Definition of like terms in math

** *Mastering like terms is crucial for simplifying algebraic expressions. This guide provides a clear definition, explains how to identify them, offers practical examples, and explores related mathematical concepts to boost your algebra skills. Learn now!*

Understanding Like Terms in Math: A Comprehensive Guide

Like terms are the building blocks of simplifying algebraic expressions. Understanding their definition and how to manipulate them is fundamental to success in algebra and beyond. This guide will clearly define like terms, illustrate how to identify them, and explore related concepts to solidify your understanding.

Defining Like Terms

In mathematics, like terms are terms that have the same variables raised to the same powers. This seemingly simple definition holds the key to simplifying complex expressions. The coefficients (the numbers multiplying the variables) can be different, but the variable part must be identical. Let's break it down: • Variables: *These are represented by letters (e.g., x, y, z).* • Powers (Exponents): These indicate how many times a variable is multiplied by itself (e.g., x^2, y^3). • Coefficients: These are the numerical values multiplying the variables (e.g., 3x, $-2y^2$). Examples of Like Terms: **• 3x and 7x (Same variable 'x', same power 1) • $-2y^2$ and $5y^2$ (Same variable 'y', same power 2) • 1/2ab and -3ab (Same variables 'a' and 'b', same powers 1)** Examples of Unlike Terms: • 2x and $2x^2$ (Same variable 'x', but different powers) • 3y and 4z (Different variables) • 5ab and $5a^2b$ (Same variables, but different powers)

Identifying Like Terms: A Step-by-Step Approach

Identifying like terms becomes easier with practice. Here's a systematic approach: 1. Focus on the variable part: **Ignore the coefficients initially. 2.** Check the variables: *Are the variables in both terms the same? 3.* Check the exponents: Are the exponents on each variable the same in both terms? 4. If both 2 and 3 are true: You have like terms.

Simplifying Expressions with Like Terms

The primary advantage of identifying like terms lies in simplifying algebraic expressions. Like terms can be combined (added or subtracted) by adding or subtracting their coefficients. The variable part remains unchanged. Example: Simplify the expression: 3x + 5y - 2x + 8y 1. Identify like terms: *3x and -2x are like terms; 5y and 8y are like terms.*

2. Combine like terms: *(3x - 2x) + (5y + 8y) = x + 13y This simplified expression is equivalent to the original but is much easier to understand and work with.*

Combining Like Terms: A Table for Clarity

| Term 1 | Term 2 | Like Terms? | Simplified Result | ||||| | 4a | 7a | Yes | 11a | | $2x^2$ | 5x | No | $2x^2 + 5x$ | | -3xy | 2xy | Yes | -xy | | $6b^3$ | $-6b^2$ | No | $6b^3 - 6b^2$ | | 1/2mn | -1/4mn | Yes | 1/4mn |

Related Concepts in Algebra

Understanding like terms is crucial for several key algebraic concepts:

1. Solving Equations

When solving equations, combining like terms is often the first step towards isolating the variable and finding the solution.

2. Expanding and Factoring Expressions

Expanding expressions (using the distributive property) often leads to like terms that can be combined for simplification. Similarly, factoring involves identifying common factors among like terms.

3. Polynomial Operations

Polynomials are algebraic expressions with multiple terms. Adding, subtracting, multiplying, and dividing polynomials all heavily rely on identifying and combining like terms.

4. Linear Equations and Graphs

Linear equations, often represented as y = mx + c, can be manipulated and graphed efficiently by understanding and combining like terms.

Conclusion

The ability to identify and combine like terms is a cornerstone skill in algebra and beyond. By mastering this concept, you will significantly improve your ability to simplify expressions, solve equations, work with polynomials, and progress to more advanced mathematical concepts. Consistent practice and a clear understanding of the definitions are key to solidifying this essential skill.

Advanced FAQs

1. Can like terms have different coefficients? *Yes, coefficients can differ. The variable part must be identical. 2.* How do I combine like terms with fractions as coefficients? Find a common denominator for the coefficients and then add or subtract as usual. 3. Are there any exceptions to the rule of combining like terms? **No, the rules for combining like terms are consistent throughout algebra. 4.** Can I combine terms with variables in the denominator? **Yes, but treat the variables in the denominator with care. Ensure you combine only terms with identical denominators. For instance, 1/x + 2/x = 3/x. 5.** How do like terms apply to higher-level mathematics?** The concept of like terms extends to more complex algebraic structures; for example, collecting like terms in matrices or tensors. The underlying principle of combining similar elements remains consistent.

