

## Course Description – Grade 5 Math

(Note: This course aligns with the Common Core US State Standards for fifth-grade mathematics and Jordanian Educational Standard.)

Welcome to 'Fun with Numbers: Grade 5 Mathematics', an interactive and engaging journey into the fascinating world of numbers, patterns, and logic. This course is meticulously designed to provide students with a solid understanding of basic mathematical concepts and practices that are integral to the fifth-grade curriculum. Throughout the course, students will delve into key areas such as:

1. **Number Theory:** Understanding place values, rounding, and estimation, as well as deepening comprehension of addition, subtraction, multiplication, and division of multi-digit numerals.
2. **Fractions and Decimals:** Mastering the art of comparing, converting, and performing arithmetic operations with fractions and decimals.
3. **Geometry:** Exploring shapes, angles, area, and perimeter, with an introduction to volume of solid figures.
4. **Algebraic Expressions:** Initiating the basic understanding of variables, expressions, and simple equations.
5. **Data Analysis:** Interpreting and creating graphs, probability, and statistical reasoning.
6. **Problem Solving:** Enhancing critical thinking skills by applying learned concepts to solve real-world problems.

Our Grade 5 course uses a blend of teaching strategies including e-learning, interactive learning activities, and digital games, all aimed at making math fun and engaging. In addition to lectures and practices, the students will have regular quizzes and tests to assess their understanding and growth. The course also emphasizes the importance of mental math and problem-solving skills.

With this e-learning, we aim to make every student confident in their math abilities, and nurture a love and appreciation for the subject that they will carry forward into their future academic journey. By the end of this course, students will be well-equipped with mathematical knowledge and problem-solving skills that will set a strong foundation for their middle school years.

Let's dive into this exciting journey and make math a joyous experience!

The table below clarifies the course content, the chapters, and the main skills in each chapter:

| # | Chapter                                            | Skills                                                                                                                                                                                                                  |
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| 1 | Chapter 1:<br>Adding and<br>subtracting<br>numbers | <ul style="list-style-type: none"><li>• Reading numbers within millions and writing them in different ways,</li><li>• finding the place value of a digit in a number in millions; comparing and arranging it,</li></ul> |

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|   |                              | <ul style="list-style-type: none"> <li>• using the number line and the place value chart to compare numbers,</li> <li>• use signs ( <math>&gt;</math> , <math>&lt;</math> , <math>=</math> ) to compare numbers,</li> <li>• adding numbers within 7 places,</li> <li>• learning to estimate the result of addition by approximation,</li> <li>• learning the properties of addition (commutative property, associative property, additive identity),</li> <li>• subtracting numbers within 7 places,</li> <li>• learning to estimate the result of subtraction by approximation, rounding numbers within 7 places,</li> <li>• identifying the arithmetic rules for even and odd numbers,</li> <li>• identifying the negative number and assigning it to the number line, and</li> <li>• recognizing the inverse of a number</li> </ul>                                                                           |
| 2 | Chapter 2:<br>multiplication | <ul style="list-style-type: none"> <li>• Estimating the results of multiplication using rounding,</li> <li>• multiplying a number by a number from one place,</li> <li>• multiplying numbers ending in zeros,</li> <li>• comparing the results of multiplication,</li> <li>• learning about the properties of multiplication (commutative property, distributive property, additive identity, zero property),</li> <li>• using multiplication to solve life problems,</li> <li>• multiplying a two-digit number by a two-digit number,</li> <li>• using the grid multiplication method to find the result,</li> <li>• multiplying a number of three places by a number of two places,</li> <li>• multiplying three or more numbers with a maximum of two places for each,</li> <li>• multiplying numbers of three places, and</li> <li>• multiplying three numbers up to three place values for each.</li> </ul> |
| 3 | Chapter 3:<br>Division       | <ul style="list-style-type: none"> <li>• Estimating the result of the division of whole numbers by approximation,</li> <li>• estimating the result of the division of whole numbers by choosing harmonic numbers,</li> <li>• dividing a number of three place values maximum on a one-digit number,</li> <li>• dividing numbers made up of two place values using models,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|   |                                        | <ul style="list-style-type: none"> <li>dividing a number made up of three place values maximum on a number of two place values in different ways, splitting numbers that end in zeros,</li> <li>finding the result of dividing a whole number of 3 place values or more by a number of two place values,</li> <li>finding the rest of the division and explaining the meaning of the rest in matters of division,</li> <li>connecting multiplication with division, and using division to solve life issues</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4 | Chapter 4:<br>Properties of<br>Numbers | <ul style="list-style-type: none"> <li>Finding the divisibility of the numbers 4, 6, 9,</li> <li>learning about the prime and complex numbers,</li> <li>analyzing the number into its prime factors using a factor tree and repeated division,</li> <li>finding the greatest common factor of two numbers, finding the least common multiple of two numbers,</li> <li>using the greatest common factor and the least common multiple in solving problems,</li> <li>using exponents to represent repeated multiplication of the same number,</li> <li>learning to write the number in exponential form, finding the value of the exponent of ten,</li> <li>finding the exponential form of the number by factoring it into its prime factors,</li> <li>finding the square of the number and the cube of the number,</li> <li>finding the square root of the square of the number, finding the cube root for a number cube, and</li> <li>using the exponents and roots to solve real life problems.</li> </ul> |
| 5 | Chapter 5:<br>Fractions                | <ul style="list-style-type: none"> <li>Writing the improper fraction as a mixed number in different ways,</li> <li>writing the mixed number in the form of an improper fraction in different ways,</li> <li>finding the equivalent fractions on the number line,</li> <li>writing equivalent fractions for a fraction,</li> <li>adding the fractions and mixed numbers using the number line,</li> <li>adding dissimilar fractions,</li> <li>adding dissimilar mixed numbers,</li> <li>using the number line to subtract fractions and mixed numbers,</li> <li>subtracting a fraction from a whole number,</li> <li>subtracting a mixed number from a mixed number,</li> </ul>                                                                                                                                                                                                                                                                                                                               |

