



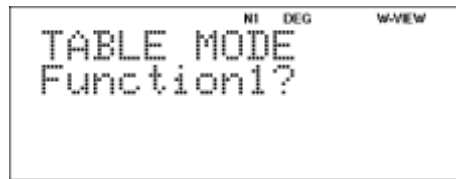
SHARP


Algebraic Expressions Investigation

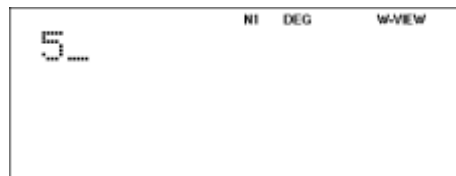
Grade 8 Maths

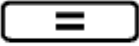


Let's explore algebraic expressions

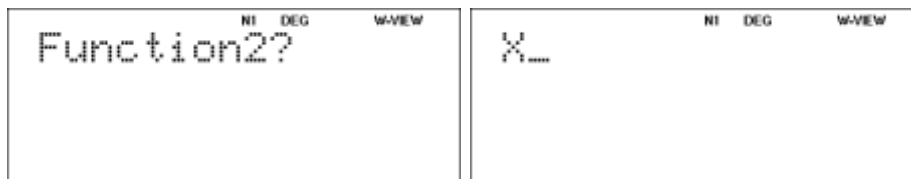
On your calculator go to table mode (on the Sharp EL-W535SA press  ).

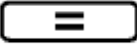


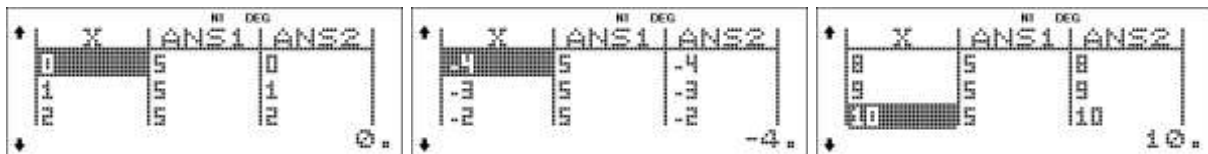
Now for function 1, we are just going to type in a number, let's say .



Press , and for function 2 we are going to write in an X, so press  .



Now press  three more times until you reach the table. Use your up and down arrow keys to scroll through the table.



1. Complete the table given below using the table on your calculator.

X	Ans 1	Ans 2
-15		
-5		
0		
1		
3		
20		
50		
x		

- What can we say happened in the first Ans column?
- Why did this happen?
- What is the special name that we give to numbers that don't change?
- What can we say happened in the second Ans column?
- Why did this happen?
- What is the special name that we give to letters that represent other values?

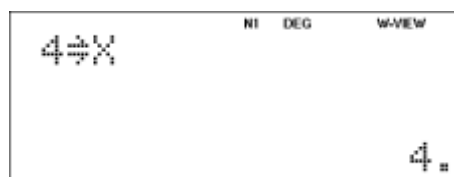
2. From the question above identify each of the following as a constant or a variable:

- | | | |
|--------|----------|---------|
| a) 5 | b) c | c) $2y$ |
| d) -10 | e) $10x$ | f) $7m$ |

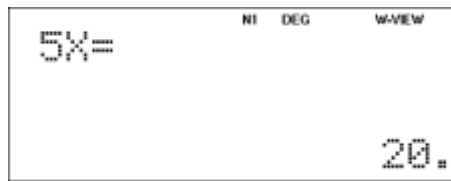
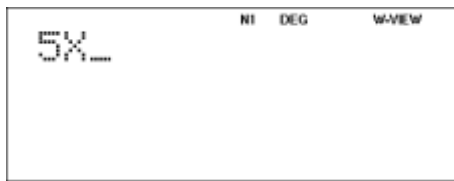
Let's explore like and unlike terms.

Go to the normal calculation mode of your calculator (press **HOME**)

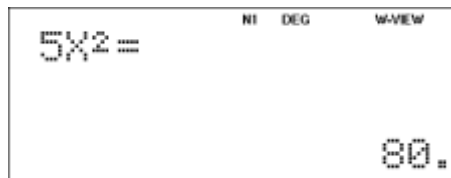
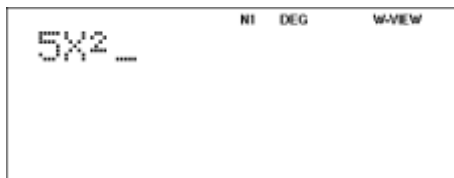
Now we are going to save a value into our X variable. So, press **4** **STO** **RCL** .



Now we are going to type in an expression. Press **5** **RCL** **RCL** and press **=**.



Now type in **5** **RCL** **RCL** **X²** and press **=**.



3. Based on the above, answer the following questions:

- a) What do you notice about the first sum ($5X$) and the second sum ($5X^2$)?
- b) Using the same technique, say whether the following are the same or different:
 - i) $4X$ and $4X^3$
 - ii) $-2X^2$ and $-2X^3$
 - iii) $6X$ and $6X$
 - iv) $7X$ and $7(X)$
- c) Store the value of 3 into Y (so press **3** **STO** **STO**). Now, say whether the following are the same or different:
 - i) $4XY$ and $4YX$
 - ii) $4X^2$ and $4Y^2$
 - iii) $5XY$ and $XY \times 5$
 - iv) $4X^2Y^2$ and $(2XY)^2$
- d) From your results in questions b) and c), answer the following questions:
 - i) Which examples gave the same results?
 - ii) Why do you think that they gave the same results?
 - iii) Which examples gave different results?
 - iv) Why do you think that the results were different?
 - v) Do you think the results would have changed if we had substituted different numbers or values into X and Y?
 - vi) From the above, how do we then define "like" terms?
 - vii) From the above, how do we define "unlike" terms?