

**Case Theories**

We have previously seen that a name can have only one active definition in a notebook. However, it is not uncommon to have the same name used in different situations inside a piece of work. If you find that you require the same name to be used in a single notebook, you can create an isolated mini-workplace inside the notebook called a Case Theory.

Inside a case theory you can reuse names and not affect their use outside the case theory.




Here **a** is given the value 3 and then this assignment is used to calculate an expression which uses **a**.

$a = 3$

$a^2 + 1$

$a^2 + 1 = 10$ Calculate



To create a case theory click the case theory button  in the palette. If you have not highlighted anything then the new case theory will probably appear at the bottom of the notebook.

Otherwise, you can highlight an object by clicking on its icon and then click the case theory button. A new case theory will appear around this object.



Here is a comment. It begins as a comment in the notebook just like every comment you have seen so far. Click on its icon and then the case theory button.

And this case theory appears around it. Everything inside here lives in its own environment....more or less.



Let's define another **a** in here and make it active.

$a = 8$



There are now two active definitions for **a** in this notebook. The one inside this case theory can only be seen by things in this case theory.

$a^2 + 1$

$a^2 + 1 = 65$ Calculate



There are now two calculations involving **a** in this notebook each using a different definition of **a**.



Another a.

$a = 1$

$a^2 + 1$

$a^2 + 1 = 10$ Calculate



$(-1)^2 + 1$ is not 10. What happened?

What happened is that **a** is not -1 here. The assignment of **a** inside this case theory is not active. Take a look outside this case theory. There is a definition of **a** somewhere. Find it.

Compare it with the calculation in this case theory.



Inside vs. Outside: A case theory inherits definitions from outside the case theory, but also allows you to overwrite them inside the case theory without affecting definitions outside the case theory.

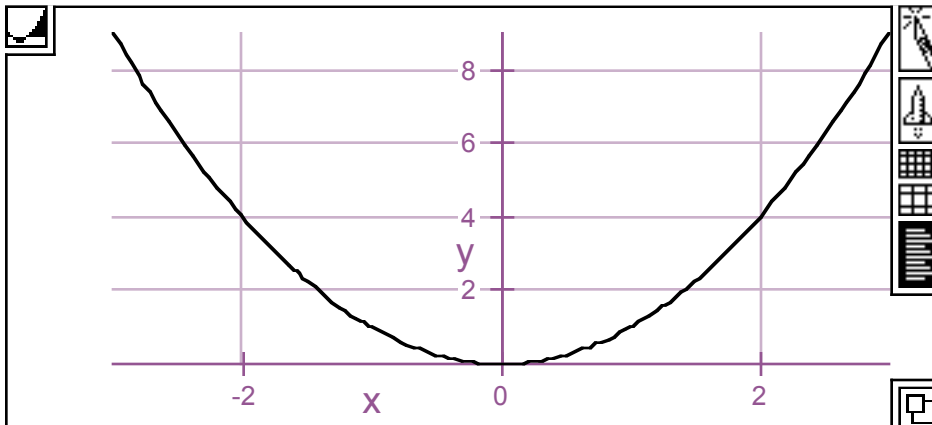
You overwrite by making definitions active in the case theory.



Graphic Objects

We have spent considerable time on Graphs. Take another look:

$y = x^2$



3 ... 3 = left...right

Stretch to Fit ▼

0 ... 9 = bottom...top

cropping

Moderately ▼

Graph Building Blocks

Curve at (x, y) where $x =$ left ... right with a

normal ▼

line, colored Black ▼.



Inside the options box you can define variables. By default there are several already defined like "left". These variables are only seen inside the graphic object. However, variables defined outside the object, like y, can still be seen.

The Graphic Object is a case theory. It is a Graph Theory.



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



1.

Make a definition of $b = 4$.

Evaluate the expression $b^2 + 2b - 3$.



2.

Create a case theory.

Inside evaluate the expressions $b^2 + 2b - 3$.



3.

Create a case theory.

Inside make a definition of $b = 5$.

make this definition active

evaluate the expressions $b^2 + 2b - 3$.