



**Problem 1 – Creating the Original Image**

In this activity, you are going to graph an image and then explore the impact of changing all the x-values by a certain amount or changing the y-values by a certain amount. Lists will be used to draw an image on the calculator screen.

1. Write the coordinates all of points on the original tree.

A	( , )	H	( , )	O	( , )
B	( , )	I	( , )	P	( , )
C	( , )	J	( , )	Q	( , )
D	( , )	K	( , )	R	( , )
E	( , )	L	( , )	S	( , )
F	( , )	M	( , )	A	( , )
G	( , )	N	( , )		

2. How do you think we can make the tree taller? \_\_\_\_\_

\_\_\_\_\_

3. How do you think we can make the tree shorter? \_\_\_\_\_

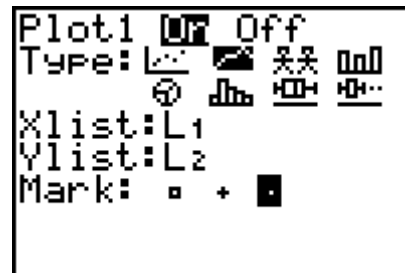
\_\_\_\_\_

4. What do you think would happen if we doubled all the x-coordinates? \_\_\_\_\_

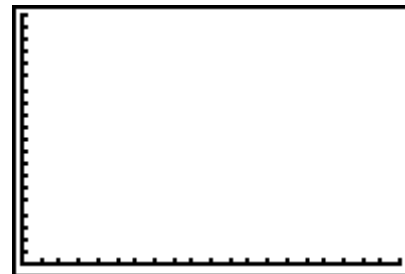
\_\_\_\_\_

5. Now enter the coordinates above as L1 and L2. All x-values are entered (in order) in L1. The y-values are entered (in order) in L2. Press **[LIST]** to open L1 and L2.

Then, set up the stat plot as shown at the right. Work with your teacher to select an appropriate Window. Press **[WINDOW]** to change the values.



Draw the tree as best you can at the right.



**Problem 2 – Changing x-values**

6. First, let's change the x-values by doubling all the numbers. To do this, press **LIST** and move to the top of L1. Then, press **2nd** **LIST** **1** to select L1, **⊗** **2** to multiply by 2, and **ENTER** to execute the command.

How did all the values in the list change?

\_\_\_\_\_

7. Predict how the graph of the tree will change.

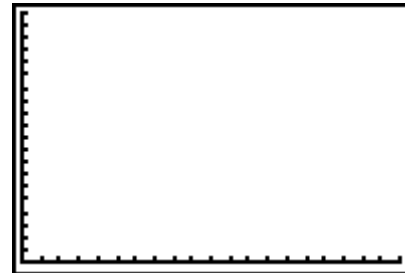
\_\_\_\_\_

8. Press **GRAPH** to see the new tree. Draw it at the right.
9. If your prediction in Question 7 was not correct, how did the graph change?

\_\_\_\_\_

	L2	L3	1
8	15	-----	
6	13		
5	12		
5	10		
6	9		
4	7		
5	6		

L1 = L1 \* 2



**Problem 3 – Changing y-values**

Before changing the y-values of the original tree, you must change the x-values back to original values. You will need to divide the list by 2. Follow the same procedure in Question 6 except divide by 2. Then, multiply the y-values by 2. Again, use the same procedure as in Question 6.

10. Predict how the graph of the tree will change.

\_\_\_\_\_

11. Press **GRAPH** to see the new tree. Draw it at the right.
12. If your prediction in Question 10 was not correct, how did the graph change?

\_\_\_\_\_

L1		L3	2
8	15	-----	
6	13		
5	12		
5	10		
6	9		
4	7		
5	6		

L2 = L2 \* 2



13. If you divide the original lists by 2, what do you predict will happen? \_\_\_\_\_

\_\_\_\_\_

14. How would you make the tree both taller and wider? \_\_\_\_\_

\_\_\_\_\_