Algebra with the TI-73

1. Solve the following problem.

   ACME rental rents inline for $5 plus $3.00 per hour. How much would it cost to rent a pair of inline skates for 5 hours?

2. List some methods your students might use to solve the problem.

Problem adapted from T³ Algebra I Institute.
ACME rental rents inline for $5 plus $3.00 per hour.
How much would it cost to rent a pair of inline skates for 5 hours?

1. Generate the rental cost, counting the hours as you go.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5.00</td>
</tr>
<tr>
<td>Ans+3</td>
<td>8.00</td>
</tr>
<tr>
<td>Ans+3</td>
<td>11.00</td>
</tr>
<tr>
<td>Ans+3</td>
<td>14.00</td>
</tr>
<tr>
<td>Ans+3</td>
<td>17.00</td>
</tr>
</tbody>
</table>

Press 5 [ ]
Press 3 [ ]
2. Generate the rental cost using a constant increment. Let the calculator count the hours.

First, press \( \boxed{\text{Const}} \) and set the constant increment.

\[
\begin{align*}
\text{Set Constant:} \\
\text{Single Multiply} \\
C_1 = 3 \\
C_2 = \\
C_3 = \\
C_4 = 
\end{align*}
\]

Now return to the home screen by pressing \( \boxed{\text{5 Const}} \). Then generate the rental cost.

\[
\begin{array}{c|c}
\text{5+3} & n=1 & 8.00 \\
8.00+3 & n=2 & 11.00 \\
11.00+3 & n=3 & 14.00 \\
14.00+3 & n=4 & 17.00 \\
\end{array}
\]
3. Some students would solve this problem by making a chart similar to the one below.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Calculation</th>
<th>Rental Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$5 + 3 = 8$</td>
<td>$8.00$</td>
</tr>
<tr>
<td>2</td>
<td>$5 + 3 + 3 = 11$</td>
<td>$11.00$</td>
</tr>
<tr>
<td>3</td>
<td>$5 + 3 + 3 + 3 = 14$</td>
<td>$14.00$</td>
</tr>
<tr>
<td>4</td>
<td>$5 + 3 + 3 + 3 + 3 = 17$</td>
<td>$17.00$</td>
</tr>
<tr>
<td>5</td>
<td>$5 + 3 + 3 + 3 + 3 + 3 = 20$</td>
<td>$20.00$</td>
</tr>
</tbody>
</table>

Now press **List** to access the List Editor. Use the List Editor to enter the number of hours in List 1 and the corresponding rental cost in List 2.

In List 3, enter the function or “rule” to describe the pattern. What does it mean if List 2 and List 3 match?

Note: To enter L1, press **List** and choose L1.
4. Another way to see that a pattern exists is to look at a plot of the pairs of values.


Then set the calculator for a scatterplot.

Press [5] to access the window settings and choose an appropriate viewing window.

Press [6] to see the plot.

Press [7] to see the values represented by each point.

5. Write the “rule” as a function and enter it in Y1. This allows you to take advantage of the function capabilities of the TI-73.
Return to the graphing screen and experiment with \[ \square \].

The TI-73 will also display a table of values for a given function. Press \[ \square \] to set up the table.

Then press \[ \square \] to view the table.
The Zenith Company also rents inline skates. They charge $10 plus $2.00 per hour.

a. Write a linear function to find the rental cost for the Zenith Company.

b. Enter the function in Y2. Use the table to determine when the Zenith Company has a lower rental cost than ACME. When are the costs the same?

c. View the graphs and determine the significance of the point (5, 20).

d. How does the equation \(10 + 2x = 5 + 3x\) relate to this problem situation?

e. Which portion of the graph represents the Zenith cost being less than the ACME cost?