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## Polynomials and Their Usefulness: Where is it Found?

The comprehension of polynomials is important throughout multiple tasks because it holds a large position in other academic subjects, improves work performance, and allows mathematical calculations to be simpler and quicker, making daily and complex situations easier. Polynomials are the core to algebra. Algebra is important for various reasons, making polynomials important for various reasons as well. Polynomials by themselves are not as useful as they are being understood well enough to perform advanced calculations with them. They are a basis for other educational subjects, and the complex ability required to do something such as factor them creates a mentality that can apply algebraic ability to multiple situations. All of this together improves work and academic performance. Algebra is used repeatedly throughout “biology, chemistry, physics, engineering, computer science, economics, food science, environmental science, medicine, dentistry, pharmacy, psychology, and social studies” (Lewis). Algebra is found in a variety of other school subjects, and polynomials construct a backbone to algebra. Without the comprehension of polynomials, one cannot fully understand algebra which creates an impediment in one’s academic career. Understanding polynomials and knowing how to expand knowledge regarding them such as knowing how to factor them proves to be helpful. Knowing polynomials helps you become fluent in factoring, and factoring is found in high school topics such as chemistry, physics, and the quadratic formula (Dohrman, “Will I Ever Use Factoring in Real Life”).

Factoring is also used for numerical analysis, matrix factorization, and finance, so it is helpful throughout youth and adulthood (Dohrman, “Will I Ever Use Factoring in Real Life”). Algebra is incorporated into every career field, and where algebra goes, polynomials follow. In other words, “polynomials are an important part of the ‘language’ of mathematics and algebra,” so they have a place “in nearly every field of mathematics” (Hayes et al.) Examples of jobs that include polynomials are economists, statisticians, engineers, and different types of scientists (White). Polynomials are important for economists as they “use data and mathematical models and statistical techniques to conduct research, prepare reports, formulate plans and interpret and forecast market trends” (White). Aerospace, civil, environmental, industrial, mechanical, chemical, and electrical engineers are all based on polynomials (White). Any field related to STEM requires talent in understanding polynomials; “physical and social scientists, including archaeologists, astronomers, meteorologists, chemists, and physicists, need to use polynomials in their jobs” (White). Business requires understanding polynomials because polynomial equations are used “to both model growth rates and predict monthly revenue” (Hunt). Careers that require constantly using formulas and expressing calculations from interpreted data will obviously be centered around mathematical concepts such as polynomials, but polynomials are beneficial for all career fields. By developing this style of complex thinking and having the extra mathematical knowledge, work performance is consequently improved. Polynomials and its benefits thus conquer the workforce. Understanding polynomials not only means you can academically move forward but that everything before algebra becomes second-hand nature. Knowing algebra, in general, can help one look at an issue and quickly determine multiple solutions by using that logical mindset. This can train your mindset “to think in a logical way, which will not only help you in the workplace but also in daily life” (Lewis). If understanding algebra generally provides this many benefits, understanding its details and core ensures facility to decision making. Polynomials thus contribute to a complex and comprehensive mindset. It is

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commonly asked when and where will polynomials be used, but “unfortunately most mathematics in everyday life is invisible to many people’s eyes” (Cho). Polynomials are used often without it being known. The development of that complex mindset and its application to daily tasks is rooted in algebraic capability and fluency in polynomials. Understanding polynomials to a point where it simply allows one to apply it to everyday situations.

This makes analyzing a situation, its variables, factors, and possible outcomes simpler. Algebra and mathematical topics are “everywhere, from objects to telecommunication and image and processing” (Cho). Examples of common activities that include polynomials are shopping, arithmetic and simplifying terms, or performing well in the working environment (Dezial). Algebra is highly useful for performing calculations for anything financial such as taking out loans, saving money, understanding sales, or traveling (Stillman). Polynomials find a position of importance in “loan calculations and company valuation” (Dohrman, “How Are Polynomials Used in Life”). Therefore, being able to specialize in polynomials ensures accuracy when handling economical topics. Mathematics is involved in ordinary activities such as cooking, driving, renovating, and even watching the news which is filled with multiple statistics and data (Smith). This mathematical mindset with the ability to efficiently perform calculations built from the understanding of algebra and concepts such as polynomials can be applied to multiple scenarios. What this means is that polynomials are not only directly involved in daily circumstances, but the mentality they develop is put to use every day as well. The opposing side to the statement that polynomials are important is built off of the grounds that polynomials will not be used and that the difficulty some experience with them does not amount to anything. It has been proven that polynomials are important throughout daily, educational, and career based tasks. The other argument being made is that polynomials can be a hassle for no reason.

This has been proven to be incorrect because of the benefits understanding them can provide and their presence in aspects of life throughout all ages, from high school to past college and in the workforce. Algebra and polynomials are also crucial for advancing upon and understanding developing technology as “mathematics is vital not only in ordinary people’s everyday lives but also in cutting-edge technology of the information age” (Cho). Discarding polynomials should not be considered with only its difficulty as a reason to. Algebra holds a presence in academic, work-related, and daily aspects of life. It is important throughout many stages and for people of different ages. If the general subject is this important, the key features of it such as polynomials are not only important as well but beneficial. If algebra is important, so are polynomials seeing as they are a major component of algebra. Polynomials are found in every career through the use of mathematics, data, measurements, functions, graphs, and equations. They provide extra knowledge to improve work performance for jobs not algebraically oriented. Algebra is the basis and foundation for all other school subjects that follow it, and polynomials are a basis and foundation to algebra. Polynomials also construct a more efficient and productive mind that responds to circumstances better. The importance of polynomials has been proven by its position in every task one can perform.