15) + (12a² - 15a) = (-6a² + 12a²) + (15) + (-15a) = 6a² -15a + 15 = 3(2a² -5a + 5). Question How do I solve one without parentheses? To simplify a math expression without parentheses, you follow the order of operations, which is PEMDAS (Parentheses, Exponents, Multiplication, Division, Addition, Subtraction). Because the expression has no parentheses, you can start checking the expression for exponents. If it does, simplify that first. Then, you can move on to multiplication and division, then finally, addition and subtraction. See more answers Ask a Question Advertisement This article was co-authored by David Jia and by wikiHow staff writer, Eric McClure. David Jia is an Academic Tutor and the Founder of LA Math Tutoring, a private tutoring company based in Los Angeles, California. With over 10 years of teaching experience, David works with students of all ages and grades in various subjects, as well as college admissions counseling and test preparation for the SAT, ACT, ISEE, and more. After attaining a perfect 800 math score and a 690 English score on the SAT, David was awarded the Dickinson Scholarship from the University of Miami, where he graduated with a Bachelor's degree in Business Administration. Additionally, David has worked as an instructor for online videos for textbook companies such as Larson Texts, Big Ideas Learning, and Big Ideas Math. This article has been viewed 381,368 times. Co-authors: 26 Updated: September 15, 2024 Views: 381,368 Categories: Mathematics Print Send fan mail to authors Thanks to all authors for creating a page that has been read 381,368 times. "I had a math quiz due today, and my teacher did not help me understand what simplify meant. So, I came to this article, and with its help, I passed my math test. If I had not visited this article, I would have received an F in mathematics."..." more Share your story Simplifying expressions mean rewriting the same algebraic expression with no like terms and in a compact manner. To simplify expressions, we combine all the like terms and solve all the given brackets, if any, and then in the simplified expression, we will be only left with unlike terms that cannot be reduced further. Let us learn more about simplifying expressions in this article. How to Simplify Expressions? Before learning about simplifying expressions, let us quickly go through the meaning of expressions in math. Expressions refer to mathematical statements having a minimum of two terms containing either numbers, variables, or both connected through an addition/subtraction operator in between. The general rule to simplify expressions is PEMDAS - stands for Parentheses, Exponents, Multiplication, Division, Addition, Subtraction. In this article, we will be focussing more on how to simplify algebraic expressions. Let's begin! We need to learn how to simplify expressions as it allows us to work more efficiently with algebraic expressions and ease out our calculations. To simplify algebraic expressions, follow the steps given below: Step 1: Solve parentheses by adding/subtracting like terms inside and by multiplying the terms inside the brackets with the factor written outside. For example, 2x (x + y) can be simplified as 2x2 + 2xy. Step 2: Use the exponent rules to simplify terms containing exponents. Step 3: Add or subtract the like terms. Step 4: At last, write the expression obtained in the standard form (from highest power to the lowest power). Let us take an example for a better understanding. Simplify the expression: x (6 – x) – x (3 – x). Here, there are two parentheses both having two unlike terms. So, we will be solving the brackets first by multiplying x to the terms written inside. x(6 - x) can be simplified as 6x - x2, and -x(3 - x) can be simplified as -3x + x2. Now, combining all the terms will result in 6x - x2 - 3x + x2. In this expression, 6x and -3x are like terms, and -x2 and x2 are like terms. So, adding these two pairs of like terms will result in (6x - 3x) + (-x2 + x2). By simplifying it further, we will get 3x, which will be the final answer. Therefore, x (6 – x) – x (3 – x) = 3x. Look at the image given below showing another simplifying expression example. Rules for Simplifying Algebraic Expressions The basic rule for simplifying expressions is to combine like terms together and write unlike terms as it is. Some of the rules for simplifying expressions are listed below: To add two or more like terms, add their coefficients and write the common variable with it. Use the distributive property to open up brackets in the expression which says that a (b + c) = ab + ac. If there is a negative sign just outside parentheses, change the sign of all the terms written inside that bracket to simplify it. If there is a 'plus' or a positive sign outside the bracket, just remove the bracket and write the terms as it is, retaining their original signs. Simplifying Expressions with Exponents To simplify expressions with exponents is done by applying the rules of exponents on the terms. For example, (3x2)(2x) can be simplified as 6x3. The exponent rules chart that can be used for simplifying algebraic expressions is given below: Zero Exponent Rule a0 = 1 Identity Exponent Rule a1 = a Product Rule am × an = am+n Quotient Rule am/an = am-n Negative Exponents Rule a-m = 1/am; (a/b)-m = (b/a)m Power of a Power Rule (am)n = amn Power of a Product Rule (ab)m = ambm Power of a Quotient Rule (a/b)m = am/bm Example: Simplify: 2ab + 4b (b2 - 2a). To simplify this expression, let us first open the bracket by multiplying 4b to both the terms written inside. This implies, 2ab + 4b (b2) - 4b (2a). By using the product rule of exponents, it can be written as 2ab + 4b3 - 8ab, which is equal to 4b3 - 6ab. This is how we can simplify expressions with exponents using the rules of exponents. Simplifying Expressions with Distributive Property Distributive property states that an expression given in the form of x (y + z) can be simplified as xy + xz. It can be