

## Mathematics & Montessori

The area of Mathematics is divided into five content areas, according to the state of New Mexico and its Content Standards for what children need to know. Numbers and Operations: the actual recognition of numbers and the doing of the operation- all four orders Algebra: solving for the unknown Data Analysis and Probability: using information to solve problems and illustrate data Measurement: various components of measuring including converting units of measurement Geometry: the study and analysis of shapes/forms and applications.

After children are able to recognize quantity and quality (match the number to the amount), we start children manipulating numbers and operations. This period of work can start as early as CASA and continue through to Grade Five. Of course the work becomes more complex, but it is the same procedure-whether you are in the ones or the millions. What this means is that children have a lot of opportunity to practice operations and learning math facts. Along with the operation work, we engage children in memorizing facts through various charts. Our expectation is that by the end of third grade, children will know their basic facts including the times tables.

We also explore sensorially with shapes to give children complete visual explanations of how shapes are formed and manipulated. What they do at the early level, they revisit in the Elementary classrooms-but with detailed classifying and numerous extensions. For example, the basic shape of a triangle is transformed, measured, flipped and turned to enrich the child's experience and knowledge of the concepts of triangles.

Children have a natural tendency to measure. Not only are they taught the standard units of measurement, they also come up with non-standard units of their own. They explore the outdoor environment and measure length (the breezeways) and circumference (the trees). They measure perimeters (the basketball court) and depth (digging holes).

Another area that children love to get engaged with is collecting data-of all kinds!! In particular surveys and graph charts abound at MRGC! Children walk from class to class with various survey topics like - "What is your favorite animal/color/team/food/etc. " After gathering the information they are given mini lessons on how to record the results via a graph.

Lastly, when we talk about solving for the unknown, Algebra fits perfectly in the Montessori curriculum. Even at an early age children like to transform numbers into letters and come up with equations that are like this -  $a + b + c$ . We explore the Binomial and Trinomial Cubes at the CASA level and then use them later for Algebraic formations.

We talk about the mysterious Greek named Pythagoras and show the visual representation of his theorem. You can clearly see how the Montessori curriculum naturally aligns with state standards. Through the concrete representations we lead children towards the application of the concepts taught.