Understanding Like Terms in Math: The Key to Simplifying Expressions

Ever stared at a complex mathematical expression and felt a pang of confusion? You're not alone! Often, the key to unlocking these seemingly daunting equations lies in understanding a fundamental concept: **like terms**. Once you grasp what like terms are and how to identify them, simplifying algebraic expressions becomes significantly easier. Think of it like sorting your Lego bricks – you group the same colors and shapes together to build something amazing. In math, like terms are your building blocks for streamlined calculations. So, what exactly are like terms? Let's dive in and demystify this essential mathematical idea.

Defining Like Terms: What's the Big Idea?

At its core, a **like term** in algebra is a term that has the **exact same variable(s)** raised to the **exact same power(s)**. It's all about consistency. The numerical coefficient (the number in front of the variable) can be different, but the variable part must be identical. Let's break this down with some examples: * **5x and 2x** are like terms because they both have the variable 'x' raised to the power of 1 (which we usually don't write). * **3y² and 7y²** are like terms because they both have the variable 'y' raised to the power of 2. * **-8ab and 12ab** are like terms because they both have the variables 'a' and 'b' multiplied together, each raised to the power of 1. Now, let's look at some examples of terms that are *not* like terms: * **4x and 4y** are not like terms because they have different variables ('x' and 'y'). * **6x² and 6x** are not like terms because the variable 'x' is raised to different powers (2 and 1). * **3x²y and 3xy²** are not like terms because the powers of the variables are different (x²y vs. xy²). This distinction is crucial because you can only add or subtract like terms. You can't combine

terms that don't share the same variable(s) and exponents.

Why Are Like Terms So Important? The Power of Simplification

The primary reason we learn about like terms is for **simplifying algebraic expressions**. Imagine an expression like: `3x + 5y - 2x + 7y` Without understanding like terms, this might look messy. But if we identify the like terms, the simplification becomes straightforward: * **Like terms with 'x':** 3x and -2x * **Like terms with 'y':** 5y and 7y Now, we can combine them: * (3x - 2x) + (5y + 7y) = **1x + 12y** And we usually write `1x` as just `x`, so the simplified expression is: **x + 12y** See how much cleaner and easier to understand that is? This ability to simplify is fundamental in solving equations, evaluating formulas, and understanding more advanced mathematical concepts. It's the foundation for manipulating algebraic expressions efficiently.

Identifying Like Terms: A Step-by-Step Guide

Let's get practical. How do you actually spot like terms in an expression? Follow these simple steps: 1. **Examine the Variables:** Look at the letters in each term. Do they have the same variables? For example, `3ab` and `5ba` have the same variables (`a` and `b`), even though the order is different. Remember that the order of multiplication doesn't change the result (commutative property). So, `ab` is the same as `ba`. 2. **Check the Exponents:** For each variable, are the exponents the same? A term like `2x³y²` and a term like `4x³y²` are like terms because both `x` has an exponent of 3 and `y` has an exponent of 2. However, `2x³y²` and `4x²y³` are *not* like terms. 3. **Ignore the Coefficients (for now):** The numbers in front of the variables (the coefficients) don't matter when determining if terms are *like*. `5x` and `10x` are like terms. You'll use the coefficients when you *combine* them, but they don't define the "likeness." 4. **Consider Constants:** Terms that are just numbers without any variables are called **constant terms**. All constant terms are like terms. For example, in the expression `7x + 3 + 2x - 9`, `3` and `-9` are constant terms and are therefore like terms. Let's try a more complex example: `4a²b + 9c - 3a²b + 5c³ - 12c + 2a²b` * **Identify terms with `a²b`:** `4a²b`, `-3a²b`, `2a²b`. These are like terms. * **Identify terms with `c`:** `9c`, `-12c`. These are like terms. * **Identify terms with `c³`:** `5c³`. This term stands alone as it has no other like terms in this expression. So, we can group them: `(4a²b - 3a²b + 2a²b) + (9c - 12c) + 5c³` This process of visually grouping or "circling" like terms can be incredibly helpful when you're first learning.

Combining Like Terms: The Next Crucial Step

Once you've identified like terms, the next logical step is to combine them. This involves adding or subtracting their coefficients. Here's how it works: * **Addition:** Add the coefficients of the like terms. * Example: `5x + 2x = (5+2)x = 7x` * Example: `3y² + 7y² = (3+7)y² = 10y²` * **Subtraction:** Subtract the coefficients of the like terms.

Remember to pay attention to the signs. * Example: `8a - 3a = (8-3)a = 5a` * Example: `10ab - 15ab = (10-15)ab = -5ab` * **Combining with Different Signs:** * Example: `9m - 4m = (9-4)m = 5m` * Example: `2n + 8n = (2+8)n = 10n` * Example: `6p² - 11p² = (6-11)p² = -5p²` Let's revisit our earlier example and combine the like terms: `4a²b + 9c - 3a²b + 5c³ - 12c + 2a²b` 1. **Combine `a²b` terms:** `4a²b - 3a²b + 2a²b = (4 - 3 + 2)a²b = 3a²b` 2. **Combine `c` terms:** `9c - 12c = (9 - 12)c = -3c` 3. **The `c³` term remains:** `5c³` Now, put the simplified terms back together: **`3a²b - 3c + 5c³`** This is the simplified form of the original expression. It's much more manageable!

Common Pitfalls and How to Avoid Them

Even with a clear definition, students sometimes make mistakes when dealing with like terms. Here are a few common pitfalls and how to steer clear of them: * **Confusing Variables and Exponents:** The most frequent error is treating `x²` and `x` as like terms. Always remember, the exponent matters! * *Correction:* Re-read the definition. Are the variables *and* their powers identical? * **Ignoring Negative Signs:** Subtraction can be tricky. Forgetting a negative sign can lead to an incorrect coefficient. * *Correction:* Treat subtraction as adding a negative. For example, `9c - 12c` is the same as `9c + (-12c)`. * **Combining Unlike Terms:** Sometimes, students try to combine terms that aren't like. For instance, adding `3x` and `2y`. * *Correction:* Strictly adhere to the rule: only combine terms with the exact same variable(s) and same powers. * **Incorrectly Grouping Variables:** Remember that `ab` is the same as `ba`, but `a²b` is not the same as `ab²`. * *Correction:* Always write variables in alphabetical order to make comparison easier, and ensure the exponents match for each specific variable. Practicing regularly is the best way to solidify your understanding and avoid these common errors. The more you work with like terms, the more intuitive it becomes.

Like Terms in Different Contexts

The concept of like terms isn't confined to basic algebraic simplification. It pops up in various areas of mathematics: * **Polynomials:** When adding or subtracting polynomials, you'll constantly be identifying and combining like terms. For example, adding `(2x² + 3x - 1)` and `(x² - 5x + 4)` requires combining the `x²` terms, the `x` terms, and the constant terms separately. * **Equations:** Solving linear equations often involves simplifying both sides by combining like terms before isolating the variable. * **Word Problems:** Translating word problems into algebraic expressions frequently results in expressions with multiple terms that need simplification using the like terms rule. For instance, if one person has `n` apples and another has `3n` apples, and they give away `2` apples each, the total remaining would be `(n+3n) - (2+2) = 4n - 4`. * **Factoring:** While not directly combining them, understanding what constitutes a like term is essential for recognizing common factors when factoring expressions. * **Functions:** When dealing with function notation, especially in calculus, simplifying

expressions often involves combining like terms. Essentially, anywhere you encounter variables and operations in mathematics, the concept of like terms plays a vital role in making the process manageable and accurate.

Conclusion: Mastering the Art of Simplification

Understanding **like terms** is a cornerstone of algebra. It's the secret ingredient that transforms complex, unwieldy expressions into simple, elegant ones. By diligently identifying terms with identical variables raised to identical powers, and then confidently combining their coefficients, you unlock the power to solve, analyze, and understand mathematical problems more effectively. So, the next time you see a jumble of variables and numbers, take a deep breath, remember the definition of like terms, and start sorting. You'll be simplifying with confidence in no time! Keep practicing, and you'll find that mastering like terms is one of the most rewarding steps in your mathematical journey. It’s a fundamental skill that will serve you well as you delve deeper into the fascinating world of mathematics.

