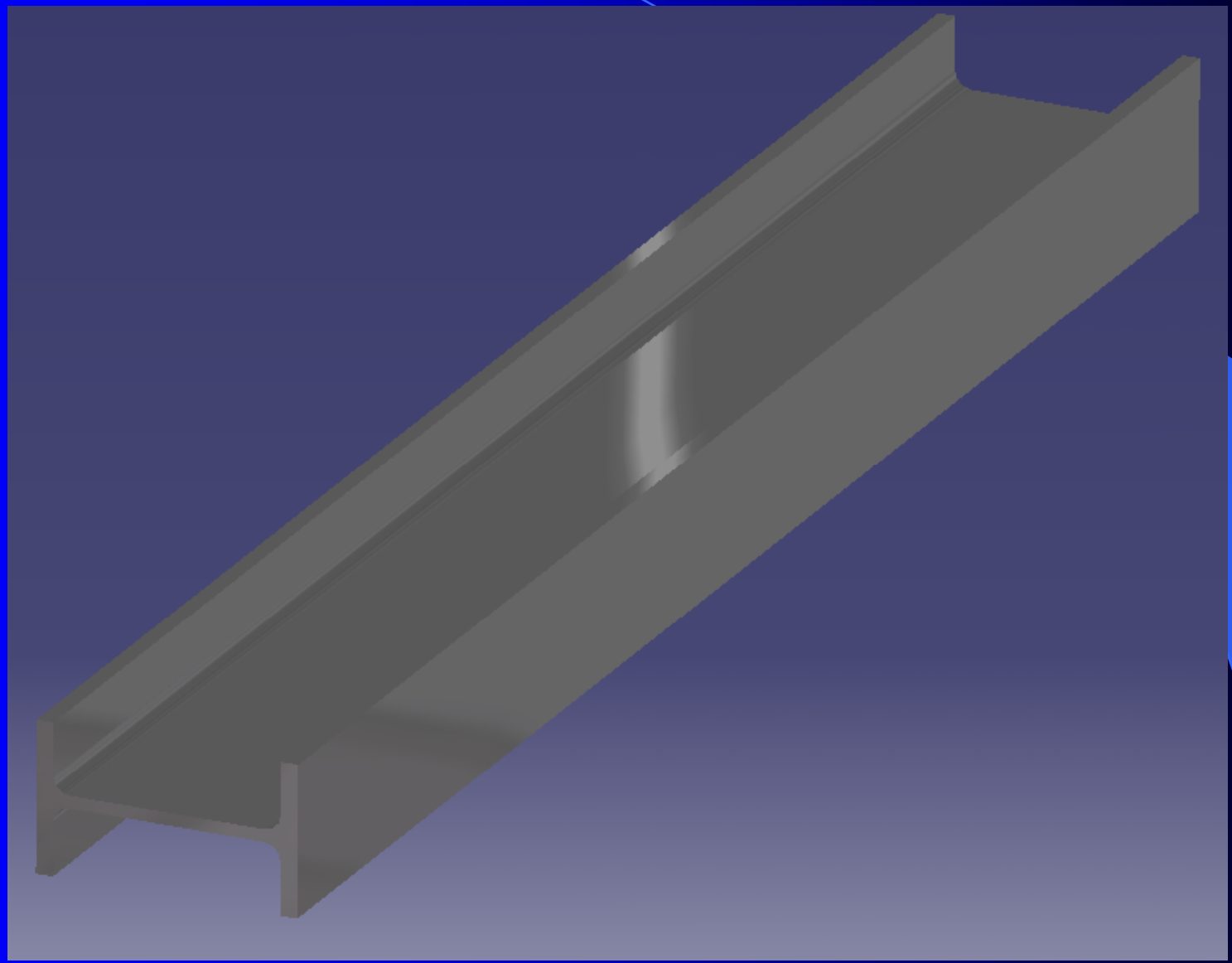
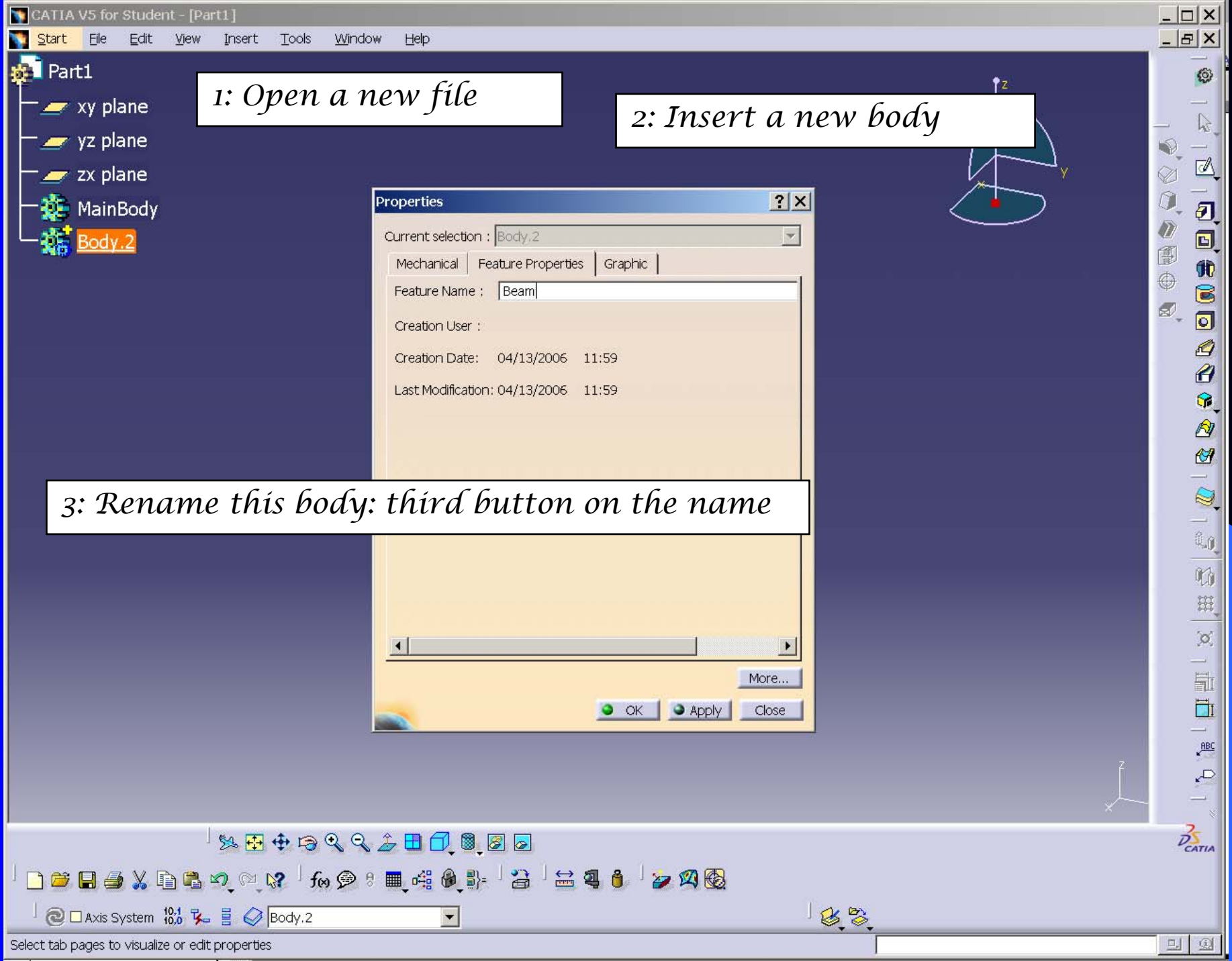
# CATIA - PARAMETRIC




CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
MainBody
Body.2
1: Open a new file
2: Insert a new body
Properties
Current selection :
Body.2
Mechanical
Feature Properties
Graphic
Feature Name :
Beam
Creation User :
Creation Date: 04/13/2006 11:59
Last Modification: 04/13/2006 11:59
3: Rename this body: third button on the name
More...
