

Grade 2 Clarifying Lessons: Texas Problem Solving

OLD Resources. These resources have NOT yet been updated to align with the revised elementary mathematics TEKS. These revised TEKS were adopted by the Texas State Board of Education in 2005, with full implementation scheduled for 2006–07. These resources align with the original TEKS that were adopted in 1998 and should be used as a starting point only.

What is a Clarifying Lesson?

A model lesson teachers can implement in their classroom. Clarifying Lessons combine multiple TEKS statements and may use several Clarifying Activities in one lesson. Clarifying Lessons help to answer the question "What does a complete lesson look like that addresses a set of related TEKS statements, and how can these TEKS statements be connected to other parts of the TEKS?"

TEKS Addressed in This Lesson

Number, operation, and quantitative reasoning: 2.3A, B; 2.4A, B

Patterns, relationships, and algebraic thinking: 2.5D

Underlying processes and mathematical tools: 2.12B, D; 2.13A, B; 2.14

Materials

- assortment of manipulatives
- recording sheets shaped like Texas
- construction paper shapes of Texas (to be used as covers of the problem-solving books)
- calculators

Lesson Resources

Uncovering Mathematics with Manipulatives and Calculators, Level 1 by Jane F. Schielack and Dinah Chancellor

Lesson Overview

Students use numerical data about Texas to write and solve real-life problems involving addition and subtraction (or multiplication and division).

Mathematics Overview

Students select the correct operation and solve problems involving addition and subtraction (or multiplication and division).

Set-up (to set the stage and motivate the students to participate)

1. Have students work in pairs to choose three numerical facts about Texas to use to make up one addition and one related subtraction story problem. These numbers could be generated through exploration with the calculator, then verified with manipulatives or reasoning. (Appropriate numbers could be used to generate multiplication and division story problems. (2.3A, B; 2.4A, B; 2.5D; 2.14))
2. Have students write their story problems on the Texas recording sheet and record the number sentences for the solutions on the back. (2.13A, B)
3. Have students trade their recording sheets and work one another's problems, using manipulatives if necessary. (2.3A, B; 2.4A, B; 2.5D; 2.14)

Teacher Notes (to personalize the lesson for your classroom)**Guiding Questions (to engage students in mathematical thinking during the lesson)**

- How did you decide what operation to use to describe the problem in your story? (2.3B; 2.4A, B; 2.14)
- How did you decide what number sentence to use to describe the problem in your story? (2.12A, B; 2.14)
- How might you use manipulatives to solve the problem in your story? (2.3B, 2.4A, B; 2.13A)
- How might you use number facts to solve the problem in your story? (2.3A)
- What patterns do you see in the number sentences for your addition and subtraction stories? (2.5D) Your multiplication and division stories? (2.4A, B)
- How might these patterns be useful in solving these problems? (2.5D, 2.14)

Teacher Notes (to personalize the lesson for your classroom)**Summary Questions (to direct students' attention to the key mathematics in the lesson)**

To strengthen students' understanding of the connections between the actions in their stories and the operations that appear in their number sentences, ask questions such as:

- How did you select the number sentences to describe the problems in your stories? (2.3B; 2.4A, B; 2.12A, B; 2.14)

- What procedures did you use to solve the problems in your stories (e.g. joining two sets of manipulatives or removing set from another)? (2.3B; 2.4A, B; 2.13A, B)
- What relationships did you see between addition and subtraction? Between multiplication and division? (2.4A, B; 2.5D)

To help students reflect on their own problem-solving processes, ask questions such as:

- Did writing your stories help you solve anyone else's problems? How did it help? (2.13A, B)
- How did you use the calculator? (2.13A)
- How did you decide what number sentence to use to solve someone else's story? (2.13B)
- How did you decide if your solution was reasonable? (2.14)

Teacher Notes (to personalize the lesson for your classroom)

Assessment Task(s) (to identify the mathematics students have learned in the lesson)

- Give students a number sentence and have them write an appropriate story problem to go with it.
- Have students make a list of situations (actions or questions) that could possibly go with an addition number sentence, subtraction number sentence, etc. Students can record them in their math journals.

Teacher Notes (to personalize the lesson for your classroom)

Extension(s) (to lead students to connect the mathematics learned to other situations, both within and outside the classroom)

Students can choose their own topic to write story problems about and make a book of problems.

Teacher Notes (to personalize the lesson for your classroom)