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| Title                 | <b>Building The Set of Natural Numbers by Peano Axioms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Students              | Ghaliah Mubark Al-otaibi and Luluh Abdullah Aldhayan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Abstract              | <p>This project research paper consists of four sections. In the first section, we build the set of natural numbers merely from the five axioms of Peano, then we state and prove some of its properties as a set. In the second section, we state the two axioms defining the additive operation (+) on <math>\mathbb{N}</math>, then we state and prove its basic properties. In the third section, we state the two axioms defining the multiplication operation (<math>\cdot</math>) on <math>\mathbb{N}</math> and prove its basic properties. In addition, we prove the distributive law of (<math>\cdot</math>) over (+). Finally, in the fourth longest section, we define the order relation (<math>\leq</math>) on <math>\mathbb{N}</math> and prove its basic properties relative to the two operations (+), (<math>\cdot</math>).</p> <p>In addition, we state and prove the three most important properties of <math>\mathbb{N}</math> which distinguish <math>\mathbb{N}</math> from other sets of numbers, namely the well-ordered principle, principle of mathematical induction and the Euclidean division theorem.</p> |
| الملخص باللغة العربية |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |