

Teaching Tips

Scheduling Math Lessons

MATH 4 consists of 165 lesson days. The following are suggestions for helping you complete this program.

- Assign *Cumulative Review* pages as seatwork or homework instead of using them as individual math lessons.
- On test days, after administering the chapter test, teach the first lesson of the next chapter.
- If combining lessons is necessary, combine the first and second lessons of a chapter.
- Schedule the math lesson to follow a subject that is less active since the student is involved in active learning during most math lessons.
- Schedule *Practice and Review* for any time during the day. The activities may be integrated in 5- or 10-minute segments—before/after recess, before/after lunch, or between other subjects.

Planning Math Lessons

- Read *Math Background for the Teacher* (Appendix pages A17–A26) for a complete mathematical understanding of *MATH 4* objectives. The effective use of this program depends on the teacher's mathematical understanding so that he can develop the student's understanding of math, not just teach the student to find answers to math problems.
- Note the objectives listed at the beginning of each lesson.
- Before teaching a lesson that includes manipulatives, practice using the manipulatives by following the instructions in the lesson.
- Highlight in the lesson plan the problems for which the student will use manipulatives or the problems that you will demonstrate with the manipulatives.

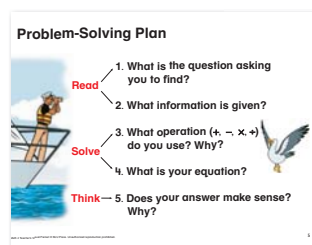
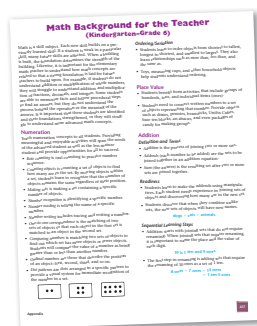
Teaching with Manipulatives

- The success of this math program depends on the use of manipulatives by the student to build a strong conceptual foundation in math. When teaching a new concept, start at the concrete level (the student uses manipulatives), move to the semi-concrete level (the student watches your demonstration or uses pictures), and finally, progress to the abstract level (the student uses only numbers).
- The purpose of manipulatives is to teach the student to *understand* math so that he is not just following a procedure that gives him the correct answer. Connect manipulative activities to understanding the operation and understanding the answers to problems the student is solving.
- Counting on his fingers indicates that the student has not memorized or is unsure of his facts and needs manipulatives. Most students will not use their fingers if other manipulatives are provided. As the students master the facts, they will find that using manipulatives is not necessary.

- Demonstrate with manipulatives on a magnetic board, a flannel board, or an overhead projector.
- Suggestions for organizing manipulatives are provided in the *Manipulative Management* section on page A8.
- Ideas for making manipulatives are provided in the *Manipulative Alternatives* section on pages A6–A7.

Teaching Problem Solving

- Problem solving is the primary goal of all math instruction. It is the process of confronting a problem and using one's wisdom and insight to attempt to solve the problem.
- Solving problems successfully is a result of understanding, questioning, and thinking. Build on a student's knowledge by *asking* him questions, when possible, rather than *telling* him information. Before explaining how to get the answer, explain the process and explore other ways of solving the problem.
- Make up word problems or allow the student to make up word problems to go with the sample problems you are demonstrating.
- Teach the student to listen for the question and to identify the information in a problem. Guide him in developing a plan to solve the problem. After he has solved the problem, encourage him to decide whether the answer is reasonable.
- While teaching the student to read graphs, encourage him to evaluate the information provided in the graph.
- Additional activities that help to develop the student's thinking skills as he uses his knowledge of math are provided on the *Exploring Ideas* pages at the end of some of the Worktext chapters.



Teaching Calculator Skills

- Use the *Calculator Wise* activities included in the Extended Activities on the Teacher's Toolkit CD to teach calculator skills for addition, subtraction, multiplication, and division. In preparation for real-life situations, the student benefits from the instruction and the use of the calculator in math class. The use of calculators is not intended to replace fact memorization and mental computation.

Teaching Math Facts

- Refer to the *Guide for Math Facts* on Appendix pages A9–A10. *Fact Fun Activities* and a list of addition, subtraction, multiplication, and division facts and fact families for memorization are provided on Appendix pages A10–A16. *Fact Reviews* are located on the Teacher's Toolkit CD.

Meeting Specific Needs

- *A Little Extra Help* in each Chapter Overview provides ideas for helping the student who is experiencing difficulty with the concepts taught in the chapter.

A Little Extra Help

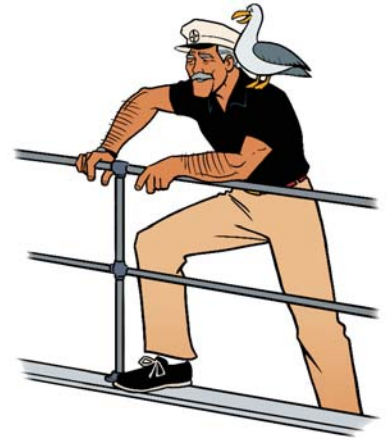
The following activity provides “a little extra help” for the student experiencing difficulty with the concepts taught in Chapter 3.

