



The sample table at the right was generated by the calculator after the **LINE** program was run.

Since the **LINE** program works with random numbers, a different table is generated each time it is run. The program defines $Y1 = AX + B$ so the table gives us the values of the expression $AX + B$ for each of the integers from -3 to 3 .

| X | Y1 | |
|----|----|--|
| -3 | 5 | |
| -2 | 6 | |
| -1 | 7 | |
| 0 | 8 | |
| 1 | 9 | |
| 2 | 10 | |
| 3 | 11 | |

X = -3

- In this sample, what is the value of $AX + B$ when $X = 2$?

- Write below what computations you think the calculator may have performed using A , B , and X to determine the y -value, $AX + B$.

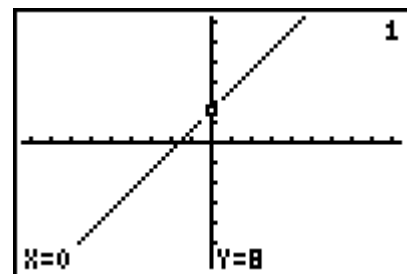
You can study the table and try to guess the values of A and B . For example, $X = 2$ gives $Y = 10$; so by substituting, we get that $(2 \times A) + B = 10$. We know from our knowledge of number facts that $(2 \times 5) + 0 = 10$, so perhaps $A = 5$ and $B = 0$.

- If you guess that $A = 5$ and $B = 0$, how would you test to see if this guess for the values of A and B was correct?

- Name another set of values for A and B that would satisfy the relationship that $2A + B = 10$.
 $A =$ _____ $B =$ _____
- Does this second set of values work for other rows in the table?

You can use **TRACE** to see the coordinates of the points on a graph. The display at the right shows the graphing window after r is pressed for the set of sample ordered pairs shown in the table on the previous page. Note that a specific set of values for X and Y are shown at the bottom of the screen.

Verify that these same values are included in the sample table shown on the first page of this activity.

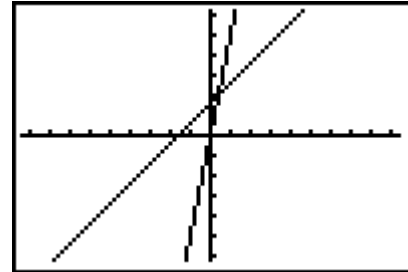




What's My Line?

6. Write below how you know the guess is incorrect based upon information provided in the calculator table.

You can also test a guess by looking at a graph of the ordered pairs from the table. A graph for our example is shown at the right.



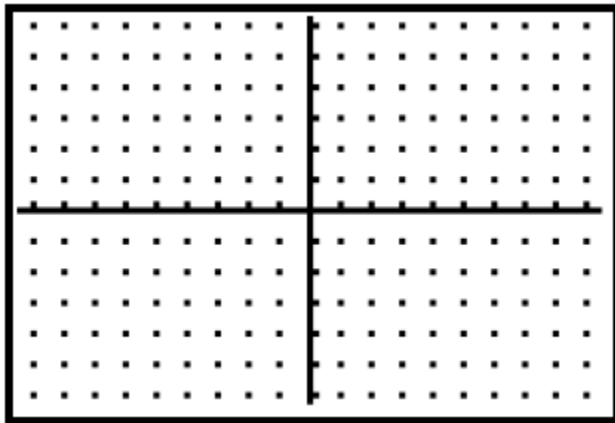
7. How do you know the guess is incorrect based upon information provided in this graph?

Now try playing **What's My Line?** (See page 4 for calculator program LINE)

Press **[PRGM]** and then press **▼** to move down to the line that shows the program name **LINE**. Press **[ENTER]** **[ENTER]**. Your calculator will display the word **Done** on the screen.

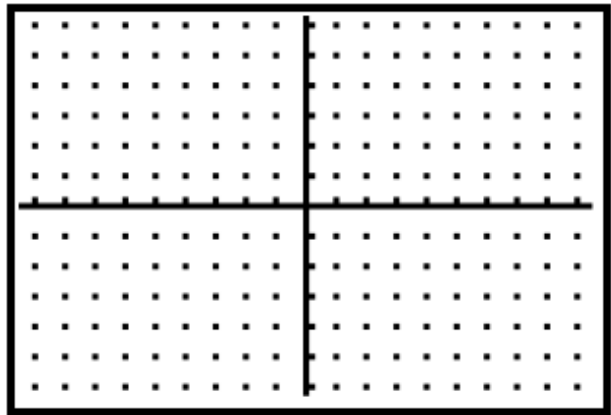
At this point the calculator has randomly selected two integer values for A and B and has placed the expression $AX + B$ into the first line of the **[Y=]** screen.

- To view a table, press **[2nd]** **[TABLE]**. To see additional entries in the table use the up and down arrow keys to scroll through the **X** column.
- To view a graph, press **[GRAPH]**. To see coordinates of points on the line, use **[TRACE]** and the left and right arrow keys.
- To make a guess, press **[Y=]** **o** and then press **▼** **↑** to move down to the line showing **Y2=**. Now type in your guess. For example, to enter a guess of $A = 4$ and $B = -3$, you would press 4 **[X,T,Θ,n]** **+** **(-)** 3 to make the entry **4X+-3**.