Understanding Like Terms in Mathematics: A Foundational Concept

In the realm of algebra, the concept of like terms forms a cornerstone of equation solving and expression simplification. But what exactly are like terms, and why do they matter so deeply in mathematical reasoning? Like terms are variables or constants that share the same variable(s) raised to the same exponent. This similarity allows them to be combined through addition or subtraction, enabling clearer, more concise mathematical statements. For instance, in the expression $3x + 5x$, both terms contain the variable x to the first power, making them like terms that can be added to yield $8x$. This process is not merely mechanical; it reflects a fundamental principle of algebraic structure—grouping similar components to reduce complexity and reveal underlying relationships.

The Significance of Like Terms in Simplification

At its core, the utility of like terms lies in simplification. When expressions contain multiple terms with identical variable parts, recognizing and combining like terms transforms cumbersome sums into more manageable forms. Consider the expression $2y^2 + 7y - 3y^2$ — by identifying $2y^2$ and $-3y^2$ as like terms, we combine them to produce $-y^2 + 7y$. This not only streamlines calculations but also clarifies the expression’s structure, making it easier to analyze or solve further. The ability to consolidate like terms is essential in everything from solving linear equations to manipulating polynomial functions, where precision and clarity are paramount.

Applications Across Mathematical Disciplines

Beyond basic algebra, like terms extend their influence into more advanced mathematical domains. In calculus, for example, integrating or differentiating functions often relies on grouping like terms to apply standard rules efficiently. When expanding binomials using the distributive property or factoring quadratic expressions, recognizing like terms ensures accurate expansion and simplification. Even in statistics and data analysis, grouping similar variables or measurements as like terms supports clearer modeling and interpretation. Their role transcends classrooms, serving as a vital tool in scientific computation and engineering design.

Benefits of Mastering Like Terms

Learning to identify and combine like terms enhances logical thinking and problem-solving precision. Students who grasp this concept early develop stronger algebraic intuition, enabling them to tackle increasingly complex problems with confidence. This foundational skill reduces errors in equation manipulation, fosters better mathematical communication, and builds a solid basis for higher-level math. It empowers learners to see beyond individual numbers and symbols, focusing instead on structural relationships that drive mathematical truth.

The Future of Like Terms in Evolving Mathematics

As mathematics continues to evolve with advancements in artificial intelligence, computational modeling, and interdisciplinary research, the principle of like terms remains enduringly relevant. While automated systems increasingly handle symbolic computation, the human ability to recognize and interpret like terms ensures accurate interpretation and creative problem-solving. In educational technology, adaptive learning platforms leverage this concept to personalize instruction, reinforcing understanding through targeted exercises. As mathematical education embraces innovation, the timeless value of like terms endures—not as a relic of algebra, but as a dynamic element in the ongoing journey of mathematical discovery.

Understanding Like Terms in Mathematics: A Detailed Analytical Guide

In the realm of mathematics, precision and clarity are paramount. When we delve into algebraic expressions, a fundamental concept that underpins our ability to simplify and manipulate them is the understanding of **like terms**. Recognizing and correctly identifying like terms is not just a procedural step; it's a foundational skill that unlocks the power of algebraic simplification, equation solving, and even more complex mathematical

endeavors. This article will provide a comprehensive, analytical look at the definition of like terms, exploring their characteristics, how to identify them, why they are important, and common pitfalls to avoid.

What are Like Terms? The Core Definition

At its heart, the definition of like terms in mathematics refers to **algebraic terms that have the exact same variables raised to the exact same powers**. Think of them as algebraic cousins – they share a common root in their variable components, and the exponent is the defining characteristic of their familial resemblance. The coefficients (the numerical part of the term) can be different, and the order of multiplication of the variables doesn't matter due to the commutative property of multiplication. However, the variables themselves and their corresponding exponents must be identical for terms to be considered "like."

For instance, in the expression $5x^2 + 3y - 2x^2 + 7$, the terms $5x^2$ and $-2x^2$ are like terms. They both contain the variable 'x' raised to the power of 2. The coefficients, 5 and -2, are different, but this doesn't preclude them from being like terms. Conversely, $3y$ and 7 are not like terms. While $3y$ has a variable, 7 is a constant term. Also, $5x^2$ and $2x$ are not like terms because the exponent of 'x' is different (2 versus 1).

