The Zero Number

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Abstract—The paper contains the history of zero that is, the origin and the main use that lead to its invention. In addition, the paper contains the important advancement that results to the implementation in mathematics for example algebra and calculus concepts. Information concerning the major inventions that is technology is in the paper together with various subjects that advanced as a result of zero. For instance, physics, chemistry, commerce and astronomy use concepts of mathematics that are because of the introduction of zero. Technologically wise, zero has brought about invention of sophisticated materials. The paper acknowledges the importance of zero and the advantages that comes along due to the implementation of zero and the later concepts.

1 Introduction

In the development of a number system, the introduction of zero that happened in the 13th century was crucial to the decimal system. It made the calculation of big numbers feasible comparing to the time before the introduction of the zero. The zero made the work easier for various fields, for example, commerce, physics and to great extends astronomy. The development of zero presents itself as the crucial invention in the field of mathematics as well; it shows the expansion of thinking capacities of human beings. It is evident that through the introduction of zero there is advancement in technology and advancement of mathematics to great extents.

Zero was used to denote empty things by the Indians before the zero dots were used as a supplement. The first arithmetic formalization was in the 650AD by Brahmagupta where dots were used to denote empty things before its introduction. Here it advanced to the introduction of the two major aspects of mathematics that is addition and subtraction where rules come in that: subtraction of zero with a number that is negative, the results is always a negative, and zero plus zero is always a zero. However, when you add a number that is positive to a zero, the results is always a positive number (Arsham).

2 Decimals and fractions

Further advancement of mathematics is crucial hence it is important to understand the concept of the number line which is as a result of the invention of the zero. The number line offers a simpler way of understanding numbers that are negative and positive from zero. That is from zero to negative which may be from zero to numbers between zero and one and the same applies to the positive numbers. The advancement of zero introduced the number line which gives decimals and fractions of positive and negative numbers (Paeth, 2000).

3 Algebra and calculus introduction and expansion

Without the introduction of zero, it would have been impossible to have algebra and calculus. With time, there was the introduction of algebra and calculus which has lead to the advancement of mathematics in general. Mathematics is in a wide range of fields for example, in chemistry, physics, commerce and astronomy. It is evident that through the introduction of zero, there has been, and there is always advancement in the algebra and calculus concepts that lead to the invention of sophisticated technology (Joseph, 2008).

Also, through zero calculus came up that enhanced formation or creation of computers and engineering aspects. It is common that engineering has its basis from mathematics and mostly from zero. The advancement of zero has brought about improvement in mathematics in various fields. Technologically wise, there is the invention of sophisticated technology that comes up because of zero that enhances the introduction of useful mathematical concepts like the multiplication and division of numbers with zero. However, Isaac Newton advanced the division concept, as it was wrong. Zero, however, helped in the introduction of logarithm which is a concept that is important in calculating large numbers.

4 Conclusion

The first arithmetic equation was in 650AD that creates a new concept to people and in the field of mathematics. The invention is as a result of the use of dots to denote nothing or null and therefore, zero takes the place of the dots. The introduction of zero with time has brought about great use in the field of chemistry physics and astronomy just to mention a few. Currently, mathematical advancement is observed in various fields for instance in technology advancement and the introduction of new mathematical concepts accompanied with the expounding on mathematical concepts. Also, the introduction of zero brought about the concept of having negative values

Zero comes along with rules that help in exploring different mathematical concepts which enhance in the advancement of mathematics as a subject. For example the concept of addition, subtraction, division, and multiplication of numbers with zero. The rules offer great assistance in logarithms and calculus never forgetting algebra. The advancement of mathematics relies on the invention of mathematics up to date, considering that it has helped in the invention and clear explanations in different fields. Algebra, calculus could not have existed if zero was never introduced in the world which has resulted in further inventions. It is important to note that zero is important in the advancement of mathematics as it brought along new concepts into the world. If zero were never introduced then, it would be almost impossible to have current technologies and mathematical concepts.

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