OK
Apply
Close
Axis System
Body.2
Select tab pages to visualize or edit properties

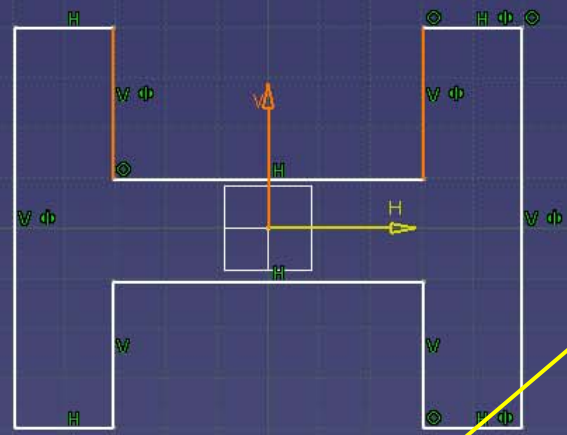
CATIA V5 for Student - [Part1]

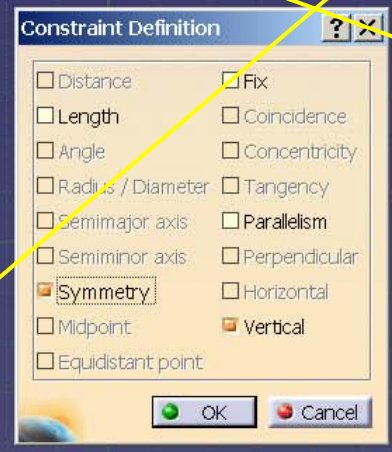