Deconstructing the Components of a Term

To truly grasp the definition of like terms, it's crucial to understand the components that make up an algebraic term:

1. **Variable(s):** These are the letters or symbols (like x, y, a, b, etc.) that represent unknown or changing values.
2. **Exponent(s):** These are the small numbers written above and to the right of a variable, indicating how many times the variable is multiplied by itself. For example, in x^3, the exponent is 3.
3. **Coefficient:** This is the numerical factor that multiplies the variable(s). In $7ab$, the coefficient is 7. If a term has no explicit coefficient, it is understood to be 1 (e.g., x^2 is $1x^2$).
4. **Constant:** A term without any variables is called a constant. For example, in $3x + 5$, the number 5 is a constant.

When identifying like terms, we focus exclusively on the **variables and their exponents**. The coefficient and the sign preceding the term are important for combining like terms, but the fundamental requirement for being "like" rests solely on the variable parts.

Identifying Like Terms: A Step-by-Step Approach

The process of identifying like terms is straightforward once you understand the criteria. Here's a methodical approach:

1. **Scan the Expression:** Read through the algebraic expression term by term.
2. **Examine the Variable Part:** For each term, identify the variable(s) and their corresponding exponents.
3. **Compare Variable Parts:** Compare the variable part of the current term with the variable parts of other terms you've already considered or will consider.
4. **Check for Exact Match:** Two terms are like terms if and only if they have the identical set of variables, each raised to the identical exponent. The order of variables in a term doesn't matter (e.g., xy is like yx).
5. **Don't Be Fooled by Coefficients:** Remember that coefficients can differ. The core criterion is the variable component.
6. **Constants are Like Terms with Themselves:** All constant terms are considered like terms because they have no variables.

Example: Consider the expression $4a^2b + 7b - 3a^2b + 9a^3 - 5b + 2$.

1. Term 1: $4a^2b$ (variables: a^2b)
2. Term 2: $7b$ (variables: b)
3. Term 3: $-3a^2b$ (variables: a^2b)
4. Term 4: $9a^3$ (variables: a^3)
5. Term 5: $-5b$ (variables: b)
6. Term 6: 2 (constant)

By comparing the variable parts:

1. $4a^2b$ and $-3a^2b$ are like terms (both have a^2b).
2. $7b$ and $-5b$ are like terms (both have b).
3. $9a^3$ is not like any other term.
4. 2 is a constant.

The Importance of Like Terms in Algebra

The concept of like terms is not merely an abstract definition; it's a cornerstone for simplification and manipulation in algebra. Here's why it's so crucial:

1. Simplifying Algebraic Expressions

The primary application of identifying like terms is in **simplifying algebraic expressions**. You can only combine like terms by adding or subtracting their coefficients. This process makes complex expressions more manageable and easier to understand. For example, the expression $4a^2b + 7b - 3a^2b + 9a^3 - 5b + 2$ can be

simplified by grouping and combining like terms:

$(4a^2b - 3a^2b) + (7b - 5b) + 9a^3 + 2$

$= (4-3)a^2b + (7-5)b + 9a^3 + 2$

$= 1a^2b + 2b + 9a^3 + 2$

$= a^2b + 2b + 9a^3 + 2$

This simplified expression is much more concise and reveals the underlying structure of the original expression more clearly. This is a fundamental skill in **algebraic simplification**.

2. Solving Equations

When solving algebraic equations, you often need to isolate a variable. This frequently involves combining like terms on either side of the equals sign to reduce the complexity of the equation. For instance, to solve an equation like $3x + 5 + 2x = 15$, you would first combine the like terms ($3x$ and $2x$) to get $5x + 5 = 15$. This step is critical for moving towards finding the value of 'x'.

3. Polynomial Operations

Operations involving polynomials, such as addition and subtraction, heavily rely on the concept of like terms. When adding or subtracting polynomials, you align and combine terms that share the same variables and exponents. For example, adding $(x^2 + 3x - 1)$ and $(2x^2 - x + 4)$ involves combining the x^2 terms, the x terms, and the constant terms separately.

4. Understanding Structure and Patterns

Recognizing like terms helps students appreciate the structure within algebraic expressions. It highlights how terms with similar variable components can be treated as single units, facilitating a deeper understanding of mathematical relationships and patterns. This is particularly evident when discussing **equivalent expressions**.

