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Enriching Calculus with Montessori Materials. Preliminary report.

The Montessori classroom is an environment for independent, discovery learning that includes many mathematics materials that are useful for visualizing mathematical concepts. The Montessori curriculum classifies these materials as Sensorial as well as Mathematical. In the sensorial area, the Red Rods are constructed in lengths from 1 decimeter to 10 decimeter, the Brown Stairs are square in cross section from 1 cm to 10 cm and Pink Tower are cubes from 1 cm to 10 cm in size. The bead chains are in the Mathematical area and come two forms, the short chains representing the squares of the numbers from 1 to 10 and the long chains representing the cubes of the numbers from 1 to 10. These Montessori materials can be used to compute the sum of powers of n from the first through the third power for computing the Riemann sums of lower degree polynomials. (Received September 18, 2007)