

## Activity 8

Somewhere  
In Between

## Teacher Notes

## Objective

- ◆ To develop estimation and mental arithmetic skills for integer addition and subtraction

## Materials

- ◆ TI-73 Calculator

*Introduction*

In this activity, the Number Line application will be used for targeting estimations. Students will make predictions of sums and differences and try to land “somewhere in between” a target interval set up by their partners.

*Procedure*

1. Distribute Student Activity pages. Have students work in pairs using one calculator between them. Direct students to use the sum of the last three digits of their phone numbers to determine who will be Player 1 and Player 2.
2. After accessing the Number Line application, have students change the viewing window to make use of a larger portion of the number line. Window settings can vary depending upon the integer arithmetic experience of the players.  
Tables are provided at the end of the activity for students to complete as they work through the activity. Their entries will help you assess their “integer arithmetic sense.”
3. While in the window settings, Player 1 also needs to set a new **Start** number. Player 1 then chooses a target interval using the **Draw Label** option of the **[DRAW]** key. Since the interval is to be small, the numbers showing the endpoints of the interval will probably overlap. Students have a table that they can complete so that the interval range is not forgotten.  
Player 1 also chooses the initial arithmetic operation for the start of the round. Each player will have the opportunity to choose the operation for the other player; both addition and subtraction are possible.
4. Have Player 2 choose a number that will put the sum (or difference) in the target interval. Encourage students to use estimation strategies other than rounding (such as compatible numbers) to determine responses.
5. If the vector lands within the target interval, Player 2 wins. Otherwise, Player 2 chooses the next operation and the play continues.
6. Continued description of play is provided.
7. Students are encouraged to write down strategies they used during the game.
8. Tables are provided for students to complete, showing their entries on the calculator.



Name \_\_\_\_\_  
Date \_\_\_\_\_

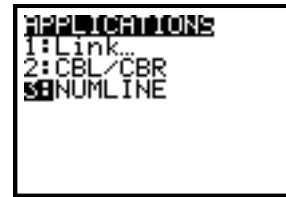
## Activity 8

### Somewhere In Between

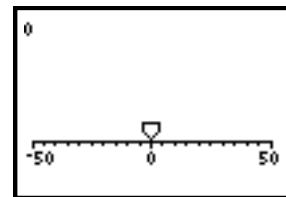
**Objective:** In this activity, you will use the Number Line application for “targeting estimations.” You will make some predictions of sums and differences and try to land “somewhere in between” a target interval set up by your partner.

1. You will need to have a partner for this activity and a calculator with the Number Line application. Mentally find the sum of the last 3 digits of your phone numbers. Whoever has the greater sum will be Player 1 and the other will be Player 2.

Access the Number Line application by pressing **[APPS]** and pressing **[ $\nabla$ ]** to select the NUMLINE application. Press **[ENTER]** twice to get to the NUM/FRAC LINE menu and select the Number Line by pressing **[ENTER]**. Press **[CLEAR]** 1 (or **[CLEAR][ENTER]**) to clear any previous work.



2. Press **[WINDOW]** and change the **Min** to **-50**, the **Max** to **50**, and the **Scale** to **5**. Unless you and your partner decide otherwise, you won't need to change these three values again. Complete the tables (see #9) as you follow through the activity.

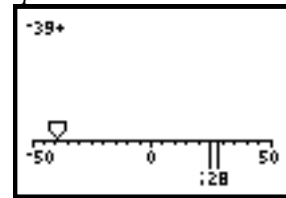


3. **Player 1:** Change the **Start** number in the WINDOW settings to any integer in the range of **-50 to 50**. When you have selected that number, press **[GRAPH]** to return to the Number Line window.

Now choose two different integers between -50 and 50 which have a small difference (or distance between). This will be the target range for the first round of the game. To enter these two numbers on the number line, press **[DRAW]** and **[ENTER]** to select the first option of Draw Label. Type one of the two numbers after **Label =** at the top of the window and press **[ENTER]**. A marker should appear on the number line at that number. Type your second number after the **Label =** and press **[ENTER]**. Press **[DRAW]** (or **[ENTER]**) to exit the Draw mode.

#### Example

Player 1 chose -39 as the start number, a target range of 25 to 28, and addition as the starting operation.



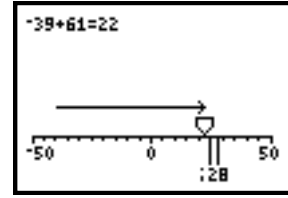
Before handing the calculator to Player 2, you need to determine the initial operation that Player 2 has to use: either addition or subtraction.

To do that, simply press either the **[+]** or **[-]** key and then pass the calculator to Player 2.

4. **Player 2:** You need to use your mental arithmetic and estimation skills and choose a number that will put the sum (or difference) in the target range shown on the number line. Type your number and press **[ENTER]**.

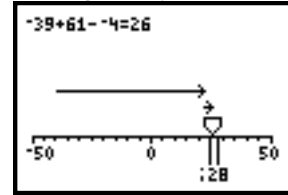
#### Example

Player 2 added 61 to -39. The sum of 22 did not fall in the target range.



**Example**

*Player 2 didn't win so subtraction is chosen and the calculator handed to Player 1. Player 1 subtracted -4 and landed in the range. Player 1 won.*



5. If the vector endpoint lies within the target range (or on one of the two boundary markers), Player 2 wins the round. If not, Player 2 presses either the addition or subtraction key, passes the calculator back to Player 1, and the round continues. Notice that in the example at the right, Player 1 does not start over, but continues to estimate from the current sum (or difference).
6. **Player 1:** Think of a number that will put the sum (or difference) in the target interval. Type in that number and press **[ENTER]**.
7. If the vector endpoint lies within the target range, Player 1 wins the round. If not, Player 1 chooses the next operation of addition or subtraction, hands the calculator to Player 2, and the round continues.
8. Describe two strategies that you used during the activity.
9. Keep a record of your choices in the tables below.

Target Range: _____ Selected by Player: _____		Start Number: _____
Operation Chosen	Number Entered	Sum or Difference

Target Range: _____ Selected by Player: _____		Start Number: _____
Operation Chosen	Number Entered	Sum or Difference

Target Range: _____ Selected by Player: _____		Start Number: _____
Operation Chosen	Number Entered	Sum or Difference

Target Range: _____ Selected by Player: _____		Start Number: _____
Operation Chosen	Number Entered	Sum or Difference