Common Mistakes and Misconceptions

Despite the seemingly simple definition, several common errors can arise when dealing with like terms:

1. **Confusing Variables and Coefficients:** A frequent mistake is treating terms with the same coefficient but different variables as like terms, or vice-versa. For example, considering $5x$ and $5y$ as like terms is incorrect.
2. **Ignoring Exponents:** Failing to account for exponents is another common pitfall. Terms like x^2 and x^3 are not like terms, even though they share the variable

'x'.

3. **Order of Variables:** While the order of multiplication doesn't matter ($xy = yx$), students might sometimes incorrectly assume that x^2y is not like xy^2. The exponents must match for each corresponding variable.
4. **Sign Errors:** When combining like terms, forgetting the sign preceding a term (e.g., treating $-3x^2$ as if it were $3x^2$) can lead to incorrect simplification.
5. **Combining Unlike Terms:** The most fundamental mistake is attempting to combine terms that are not like terms, such as adding $2x$ and $3y$.

To avoid these errors, it's beneficial to use color-coding or underlining to group like terms when first learning to identify and combine them. This visual aid can significantly improve accuracy.

Beyond Basic Algebra: Where Like Terms Appear

The concept of like terms extends beyond introductory algebra. You'll encounter it in more advanced topics such as:

1. **Calculus:** When differentiating or integrating polynomial functions, you'll often simplify expressions by combining like terms.
2. **Linear Algebra:** In operations with vectors and matrices, similar principles of combining like components apply.
3. **Physics and Engineering:** Many scientific formulas and models involve algebraic expressions that require simplification through the identification and combination of like terms.

Essentially, any mathematical context that involves the manipulation of algebraic expressions will implicitly or explicitly rely on the understanding of like terms.

Conclusion: The Foundation of Algebraic Efficiency

In conclusion, the definition of like terms in mathematics is elegantly simple yet profoundly important. Like terms are algebraic expressions that share the same variables raised to the same powers. Mastering the identification and combination of these terms is a critical step in building a strong foundation in algebra. It empowers students to simplify complex expressions, solve equations efficiently, and confidently tackle more advanced mathematical challenges. By understanding the nuances of what makes terms "like," we unlock a powerful tool for algebraic efficiency and mathematical clarity.

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Questions & Answers About definition of like terms in math

No	Question	Answer
1	What are 'like terms' in math, in simple terms?	Like terms are terms in an algebraic expression that have the exact same variables raised to the exact same powers. Think of them as being in the same 'category'.
2	Can you give me a quick example of like terms?	Sure! In the expression `3x + 5y - 2x + 7`, the terms `3x` and `-2x` are like terms because they both have the variable 'x' to the power of 1.
3	What makes terms *unlike* in math?	Terms are unlike if they have different variables, different powers of the same variable, or both. For example, `4a` and `4b` are unlike because the variables are different, and `2x` and `2x²` are unlike because the powers of 'x' are different.
4	Why is it important to identify like terms?	Identifying like terms is crucial for simplifying algebraic expressions. You can only add or subtract like terms, which makes equations easier to work with and solve.
5	How do you combine like terms?	To combine like terms, you simply add or subtract their coefficients (the numbers in front of the variables). The variable part stays the same. For instance, `3x + 2x` becomes `5x`.
6	Does the sign in front of a term matter when identifying like terms?	Absolutely! The sign is part of the term. So, `5y` and `-5y` are like terms, but `5y` and `5y²` are not. You must consider both the variable and its exponent.

7	What if a term has no visible coefficient? What is it?	If a term has no visible coefficient, it's understood to be 1. For example, `x` is the same as `1x`, and `-a` is the same as `-1a`. This is important when combining like terms.
8	Can terms with different constant numbers be like terms?	No. For terms to be like terms, they must have the same variables raised to the same powers. Constant terms (numbers without variables) can only be combined with other constant terms.
9	Does order matter when rearranging terms to find like terms?	No, the order doesn't matter due to the commutative property of addition. You can rearrange terms to group like terms together for easier simplification. For example, `a + b + a` can be seen as `a + a + b`.
10	Are terms with exponents considered like terms if the base is the same but the exponent is different?	No. For terms to be like terms, not only must the variable (the base) be the same, but the exponent must also be the same. For example, `x²` and `x³` are unlike terms.

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Core Discussion

Digital books help readers maintain productivity.

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Conclusion

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