Determine the fraction of a set—Finding $\frac{1}{4}$ of 4 may not pose a problem to the student. However, finding $\frac{1}{4}$ of 12 may be confusing. To help the student, allow him to fold strips of paper. For example, to find $\frac{1}{4}$ of 12, give the student a strip of paper that has been marked into 12 equal units. Direct him to fold the strip into 4 equal parts. The student will see that there are 3 units in each fold; therefore, the answer is $\frac{1}{4}$ of 12 = 3.

- Use the *Cumulative Review* pages to identify concepts the student has forgotten. This review enables you to evaluate the specific needs of students so that you can reteach these students individually or in small groups.
- The *ReTeaching* pages, located on the Teacher's Toolkit CD, provide additional reinforcement or reteaching for the struggling student. Use the pages to reintroduce the concept for additional exposure and further skill development.
- The *Enrichment* pages, also located on the Teacher's Toolkit CD, provide challenging activities for the advanced student and for the resourceful student who is willing to explore alternative measures for solving problems. Although the pages include individualized activities, the teacher may need to provide some direction and encouragement as the student develops and applies his thinking skills.
- Teachers of students with English as a second language should recognize cultural differences that affect the teaching of math to these students. Assignments may need to be modified or replaced with easier assignments while these students are learning foundational skills. When completing assignments, they need much oral practice and the benefit of being paired with English-proficient students.

Making Math Enjoyable

- The ocean theme provides the teacher with ideas to motivate students.
- The theme characters—Captain Bailey, a retired naval officer who works for La Costa Museum, and a pet seagull, Clipper—add interest to *MATH 4*.
- A read-aloud story about Captain Bailey and Clipper introduces each chapter and shares Captain Bailey's adventures as he looks for recovered treasure from shipwrecks. These stories are enjoyable even to the reluctant math student and may help to improve his attitude toward math.
- Activities such as using math manipulatives, acting out math problems, making graphs, and doing probability experiments engage the student in active learning.
- Colorful worktext pages provide a variety of interesting activities for the student to practice what he has learned.
- Extended Activities and Calculator Wise activities add variety and fun to math.



Teaching Christian Principles

- Biblical principles related to math help the teacher promote a Christian worldview.
- Some lessons include short Bible accounts or discussions of events and principles in the Bible.

Introduce the Lesson

In 1 Corinthians 14:40, Christians are instructed to do all things “decently and in order.” While this verse refers to Christians gathering together to discuss the things of the Lord, the principle of doing things decently and in order also applies to math.

Long ago, mathematicians solved equations in a logical manner; however, a common system of mathematics had not been established, so their work could not be reproduced or proven by other mathematicians. Consequently, a system developed for solving equations.

As you continue to learn about math, you will find that using parentheses provides us with an orderly way to solve equations and is important when learning to solve more difficult equations.

- The identification of Bible Action Truths and Bible Promises in the lessons helps the teacher recognize Christian principles and character traits which can be included during the teaching.

Assigning Homework

Although no pages or exercises have been designated as specific homework assignments for math, there is ample material that may be assigned. The following are examples of possible homework assignments.

- Complete unfinished Worktext pages.
- Complete the Cumulative Review pages in the Worktext.
- Complete a page from the *REVIEWS* book.
- Complete a ReTeaching page.
- Complete an Enrichment page.
- Practice math facts.
- Study for the chapter test.

Math assignments, whether completed in class or as homework, should be adjusted, based upon the type of math instruction.

- Instruction that emphasizes the understanding of math using interactive learning and manipulatives places the focus on *problem solving*. The average student will not need to do many problems.
- Instruction that emphasizes following a procedure to get the correct answer focuses on *computation*. The average student will need to do more problems since he is learning by repetition, not by understanding.

Grading Math

- Check all Worktext pages but record a grade from only 1 or 2 pages each week.
- Record grades for Worktext pages that reflect skills that are not new. Pages from the *REVIEWS* book may also be assigned and graded several days after the lesson is taught.
- Administer each chapter test and record the grade.
- Assign more value to word problems than computation problems; e.g., the correct equation for the word problem receives 1 point, the correct answer 2 points, and the total point value for solving the word problem is 3 points.
- You may choose to grade the student's participation in math class. This grade may include the effective use of manipulatives and a genuine effort to understand the concept.
- When determining the math grade for report cards, you may want to give some aspects of math more weight than others. You will know best what your expectations are and if your emphasis has changed from one grading period to another.

Possible Grading Proportions

Written Work	Tests	Participation
75%	25%	—
65%	25%	10%
25%	50%	25%
50%	50%	—