ⓘ Overview

Students will work in cooperative groups to determine how to reach a specific score in a football game.

Grade Levels: 4–6

◎ Concepts

- Addition
- Multiplication
- Problem solving

☆ Materials

- ▦ TI-15 Explorer™ calculators
- *Miss Nelson has a Field Day*
  Allard, Harry and Marshall, James (Boston, MA: Houghton Mifflin, 1985)
- Sports section of a newspaper showing football scores
- Chart paper
- Paper, pencils
- Student activity sheet

✓ Assessment

Throughout the activities, questions are included for formative assessment. Student work samples should be used as a check for understanding. Have the students use the TI-15 Explorer™ to show the different ways to calculate.

Modified from Football Scores, from A World of Mathematics: Activities for Grades 4, 5, 6 using the TI-15

Introduction

Read *Miss Nelson Has a Field Day* to the students. Discuss football scores with the students. Present scores from various football games: professional, college, high school, or other scores of interest to the students. Compare the scores of those games with the score from the game in the book. Have students discuss the similarities and differences between all of these scores.

Presenting the Problem

1. Review the four steps of problem solving with the students:

   o   Understanding the problem

   o   Making a plan

   o   Carrying out the plan

   o   Evaluating the solution

   Have the students read *The Problem* page and paraphrase the problem. Make sure the students are clear on what the problem asks.

2. Discuss with students the information on the Problem page. There are numerous combinations that lead to 77 points. Have students find as many as possible.

3. If groups have difficulty with the problem, use the *Things to Consider* page. This page provides guiding questions to help the students to complete the problem-solving step.

4. Have the teams present their information. Create a class chart showing all of the different ways the different teams solved the problem.

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Evaluating the Results

1. After the presentations are made, have students examine the various solutions presented.

Questions for Students:

❖ *How are the presentations similar?*
❖ *How are the presentations different?*

2. Ask them to compare the numbers used.

Questions for Students:

❖ *Did all groups use the same numbers?*
❖ *Why do you think this is so?*

3. Ask them to determine the reasonableness of the results.

Questions for Students:

❖ *Did each group answer the question?*

❖ *Do the numbers used make sense?*

❖ *Did all of the groups consider all of the variables?*

4. Have them consider the class chart.

Questions for Students

❖ *Do we have all of the possible combinations?*

❖ *How do we know?*

❖ *How could we organize the chart to help us see if all combinations have been included?*

5. Ask the class to share the ways they used the calculator and the results they got.

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SOLUTIONS

Student Activity

Name _____

Date _____

Using the Calculator.

Use the TI-15 to perform addition and multiplication.

Addition and multiplication: Using parentheses

Consider this problem:

1 Michelle bought school supplies. She bought 5 notebooks at 29 cents each, 6 packages of paper at 58 cents each, and 3 packages of pens at 79 cents each. How much money did she spend?

Press	The display shows:
· 29 + · 29 + · 29 + · 29 + · 29 + · 58 + · 58 + · 58 + · 58 + · 58 + · 58 + · 79 + · 79 + · 79 Enter	**7.3**

Using parentheses can keep all of the calculations in order and simplify the number of keystrokes used.

Now try this:

Press	The display shows:
((· 29 × 5) + ((· 58 × 6) + ((· 79 × 3) Enter	**7.3**

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Was it the same as the first one? Why do you suppose that happened?

Sample answer: yes; the same numbers are being added; they are just arranged differently.

2 Roberto was helping his mother at the garage sale. His mother told him he could keep the money from all of the items he sold. Roberto sold 13 items at 5 cents each, 21 items at 10 cents each, and 9 items at 15 cents each. How much money did he get to keep?

Press	The display shows:
(13 × · 05) + (21 × · 10) + (9 × · 15) Enter	**4.1**

3 Hildegarde went to the school book fair. She bought 23 books. She bought 9 books at 25 cents each, 10 books at 75 cents each, and 4 books at $1.29 each. How much did Hildegarde spend?

Answer: $14.91

Write the keystrokes you will use to solve this problem.

Answer: (9 x .25) +(10 x .75) + (4 x 1.29) Enter

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Use a different set of keystrokes to solve the problem.
Did you get the same answer? Why do you suppose that happened?

Sample answer: I got the same answer because the same numbers are being added; they are just arranged differently.

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