

"The inquiring-based approach that frames the activities is a critical standards-driven model for developing and enhancing logical and critical thinking. This...is timely as we are asked to examine current curriculum materials in terms of scientifically-based research (No Child Left Behind Act, U.S. Department of Education, 2001)."

Robert Gyles – Deputy Superintendent, Community School District 4, City of New York

Building logical and critical thinking

Math Together™ integrates language arts and social studies with intensive mathematics problem solving to develop critical thinking and analytical skills. This interdisciplinary approach means as tutors and tutees build competence and confidence in math, they also improve their reading, writing and understanding of U.S. history.

All of the language arts – listening, speaking, reading and writing – are practiced in each lesson. Key concepts such as problem solving, estimation, fact mastery and calculator use are addressed across all math strands: numeration, geometry, measurement, pre-algebra and data analysis. The framework aligns with NCTM standards.

Interdisciplinary: combines English Language Arts, Social Studies and Mathematics

Inquiring-based approach: develops and enhances logical and critical thinking

Peer coaching and cooperative learning: nurtures social and emotional learning

User friendly: provides strategies and structure for problem solving

The M Team at the Alamo

Lesson Eight



"Malcolm, you won't believe it!" Maria exclaimed. Malcolm, Miko and Mike had just arrived to find Maria and Professor Protractor already planning for their seventh trip back into history.

"We are going to one of my favorite cities — San Antonio, Texas!" Maria said. "With its beautiful River Walk and El Mercado, the Spanish market, it is the most beautiful place I know."

"But San Antonio in 1836 was very different from today, Maria," Professor Pro explained. "And the Alamo was the city's last defense. Did you buy the food we discussed?"

"Si, Professor," Maria answered. "But it doesn't look like much for all those men."

Interdisciplinary

Passages and activities based on U.S. history complement the language arts and social studies curricula. Key math concepts are woven throughout engaging stories, whose topics range from the Revolutionary War to the presidency of George W. Bush. The content, while incorporating fifth-grade social studies curriculum, is written on a third-grade level. Thus, both tutor and tutee maintain interest in and learn from the stories.

journal

8

Name _____ Date _____

How can I use bar graphs to solve problems?

Why is the graph's title important to me?

What does the scale tell me?

Why do you label each part of a bar graph?

Which new fact families did I learn today?

Reading-Writing-Math Connection

Students who can explain their reasoning orally and in writing are using language skills to develop and demonstrate real understanding. In Math Together, tutor and tutee read aloud and discuss passages. Tutees end each lesson by writing on a journal page. A series of carefully-worded questions helps them reflect on and summarize the key concepts they've learned.

Problem-solving strategies and structure

Lesson Eight **SOLVE SHEET**

Name _____ Date _____

S How many Texans defended the Alamo after the volunteers came to help?

O

L

V

E Was my answer reasonable? Yes No
 Did I estimate? Yes No
 Did I check my answer? Yes No

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Problem-Solving Strategies

The SOLVE paradigm teaches students to solve problems to learn, rather than learning to solve problems. Handy bookmarks and SOLVE cards remind tutors and tutees of the steps.

Consistent Application

Repetition of key components such as SOLVE helps students feel confident about their abilities. They build critical thinking skills as concepts are reviewed and practiced throughout 30 lessons.

- S Study the problem.** Identify the question to be answered.
- O Organize the facts.** Delete unnecessary data. Highlight important information.
- L Line up your plan of action.** What should you do?
- V Verify your plan.** Try it out to see if it works.
- E Examine your results.** Does your answer make sense? Is it accurate?

Nurturing Social and Emotional Learning

Schools play an essential role in promoting the social and emotional development that prepares children to become caring and responsible adults. Peer coaching and cooperative learning are built into each lesson, beginning with a warm-up chat and ending with praise for the tutees' progress.

Fact Mastery

While Math Together focuses on understanding the processes behind problem solving, solid fact mastery remains an important part of the equation. Tutees learn to build their own fact families, then practice and expand on them at the beginning of each lesson.

TUTOR INSTRUCTION SHEET

Lesson 14

"The M Team Meets George Washington Carver"

Materials needed:

- SOLVE cards
- Ruler
- Highlighter
- Pencil
- Crayons or Markers
- Envelope of tutee materials

Warm Up

Greet your tutee and have a short, friendly chat.

Review the fact family cards with your tutee. As you go through each card, have your tutee say the number sentences and give the sums and differences.

Review the fact cards as many times as possible in the four-minute warm-up period.

Give your tutee the grid paper included at the back of the lesson.

Before we read the story, I want you to draw something for me. Use this grid paper and a crayon or marker. First, color a square on the grid paper by shading in four square centimeters.

say

Lesson 14 TUTOR INSTRUCTION SHEET

Now take a different color marker and color another four-centimeter square beside the first one. Are the squares exactly alike? Mathematicians would say they are congruent.

Now take a third color marker and shade in a square that is nine square centimeters. How is it like the first two shapes? They're all square. How is it different? It is larger. It is not congruent.

say Congruent figures are exactly alike. They can be rectangles, triangles or any other shape, as long as they are exactly alike. Draw another square that is congruent to the nine-centimeter square.

Make sure your tutee draws a square with nine square centimeters. If he/she still has trouble with concept, have him/her continue to draw congruent squares and rectangles. Praise your tutee for his/her efforts.

Read the Story

In today's story, we'll read about Malcolm's great-great uncle, George Washington Carver. Look at the title and picture. Can you predict what the story will be about?

Ease of Use

Step-by-step instructions make it simple for tutors to apply best practices. Training sessions help them review and practice the concepts they will share with their tutees. Lessons are designed for use with third- or fourth-grade tutees and fifth-grade tutors.

Math Vocabulary Building

Tutees are introduced to unfamiliar words before they encounter them in stories or problems. They begin to feel like mathematicians as repetition makes them comfortable with the special math vocabulary.

Language Arts Best Practices

Math Together uses proven Reading Together™ strategies such as rereading, retelling and predicting.



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