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|   |                              | <ul style="list-style-type: none"> <li>• subtracting a mixed number from a whole number,</li> <li>• using the number line to find the result of a whole number multiplied by a fraction or mixed number,</li> <li>• multiplying a whole number in a fraction in different ways,</li> <li>• multiplying a whole number by a mixed number in different ways,</li> <li>• dividing a whole number by a fraction or mixed number,</li> <li>• recognizing the reciprocal of a fraction, dividing a fraction or mixed number by a whole number, and</li> <li>• using fractions to solve life problems.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6 | Chapter 6:<br>Decimal Places | <ul style="list-style-type: none"> <li>• Using forms to express the parts of a thousand,</li> <li>• writing fractions as decimals and representing them,</li> <li>• writing the decimal fraction in standard, verbal and analytic form,</li> <li>• using decimals to solve life problems,</li> <li>• converting the fraction to a decimal,</li> <li>• converting the mixed number to a decimal,</li> <li>• converting the fraction decimal to a fraction or a mixed number,</li> <li>• comparing fractions and decimals, arranging the fractions and decimal numbers in ascending and descending order,</li> <li>• rounding the decimal numbers to the nearest whole number or to the nearest part of ten, hundred, or thousand, adding and subtracting the decimal numbers,</li> <li>• estimating the result of adding and subtracting decimals by rounding to the nearest decimal place or whole number,</li> <li>• multiplying decimal numbers by 10, 100, 1000,</li> <li>• multiplying decimal numbers by a whole number,</li> <li>• multiplying two decimal numbers,</li> <li>• estimating the multiplication results of decimal numbers,</li> <li>• dividing decimal numbers by 10, 100, 1000</li> <li>• dividing integers whose result is a decimal number,</li> <li>• Dividing a decimal number by a decimal number,</li> <li>• estimating the quotient of decimal division,</li> <li>• knowing the percentage,</li> </ul> |

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|   |                                                   | <ul style="list-style-type: none"> <li>• converting from a fraction or mixed number to a percentage,</li> <li>• finding the number from a percentage.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7 | Chapter 7: Data representation and interpretation | <ul style="list-style-type: none"> <li>• Distinguishing the statistical question,</li> <li>• identifying quantitative and qualitative data,</li> <li>• collecting quantitative and qualitative data and organizing it in a table of signs,</li> <li>• identifying the coordinate plane and its axes,</li> <li>• reading points on the coordinate network and representing them,</li> <li>• represent data with lines, then read and interpret them,</li> <li>• representing two data sets with double columns in addition to reading and interpreting them, and</li> <li>• representing two sets of data with double lines and reading and interpreting them.</li> </ul>                             |
| 8 | Chapter 8: Equations                              | <ul style="list-style-type: none"> <li>• Using models to represent algebraic expressions,</li> <li>• learning about algebraic expressions, writing an algebraic expression using symbols,</li> <li>• learning about substitution,</li> <li>• finding the value of an algebraic expression, using the equations board and algebraic segments to solve equations,</li> <li>• solving addition and subtraction equations, u</li> <li>• sing the algebraic blocks and equations board to solve multiplication and division equations,</li> <li>• writing an equation involving multiplication or division and solving it, and</li> <li>• solving problems using a scheme (drawing the model).</li> </ul> |
| 9 | Chapter 9: Geometry                               | <ul style="list-style-type: none"> <li>• Knowing the polygon,</li> <li>• distinguishing the polygon from other geometric shapes,</li> <li>• identifying the regular and irregular polygon,</li> <li>• classifying the triangles according to the lengths of their sides,</li> <li>• identifying the congruent triangles</li> <li>• identifying the different-sided triangles,</li> <li>• classifying their acute angles according to their measures (acute, straight, obtuse),</li> <li>• knowing the properties of quadrilaterals,</li> <li>• distinguishing the special cases of parallelograms,</li> </ul>                                                                                        |

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|    |                                              | <ul style="list-style-type: none"> <li>• identifying the common features of the quadrilaterals, knowing the withdrawal,</li> <li>• drawing a picture of a shape after making a withdrawal to it,</li> <li>• knowing the reflection, and</li> <li>• drawing the reflection of a shape in the coordinate plane</li> </ul>                                                                                                                                                                                                                                                                                                                                              |
| 10 | Chapter 10:<br>Measurement                   | <ul style="list-style-type: none"> <li>• Knowing the units of complex mass and converting between them,</li> <li>• converting units of measurement for capacity and length,</li> <li>• solving problems containing complex units,</li> <li>• calculating time in its different units,</li> <li>• estimating the areas of irregular complex shapes using squares paper,</li> <li>• learning complex shapes, and</li> <li>• calculating the areas and perimeters of complex shapes.</li> </ul>                                                                                                                                                                         |
| 11 | Chapter 11:<br>Statistics and<br>Probability | <ul style="list-style-type: none"> <li>• Exploring the concept of arithmetic mean,</li> <li>• calculating the arithmetic mean of single data,</li> <li>• knowing the median and mode,</li> <li>• calculating the median and mode for single data, knowing the range,</li> <li>• finding the range for individual data,</li> <li>• finding the range for data represented graphically or in a frequency table,</li> <li>• distinguishing between the results of random experiments in terms of equal or unequal probability of occurrence,</li> <li>• knowing the output and the sample space, and</li> <li>• the chance of the probability of occurrence.</li> </ul> |