

# A Developmental Approach to Preparing Students for Standardized or State Tests



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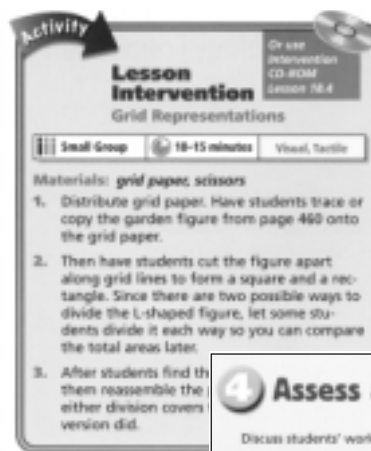
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## **BUILD TEST-TAKING SKILLS INTO EVERY LESSON**

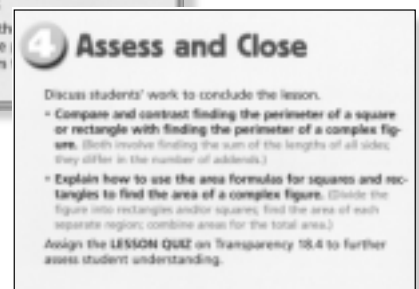
Requirements of No Child Left Behind present clear challenges to elementary school classrooms to rethink the way individual student progress is assessed, how assessment information is used to improve instruction, and how students are prepared for assessments. With the accountability stakes raised by requirements for annual yearly student progress, there is increasing concern that teachers will teach to the test, thereby narrowing the curriculum and compromising the quality of daily lessons. What individuals typically mean when they express fear of “teaching to the test” is more accurately described as “teaching the test,” or as Popham (2001) describes it, actual item teaching, or teaching that is focused directly on test items. Popham (2001) contrasts this with “curriculum teaching” in which a teacher directs instruction toward a body of knowledge that a test represents. This type of alignment among curriculum, instruction, and assessment represents ethical test preparation and does not result in inappropriate teaching. Research suggests that this type of alignment is an important characteristic of effective curricula (Charles A. Dana Center, 1999).

Therefore, a highly effective mathematics program embeds test preparation in every lesson, so that it is virtually invisible to the student and doesn’t limit classroom instruction.

Research also shows that high-quality classroom-based assessment, linked to corrective instruction, can significantly improve the quality of learning, perhaps more than other kinds of teaching interventions (Guskey, 2003; Stiggins, 2002). When teachers provide opportunities for



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daily and ongoing diagnostic assessments that are aligned with lesson objectives, and use the results of these assessments to modify instruction and support further student learning, students are more apt to master content that will later be assessed by state or standardized exams, become more confident learners, and more confident test-takers.

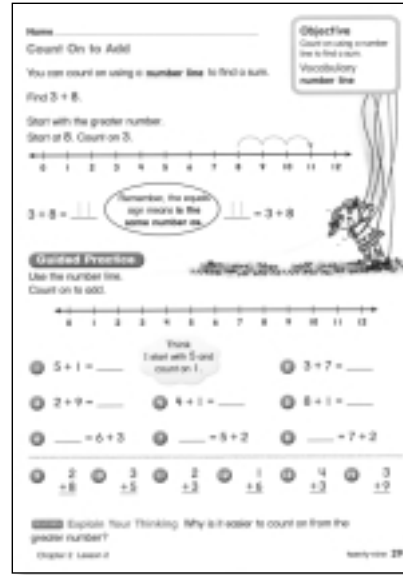
**BEST PRACTICES FOR PREPARING LEARNERS TO SUCCEED ON TESTS**

As elementary school students are building an understanding of mathematics concepts, mastering skills, and acquiring problem-solving strategies, teachers also need to ensure that students acquire the test-taking skills they need in order to demonstrate progress and achieve state standards. To fully integrate test preparation into each lesson, a comprehensive elementary mathematics program needs to include exercises and activities that

- Use representations and models students will see on tests
- Model the questions students need to ask themselves as they take tests
- Develop students’ comfort and confidence with test formats
- Give students practice with problem solving in a testing situation
- Reinforce vocabulary that appears in lessons and on tests.

**USE REPRESENTATIONS AND MODELS STUDENTS WILL SEE ON TESTS**

Often students experience difficulty with state or standardized tests because the mathematics is represented in ways on the assessment that differ from how it was presented in class or the text. When this happens students fail to answer questions correctly on tests because they do not recognize or understand the mathematical models, not because they do not understand the mathematical concepts. Therefore, as concepts are introduced to students, it is important that mathematical models used in the classroom include alternative approaches and



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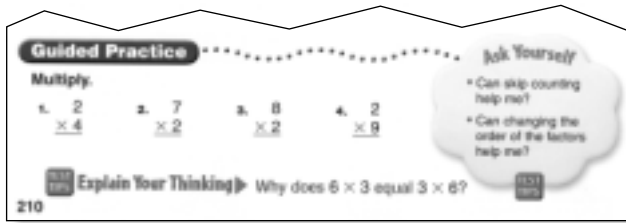
base-ten models for whole numbers and decimals, ten-frames, and other mathematical models should permeate students’ learning activities. Use of alternate representations minimizes conceptual misunderstandings and reinforces the cognitive flexibility students need to solve problems.

**MODEL THE QUESTIONS STUDENTS NEED TO ASK AS THEY TAKE TESTS**

Many tests now ask students to justify or explain their thinking. Lessons should expose learners to writing prompts that require this type of response and the type of metacognitive questions students need to ask themselves as they start to solve problems should be embedded in the mathematical lessons and activities. To help model this instructional strategy for students, an effective math program embeds and models these questions in each lesson. For example, effective guided practice should include metacognitive prompts that initiate student thinking and model the types of questions students should ask themselves that are keys to successful problem solving. Research indicates that the teaching of metacognitive activities should be incorporated into the subject matter and that when this is done it improves student learning, particularly in the area of mathematical problem solving (National Research Council, 2000).

representations students might encounter on tests. For example, instead of always representing an addition problem, for example, as “3 + 8 = \_\_\_”, students should also see problems of the form “\_\_\_ = 3 + 8.”

