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From Polyominoes to Planters: Using Manipulatives and Project-Based Learning to Explore Measurement

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From Polyominoes to Planters: Using Manipulatives and Project-Based Learning to Explore Measurement is a scaffolded curriculum unit built around open-ended instruction, direct instruction, and research-based manipulative practice. It is designed to take place over two to three weeks and is created for sixth-grade students receiving special education services in self-contained math classrooms. Its activities will provide students opportunities to explore in a rigorous manner the characteristics of rectangles and also three-dimensional rectangular prisms, and to build understanding of concepts of geometric measurement, including perimeter, area, and volume. This unit adopts the common practice in special education settings of using "manipulatives", i.e. hand-held objects that can be used to illustrate key concepts. All such uses are designed to be consistent with research-based best practices. In order to master geometrical concepts of measurement and to increase their spatial ability, students will engage in polyomino practice with unit square tiles and construct miniature vegetable planters to explore using cubes as units of volume.

(Developed for Mathematics/Geometry, grade 6; recommended for Mathematics/Geometry, grade 6)