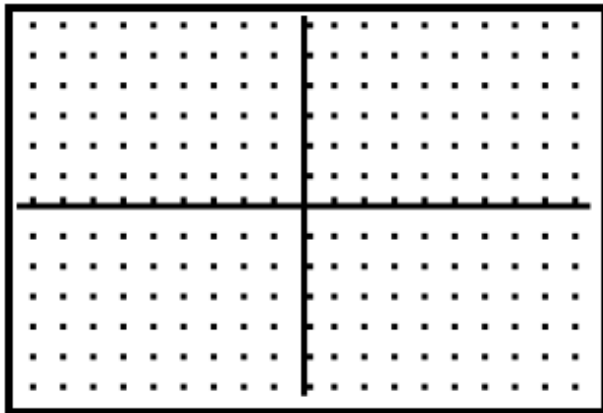
A = _____ B = _____

Y = _____X + _____



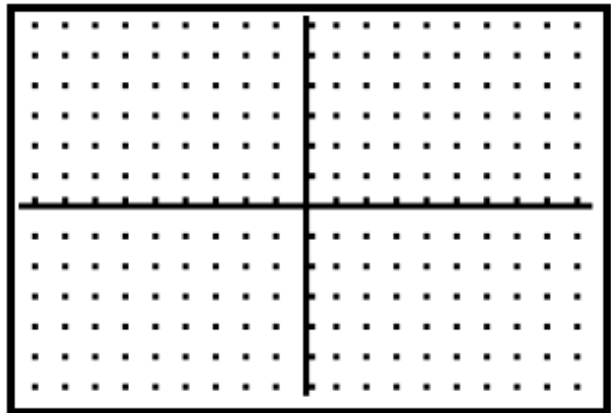
A = _____ B = _____

Y = _____X + _____



A = _____ B = _____

Y = _____X + _____



A = _____ B = _____

Y = _____X + _____

As you played the game you probably got better at making correct guesses for A and B.

8. List the information from a graph or a table that helped you most in making better choices.

9. What connections do you see between a graph and a table of values for a particular example of the expression $AX + B$?

| Text in Program | Keystrokes for entering text into the calculator |
|--------------------------------|--|
| Program: Line | <code>PRGM</code> <code>▶</code> <code>▶</code> <code>ENTER</code> LINE <code>ENTER</code> |
| ClrHome | <code>PRGM</code> <code>▶</code> 8 <code>ENTER</code> |
| Normal: Float | <code>MODE</code> <code>ENTER</code> <code>ALPHA</code> <code>:</code> <code>MODE</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| Radian: Func | <code>MODE</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ALPHA</code> <code>:</code> <code>MODE</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> <code>ENTER</code> |
| Connected | <code>MODE</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| Sequential | <code>MODE</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| Full | <code>MODE</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| RectGC | <code>2nd</code> <code>[FORMAT]</code> <code>ENTER</code> <code>ENTER</code> |
| CoordOn | <code>2nd</code> <code>[FORMAT]</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| GridOff | <code>2nd</code> <code>[FORMAT]</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| AxesOn | <code>2nd</code> <code>[FORMAT]</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| LabelOff | <code>2nd</code> <code>[FORMAT]</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>▼</code> <code>ENTER</code> <code>ENTER</code> |
| PlotsOff | <code>2nd</code> <code>[STAT PLOT]</code> 4 <code>ENTER</code> |
| FnOff | <code>VARS</code> <code>▶</code> 4 2 <code>ENTER</code> |
| -47→Xmin : 47→Xmax : 5→Xscl | <code>(-)</code> 47 <code>STO▶</code> <code>VARS</code> 1 1 <code>ALPHA</code> <code>:</code> 4 7 <code>STO▶</code> <code>VARS</code> 1 2 <code>ALPHA</code> <code>:</code> 5 <code>STO▶</code> <code>VARS</code> 1 3 <code>ENTER</code> |
| -31→Ymin : 31→Ymax : 5→Yscl | <code>(-)</code> 3 1 <code>STO▶</code> <code>VARS</code> 1 4 <code>ALPHA</code> <code>:</code> 3 1 <code>STO▶</code> <code>VARS</code> 1 5 <code>ALPHA</code> <code>:</code> 5 <code>STO▶</code> <code>VARS</code> 1 6 <code>ENTER</code> |
| "AX+B" →Y1 | <code>2nd</code> <code>ALPHA</code> " A X <code>ALPHA</code> + <code>2nd</code> <code>ALPHA</code> B " <code>ALPHA</code> <code>STO▶</code> <code>VARS</code> <code>▶</code> 1 1 <code>ENTER</code> |
| int(13rand) – 6→A | <code>MATH</code> <code>▶</code> 5 1 3 <code>MATH</code> <code>◀</code> 1 <code>)</code> - 6 <code>STO▶</code> <code>ALPHA</code> A <code>ENTER</code> |
| int(33rand) – 16→B | <code>MATH</code> <code>▶</code> 5 3 3 <code>MATH</code> <code>◀</code> 1 <code>)</code> - 16 <code>STO▶</code> <code>ALPHA</code> B <code>ENTER</code> |
| ClrTable | <code>PRGM</code> <code>▶</code> 9 <code>ENTER</code> |
| -3→TblStart : 1→ΔTbl | <code>(-)</code> 3 <code>STO▶</code> <code>VARS</code> 6 1 <code>ALPHA</code> <code>:</code> 1 <code>STO▶</code> <code>VARS</code> 6 2 <code>ENTER</code> |
| IndpntAuto : DependAuto | <code>2nd</code> <code>[TBLSET]</code> <code>ENTER</code> <code>ALPHA</code> <code>:</code> <code>2nd</code> <code>[TBLSET]</code> <code>▼</code> <code>ENTER</code> |