

Kindergarten Mathematics

The following statements reflect developmentally appropriate philosophy in teaching mathematics in Kindergarten. Although appropriate math learning is linked with relevant and interesting real world experiences with patterns, data, geometry, number, and number ideas, teachers should be mindful that strong mathematical experiences require planning, implementation, and assessment. Please refer to your Math Curriculum Notebook, the Arlington Scope and Sequence Chart, and TERC teacher guide to assist you in planning for appropriate Kindergarten mathematical experiences. Note that there are a number of strands that encompass the content area of mathematics. All areas should be addressed throughout the year.

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Math is an important part of every day. Children need opportunities to “play” with math in a variety of ways. Plan a variety of activities that involve whole group, small group and individual. Math experiences may include reading (or being read to), writing (or dictation), and is often involved in science activities. Math activities should include calendar and attendance taking, some paper and pencil tasks, game playing, mental problem solving, and use of manipulatives and other materials. Activities should be planned to include some adaptation as necessary for children who need a greater challenge, or more support or experience with lower level skills.

Children come to kindergarten with much informal mathematical experience. They have ideas about counting, quantity, relationships between objects, money, shapes and patterns. They have formed ideas that are firmly based in their own real world experiences. These ideas developed from the child’s curiosity about the world they live in, and their interaction with real materials and experiences.

In school, many children begin to see “school math” as something distinctly different from their own sense of numbers and problem solving. As you help your kindergarteners to gain more math power, be careful that school math does not become “a collection of fragmented rote skills disconnected from the real world.”

Schulman Dacey, L. & R. Eston, 1999. Growing Mathematical Ideas in Kindergarten
Sausalito, CA: Math Solutions Publications

*The following is excerpted from Principles and Standards for School Mathematics,
National Council for Teachers of Mathematics:*

Teachers foster children's mathematical development by providing environments rich in language, where thinking is encouraged, uniqueness is valued, and exploration is supported. Play is children's work. Teachers support young children's diligence and mathematical development when they direct attention to the mathematics children use in their play, challenge them to solve problems, and encourage their persistence.

Children learn through exploring their world; thus, interests and everyday activities are natural vehicles for developing mathematical thinking. As a child arranges stuffed animals by size, an adult might ask, "Which animal is the smallest?" When children recognize a stop sign by focusing on the octagonal shape, adults have an opportunity to talk about different shapes in the environment. Through careful observation, conversations, and guidance, adults can help children make connections between the mathematics in familiar situations and new ones.

High-quality learning results from formal and informal experiences. "Informal" does not mean unplanned or haphazard. Since the most powerful mathematics learning results from children's exploration with problems and materials that interest them, adults should take advantage of opportunities to monitor and influence how children spend their time. Adults can provide access to books and stories with numbers and patterns; to music with actions and directions such as up, down, in, and out; or to games that involve rules and taking turns. All these activities help children understand a range of mathematical ideas. Children need things to count, sort, compare, match, put together, and take apart.

Children need introductions to the language and conventions of mathematics, at the same time maintaining a connection to their informal knowledge and language. They should hear mathematical language being used in meaningful contexts. For example, ask a child to get the *same* number of forks *as* spoons; or a classmate may be *taller than* the child is, but the child may be *shorter than* the next child. Young children need to learn words for comparing and for indicating position and direction at the same time they are developing an understanding of counting and number words.

Children are likely to enter formal school settings with various levels of mathematics understanding. However, "not knowing" more often reflects a lack of opportunity to learn than an inability to learn.

Most students enter school confident in their own abilities, and they are curious and eager to learn more about numbers and mathematical objects. They make sense of the world by reasoning and problem solving, and teachers must recognize that young students can think in sophisticated ways. Young students are active, resourceful individuals who construct, modify, and integrate ideas by interacting with the physical world and with peers and adults. They make connections that clarify and extend their knowledge, thus adding new meaning to past experiences. They learn by talking about what they are thinking and doing and by collaborating and sharing their ideas.

Young students are building beliefs about what mathematics is, about what it means to know and do mathematics, and about themselves as mathematics learners. These beliefs influence their thinking, performance, attitudes, and decisions about studying mathematics in later years (Kamii 2000).

<http://standards.nctm.org/document/chapter4/index.htm>

Standards for Grades Pre-K–2, Principles and Standards for School Mathematics, National Council for Teachers of Mathematics