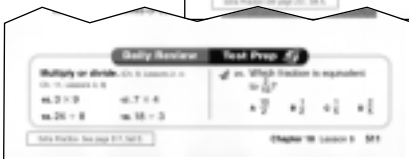
Similarly,



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### DEVELOP STUDENTS' COMFORT AND CONFIDENCE WITH TEST FORMATS

It is important not only for students to master the content they will be assessed on, but to also give students an opportunity to practice the content in the format questions will be posed so that the assessment's format does not interfere with a student's ability to demonstrate his/her understanding of mathematics (Powell, 1999). This type of test preparation can be built into every lesson and throughout instruction via daily review and practice tests that help students maintain skills as they acquire them, but in the format they will experience on standardized and state tests. Effective electronic teaching tools provide teachers with the flexibility they need to generate customized tests and practice materials in different formats: multiple choice, free response, and extended response. This also enables teachers to create customized spiral reviews that fit



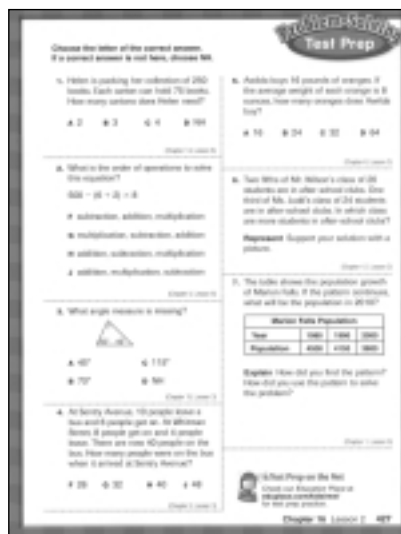
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their classroom's needs and testing schedule. Students who are exposed early and often to practice tests that mirror standardized or state-test formats gain knowledge of what to expect when it counts, and gain confidence in their ability to solve problems under pressure reducing test anxiety.

### GIVE STUDENTS PRACTICE WITH PROBLEM SOLVING IN A TESTING SITUATION

As part of a sound practice of daily reviews, an effective mathematics program also provides students with regular opportunities to practice problem solving in an assessment context. When lessons are followed by a test preparation section, students can immediately put newly acquired content to use. This reinforces the lesson content as it is learned and provides for systematic interventions before new material is tackled. By integrating content and assessment, a



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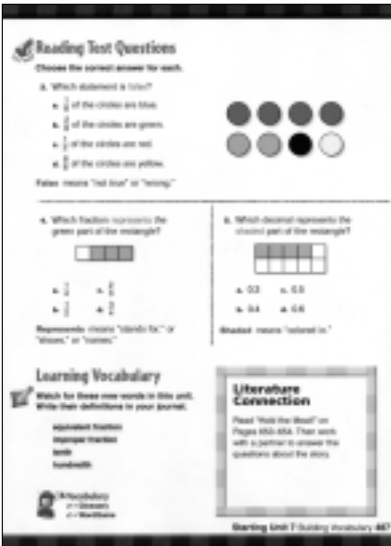
mathematics program can provide teachers a means to address students' needs, while giving students daily exposure to problem solving in a testing situation.

The Web

extends the opportunity for students to practice problem solving from home. Web-based test preparation modules enhance classroom learning and encourage parents to become involved in their student's mathematics curriculum.

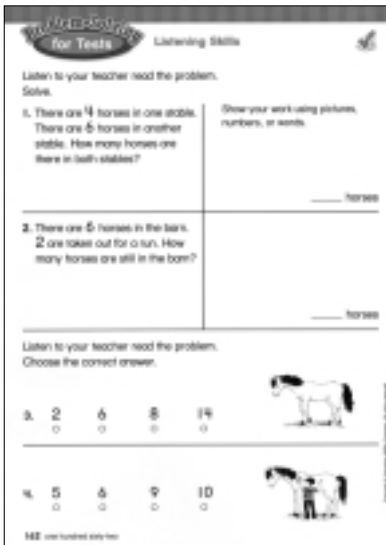
### REINFORCE VOCABULARY THAT APPEARS IN LESSONS AND ON TESTS

Students who score poorly on tests often do so because they have difficulty reading and understanding the problems presented. A program that promotes conceptual understanding and problem solving should include a focus on the mathematics vocabulary and comprehension skills students need to acquire in order to read and interpret problems successfully. Direct instruction in mathematics vocabulary has been shown to improve student achievement on



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a mathematics classroom whose meaning may be unfamiliar to young learners (Rubenstein and Thompson, 2002). In addition, mathematics assessments themselves may use vocabulary that has not been taught in class. The word “represent,” for example, may appear on a test, but not have been used in class. Consequently, an effective mathematics program will provide direct instruction both in formal mathematics vocabulary and the vocabulary that is likely to appear on state or standardized tests.



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As comprehension skills are developed through vocabulary instruction, it is also critical that early learners develop listening skills that promote language comprehension. At the primary level, many assessments are administered orally.

Mathematics programs that prepare young children for such assessments need to include listening exercises that familiarize younger learners with this assessment format. To achieve the equity goals of No Child Left Behind and the National Council of Teachers of Mathematics Standards, schools must do their utmost to make test preparation and improved classroom-based assessment practices “an integral part of instruction that informs and guides teachers as they make instructional decisions” (NCTM, 2000). This multi-tiered approach can help ensure that mathematics students are actively engaged in test preparation at every stage of learning.

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