

Algebra Exercises

Describe an activity that could be used to show $(a + b)^2 = (a + b)(a + b)$.

Describe an activity that could be used to show $(a - b)^2 = (a - b)(a + b)$.

Create a paper set of manipulatives including units, x s, and x^2 s. Do an example like $5(2x^2 + 3x + 4)$ using the manipulatives. Describe your thoughts and reactions to the manipulation in light of thinking about how this could help students understand the operation.

Create a partial product explanation of the product of two binomials.

Find at least one situation where algebra is used in a daily-life application and describe how it could be used to answer the typical student question "When am I ever going to use this?"

In a setting like x^n , x is defined as the base and n is the exponent that "shows how many times x is used as a factor." One question that should be asked eventually about the definition is, "What if the exponent is 0.5? How do we write x as a factor 0.5 times?" Describe how you would explain this to a beginning algebra class.

Is there a need to discuss implicit multiplication versus non-implicit multiplication in beginning algebra? Why or why not?

Is there a need to discuss the idea that x really means $(1)(x)$ in beginning algebra? Why or why not?

It is proper to say the distributive property (law) of multiplication over addition (subtraction) on the set of integers. Without the set and operation, we don't know much about what works and what does not. Yet we say distributive property and go on. How do we justify precision of language at some times and not at others?

Student ability to solve equations involving factoring skills is often weak. Couple that with the idea that students often do not understand the zeros of a function, the role of a graph of the equation, or why they are solving the equation. How should you deal with these problems in a beginning algebra class?

How much geometry should be presented in beginning algebra? Defend your response.

Should writing skills be covered in algebra? For example: Pretend you are an irrational number. You are about to see an old school friend you have not seen for many years. Write a letter describing yourself so you will be easy to spot.

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The calculator has brought to light that our emphasis has been on teaching rules and mechanics. Now we have tools to do the mechanics. So, the questions are, “Why do we teach algebra?” And, “What should we teach in algebra?” Should we focus on mechanics or concepts and applications? How would you answer those questions?

Resources

Brumbaugh, D. K., Ortiz, E., Gresham, G. (2006). *Teaching Middle School Mathematics*. Mahwah, NJ: Lawrence Erlbaum Associates.

Brumbaugh, D., Rock, D. (2006 (3rd Ed.)). *Teaching Secondary Mathematics*. Mahwah, NJ: Lawrence Erlbaum Associates.

Brumbaugh, D., Rock, D. (2001). *Scratch Your Brain C1*. Pacific Grove, CA: Critical Thinking Books and Software.