very useful while simplifying expressions. Look at the above examples, and see whether and how we have used this property for the simplification of expressions. Let us take another example of simplifying 4(2a + 3a + 4) + 6b using the distributive property. Therefore, 4(2a + 3a + 4) + 6b is simplified as 20a + 6b + 16. Now, let us learn how to use the distributive property to simplify expressions with fractions. Simplifying Expressions with Fractions When fractions are given in an expression, then we can use the distributive property and the exponent rules to simplify such expression. For example, 1/2 (x + 4) can be simplified as x/2 + 2. Let us take one more example to understand it. Example: Simplify the expression: 3/4x + y/2 (4x + 7). By using the distributive property, the given expression can be written as 3/4x + y/2 (4x) + y/2 (7). Now, to multiply fractions, we multiply the numerators and the denominators separately. So, y/2 × 4x/1 = (y × 4x)/2 = 4xy/2 = 2xy. And, y/2 × 7/1 = 7y/2. Therefore, 3/4x + y/2 (4x + 7) = 3/4x + 2xy + 7y/2. All three are unlike terms, so it is the simplified form of the given expression. While simplifying expressions with fractions, we have to make sure that the fractions should be in the simplest form and only unlike terms should be present in the simplified expression. For an instance, (2/4)x + 3/6y is not the simplified expression, as fractions are not reduced to their lowest form. On the other hand, x/2 + 1/2y is in a simplified form as fractions are in the reduced form and both are unlike terms. ► Related Topics: Check these interesting articles related to the concept of simplifying expressions in math. Example 1: Find the simplified form of the expression formed by the following statement: "Addition of k and 8 multiplied by the subtraction of k from 16". Solution: From the given statement, the expression formed is (k + 8)(16 - k). To simplify this expression, we need to use the concept of multiplication of algebraic expressions. By using the distributive property of simplifying expression, it can be simplified as, ⇒ k (16 - k) + 8 (16 - k) ⇒ 16k - k2 + 128 - 8k ⇒ - k2 + 16k - 8k + 128 ⇒ - k2 + 8k + 128 Therefore, - k2 + 8k + 128 is the simplified form of the given expression. Example 2: Simplify the expression: 4ps - 2s - 3(ps +1) - 2s . Solution: By using the rules of simplifying expressions, 4ps - 2s - 3(ps +1) - 2s can be simplified as, ⇒ 4ps - 2s - 3(ps +1) - 2s ⇒ 4ps - 2s - 3ps - 3 - 2s ⇒ 4ps - 3ps - 2s - 2s - 3 ⇒ ps - 4s - 3 Therefore, 4ps - 2s - 3(ps +1) - 2s = ps - 4s - 3. Example 3: Daniel bought 5 pencils each costing $x, and Victoria bought 6 pencils each costing $x. Find the total cost of buying pencils by both of them. Solution: Given, Daniel bought 5 pencils each for $x. The cost of all 5 pencils = $5x. And, Victoria bought 6 pencils each for $x, so the cost of 6 pencils = $6x. Therefore, the total cost of pencils bought by them = $5x + $6x = $11x. View Answer > go to slidego to slidego to slide Great learning in high school using simple cues Indulging in rote learning, you are likely to forget concepts. With Cuemath, you will learn visually and be surprised by the outcomes. Book a Free Trial Class FAQs on Simplifying Expressions In math, simplifying expressions is a way to write an expression in its lowest form by combining all like terms together. It requires one to be familiar with the concepts of arithmetic operations on algebraic expressions, fractions, and exponents. We follow the same PEMDAS rule to simplify algebraic expressions as we do for simple arithmetic expressions. Along with PEMDAS, exponent rules, and the knowledge about operations on expressions also need to be used while simplifying algebraic expressions. What Mathematical Concepts are Important in Simplifying Expressions? The mathematical concepts that are important in simplifying algebraic expressions are given below: What are the Rules for Simplifying Expressions? The rules for simplifying expressions are given below: Follow the PEMDAS rule to determine the order of terms to be simplified in an expression. Distributive property can be used to simplify the multiplication of two terms in an algebraic expression. Exponent rules can be used to simplify terms with exponents. First, we open the brackets, if any. Then we simplify the terms containing exponents. After that, combine all the like terms. The simplified expression will only have unlike terms connected by addition/subtraction operators that cannot be simplified further. How to do Simplifying Expressions? Follow the steps given below to learn how to simplify expressions: Open up brackets, if any. If there is a positive sign outside the bracket, then remove the bracket and write all the terms retaining their original signs. If there is a negative sign outside the bracket, then remove the bracket and change the signs of all the terms written inside from + to -, and - to +. And if there is a number or variable written just outside the bracket, then multiply it with all the terms inside using the distributive property. Use exponent rules to simplify terms with exponents, if any. Add/subtract all like terms. Write the simplified expression in the standard form (from the highest power term to the lowest power term). How do Simplifying Expressions and Solving Equations Differ? Equations refer to those statements that have an equal to "=" sign between the term(s) written on the left side and the term(s) written on the right side. Solving equations mean finding the value of the unknown variable given. On the other hand, simplifying expressions mean only reducing the expression to its lowest form. It does not intend to find the value of an unknown quantity. What is an Example of Simplifying Expressions? Simplifying algebraic expressions refer to the process of reducing the expression to its lowest form. An example of simplifying algebraic expressions is given below: 2x + 6x (y - 7) - 8 = 2x + 6xy - 42x - 8 = 6xy - 40x - 8