The LAUSD Mathematics Instructional Guide (MIG) helps promote a balanced and designed mathematics curriculum for students as part of a coherent educational system. The Los Angeles Unified School District's vision is to provide its students with:

- **A designed curriculum** based on the Mathematics Content Standards for California Public Schools and the Mathematics Framework for California Public Schools.

- **A balanced curriculum** that teaches computational and procedural skills; conceptual understanding of mathematics; and problem solving.

- **A coherent educational system** in which the standards, the assessments, the curriculum, and the teacher professional development are closely aligned to one another.

**Designed Curriculum:** A designed curriculum is one that follows a deliberate design in which its elements act synergistically to provide all students access to content and reasoning standards. It is more than any single textbook. If taught completely and satisfactorily, this curriculum provides students with the experiences they need to become mathematically literate.

**Balanced Curriculum:** According to the Mathematics Framework for California Public Schools, mathematics education must provide students with a balanced instructional program. in such a program, students become proficient in basic computational and procedural skills, develop conceptual understanding, and become adept at problem solving. All three components are important; none is to be neglected or under emphasized. Balance, however, does not imply allocating equal amounts of time for each of the three components. At some times students might be concentrating on lessons or tasks that focus on one component; at other times the focus may be on two or all three. Basic computational and procedural skills, conceptual understanding, and problem solving form a web of mutually reinforcing elements in the curriculum.

**Coherent Education:** The California mathematics standards provide the basis of such an educational system. A close examination of the standards reveals certain big ideas, concepts and skills that students need to learn and use. An appropriate curriculum is designed to allow all students access to the concepts and skills. Proper use of the California Standards Test (CST) blueprints and the data from periodic assessments allow teachers to adapt the curriculum to the needs of their students. Appropriate teacher support in the form of professional development and resources provides additional avenues to reach students. Each of these components is crucial to form a coherent educational system.
Conceptual Understanding

Understanding concepts means that students can use them to solve simple and complex problems, represent solutions in multiple ways, and explain procedures to someone else. Mathematics makes sense to students who have a conceptual understanding of the domain. Students know not only how to apply skills but also when to apply them as well as why they are being applied. Through this process students are able to see the structure and logic of mathematics and to use it flexibly, effectively, and appropriately. In seeing the larger picture and in understanding the underlying concepts, students are in a stronger position to apply their knowledge to new situations and problems and to recognize when they have made procedural errors. Work on conceptual understanding involves the opportunity to use; represent; explain.

Problem Solving

This is a goal-related activity that involves applying skills, understandings, and experiences to resolve new, challenging, or perplexing mathematical situations. The first phase in solving problems includes analyzing the problem (e.g. looking for patterns and making connections to known mathematical structures), making or formulating conjectures, and translating or expressing the problem into student language. The second phase involves integrating or putting together all the different pieces of information and representing the problem in mathematical language (e.g. an equation). Finally, the problem is solved using a wide variety of basic and technical skills with reasons or justifications made for each step in the solving process. Students might further identify relevant mathematical generalizations and seek connections to similar problems. Problem solving involves the opportunity to formulate, analyze, and translate; integrate and represent; solve and justify.

Computational and Procedural Skills

For each level of mathematics, a specific set of basic computational and procedural skills must be learned. For example, students need to memorize the number facts of addition and multiplication of one-digit numbers and their corresponding subtraction and division facts. The ability to retrieve these facts accurately and automatically from long-term memory, in turn, makes the solving of more complex problems, such as multi-step problems that involve basic arithmetic, quicker and less likely to result in errors (Geary and Widaman 1992). Computational and procedural skills are those that all students should learn to use routinely and automatically. Students should practice basic computational and procedural skills and use them frequently enough to commit them to memory. Work on skills involves the opportunity to practice; use accurately and automatically; memorize.