



Declarations : Part Two - Automatic Declarations



You have already seen the use of expression names. You have probably named some expressions yourself. You are free to make up your own names, but LiveMath needs to keep track of what names are currently in use in your notebook.

LiveMath is constantly doing bookkeeping on objects either in use or available in the notebook. When creating a new name, LiveMath needs to know what name is being used and what type of object it is naming.

This is accomplished by Declarations.



The previous notebook explained how to manually create a new declaration in a notebook. In this notebook we will take a look at LiveMath's automatic declaration system.




If you do not declare a new variable and instead just use it, LiveMath will announce that it is unaware of the name you are using and automatically create a declaration for it.


LiveMath will notify you by displaying a dialog box



Select the type of object you want the name attached to and click OK. LiveMath will insert a new declaration statement at the top of your notebook.

If your notebook has a collapsed group of icons as the first structure in your notebook (like this notebook) then the declaration will be inserted inside this group. So, you will not immediately see it. Open the collapsed group to see the new declaration.

-  LiveMath waits until it thinks you are done with your definition before asking you about it. Usually LiveMath waits until you begin a new activity in the notebook before recognizing that you are done with the definition. Then it asks you about declaring the variable or function.

You can ask LiveMath to scan the notebook for undeclared names by clicking on the Clarify button  in the palette.



Now It's Your Turn... Follow the directions below to get hands on experience.



1.

Currently there is no variable called house in this notebook. Create a new statement icon and type in the definition

$$\text{house} = 3x + 1$$

After you type 1 your cursor will still be sitting to the right of the 1. At that point LiveMath will not know you are done with the definition. Click on the Clarify button in the palette to get the declaration dialog box.



2.

Create a new statement icon and type in the definition

$$\text{car} = 3x - 3$$

Create a new statement icon and type in the definition

$$\text{chair} = 5x + 2$$

LiveMath probably has not asked you about defining these variables because you are still defining things. Create a new statement icon and type in

$$\text{car} + \text{chair}$$

highlight both of the equations for car and chair and drag them onto the addition expression to substitute.

LiveMath will immediately ask you about declaring car and chair, insert declaration statements at the top of the notebook, make these definitions the active definitions (dots in the icons), and finally perform the substitution.



3.

Open up the collapsed icon at the top of this notebook. See what the declaration statements look like for house, car, and chair.



4.

Manually create a new declaration icon below this statement. Declare a variable called **train**.

Create a statement and define **train = 3**.

Create another statement and enter the expression **train + 10**.

Highlight **train + 10** and calculate it.



You should get a result of 13. Also LiveMath will make the statement **train - 3** the active definition (dot in its icon).

Delete the **train** declaration. The active dot will disappear and the result icon which was a triangle is now a square.

This is one clue that LiveMath has somehow forgotten about a declaration or lost one that previously existed.