



MATH LEARNING TRAJECTORY: GEOMETRY AND SPATIAL SENSE

Learning trajectories describe learning goals that reflect the big ideas of mathematics, developmental progressions in the knowledge and skills of children at various levels, and instructional activities educators might plan for children (Clements & Sarama, 2009).

This learning trajectory serves as a guide for designing activities and teaching moves that focus on math concepts and skills that are developmentally appropriate for each child in your care.

Resources

Clements, D. H. & Sarama, J. (2009). *Learning and teaching early math: The learning trajectories approach*. New York: Routledge.

Clements, D. H., & Sarama, J. (2009). Learning trajectories in early mathematics—sequences of acquisition and teaching. *Encyclopedia of Language and Literacy Development* (pp. 1–7). London, ON: Canadian Language and Literacy Research Network.

http://www.academia.edu/2773336/Learning_Trajectories_in_Early_Mathematics_-_Sequences_of_Acquisition_and_Teaching

Copley, J. V. (2010). *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children.

Greenberg, J. (2012). More, all gone, empty, full: Math talk every day in every way. *Young Children*, 67(3), 62–64.

Retrieved from http://www.naeyc.org/yc/files/yc/file/201205/RockingAndRolling_YC0512.pdf



National Head Start Family Literacy Center. (2010). *High five mathematize: An Early Head Start and Head Start resource guide*. Washington, DC: Office of Head Start, Administration for Children and Families, U.S. Department of Health and Human Services. Retrieved from <http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/practice/curricula/high-five.html>

Notari Syverson, A., & Sadler, F. H. (2008). Math is for everyone: Strategies for supporting early mathematical competencies in young children. *Young Exceptional Children*, 11(3), 2–16.

Sarama, J., & Clements, D. H. (2009, March). Teaching math in the primary grades: The learning trajectory approach. *Beyond the Journal Young Children on the Web*. Retrieved from http://www.naeyc.org/files/yc/file/Primary_Interest_BTJ.pdf

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Big idea: Understand shapes, their properties, and how objects are related to one another

Infants and Toddlers	Younger Preschoolers	Older Preschoolers
<p>LEARNING GOALS</p> <ul style="list-style-type: none">• Explore shapes through hands-on experiences.• Understand simple position directions.  <p>TEACHING MOVES</p> <ul style="list-style-type: none">• Provide toys and blocks with different shapes.• Play simple movement games.• Talk about shapes and their positions in space.	<p>LEARNING GOALS</p> <ul style="list-style-type: none">• Name shapes and describe their attributes.• Understand spatial concepts about location, distance, and direction.  <p>TEACHING MOVES</p> <ul style="list-style-type: none">• Provide opportunities to explore two- and three-dimensional objects.• Ask children to label names of shapes and describe their attributes.• Ask children to describe locations of objects in familiar environments.	<p>LEARNING GOALS</p> <ul style="list-style-type: none">• Combine shapes to make new shapes.• Describe and represent the relative position of objects in space.  <p>TEACHING MOVES</p> <ul style="list-style-type: none">• Offer activities where children manipulate, modify, and combine shapes.• Have children create simple maps with toys, blocks, and pictures.