Start File Edit View Insert Tools Window Help

# Draw the profile of the beam

Part1
- xy plane
- yz plane
- zx plane
- MainBody
- Beam
  - Sketch.1
    - AbsoluteAxis
    - Geometry
    - Constraints

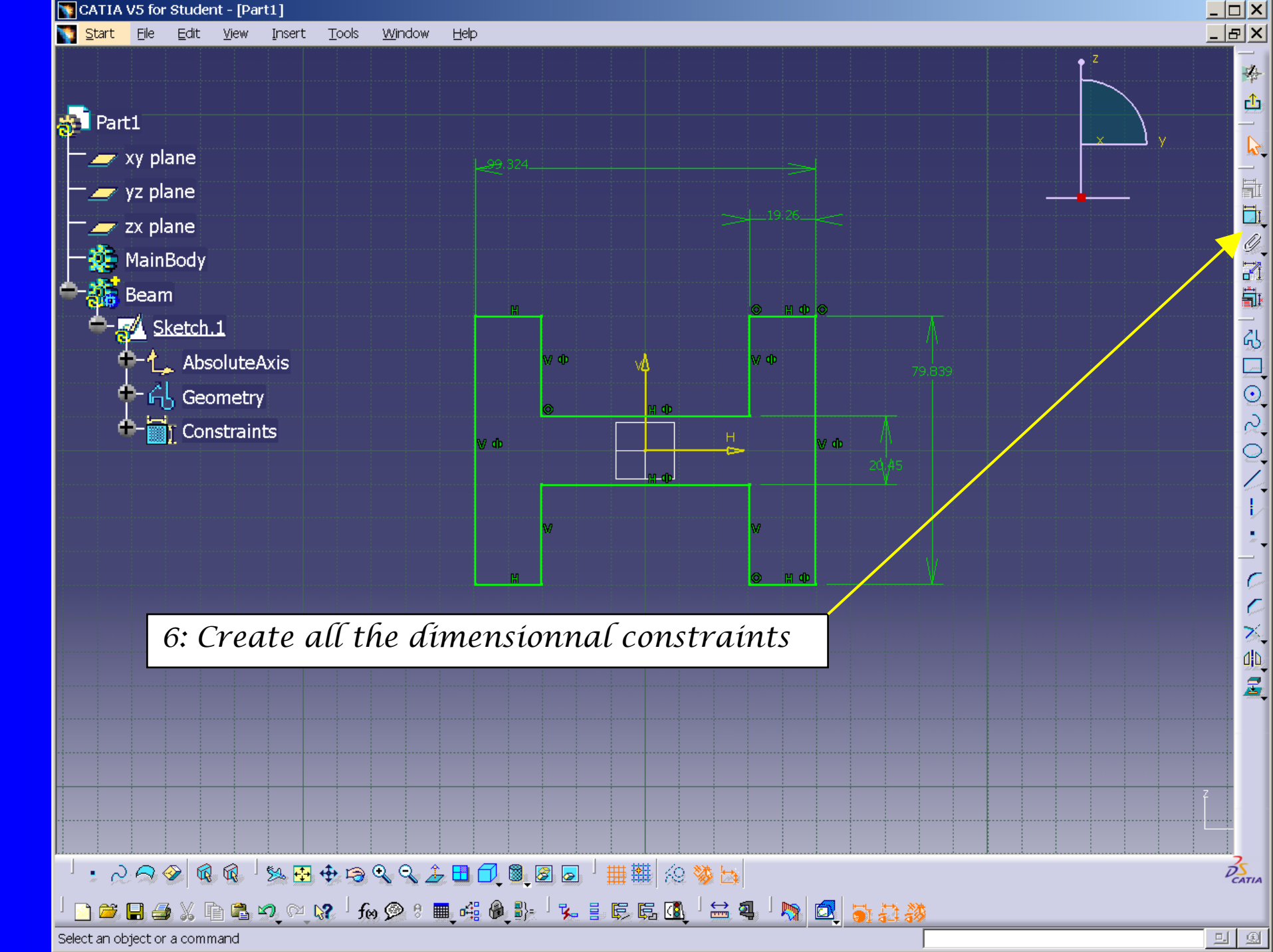
*4: Sketch a new profil in the plan yz*

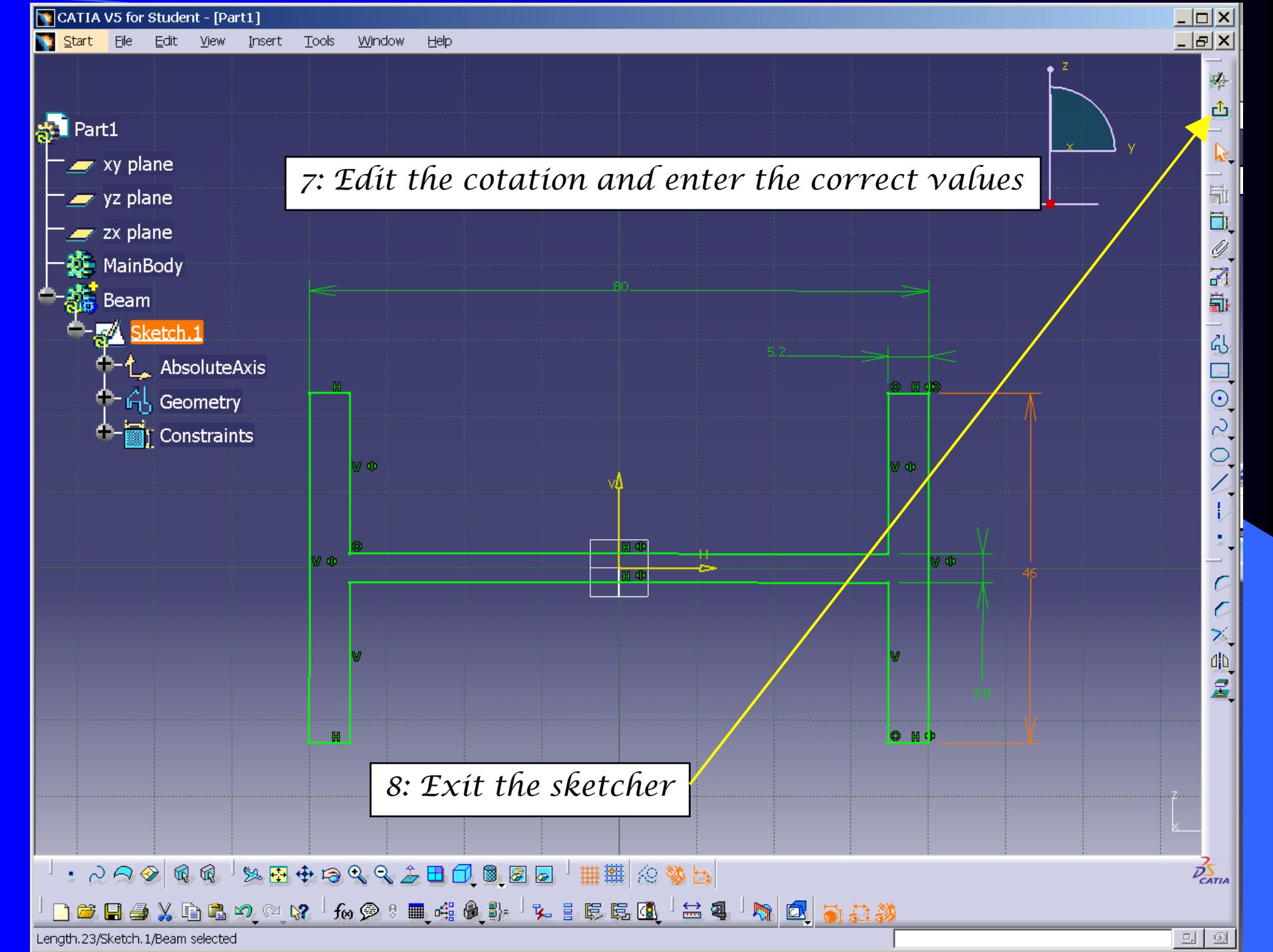


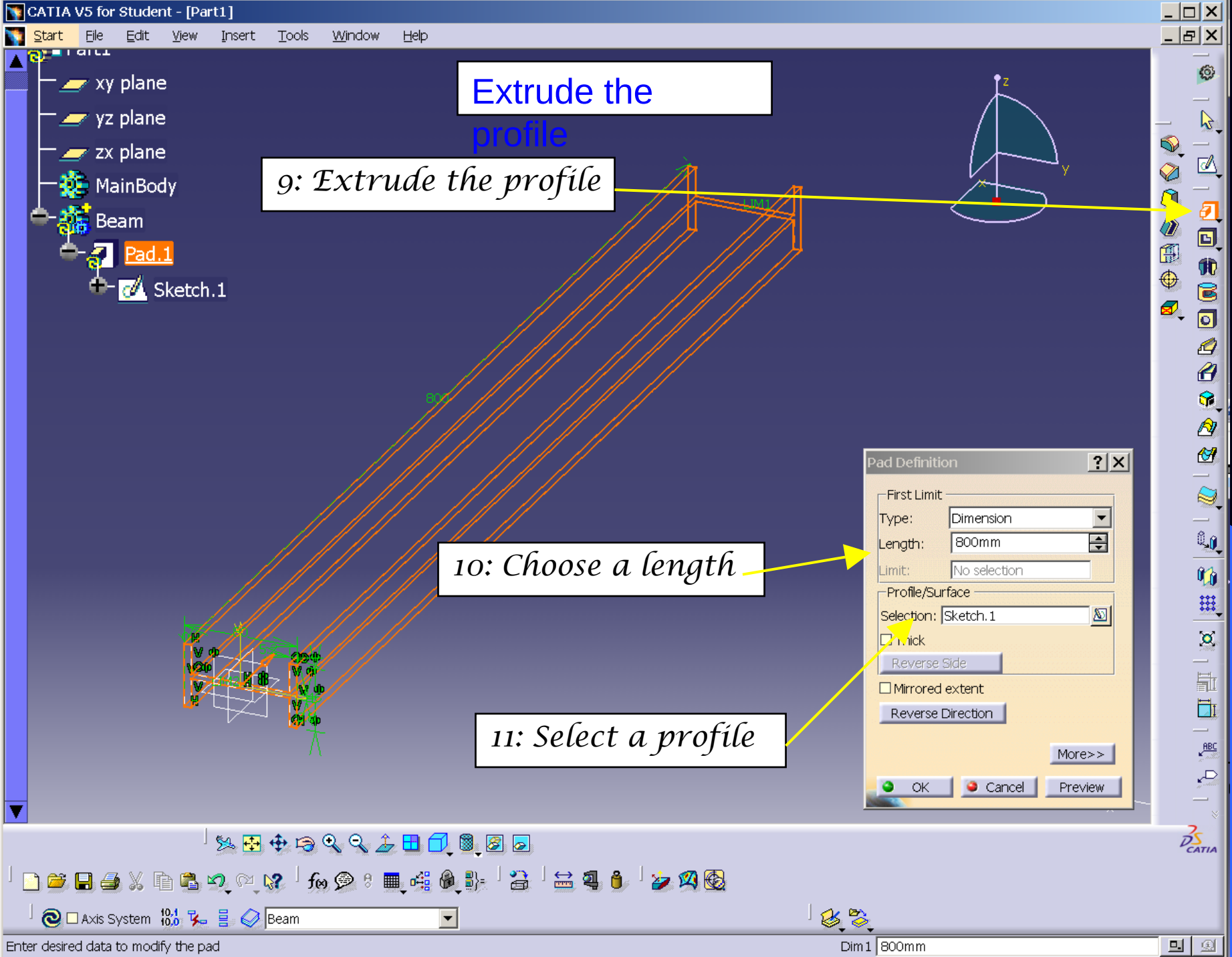


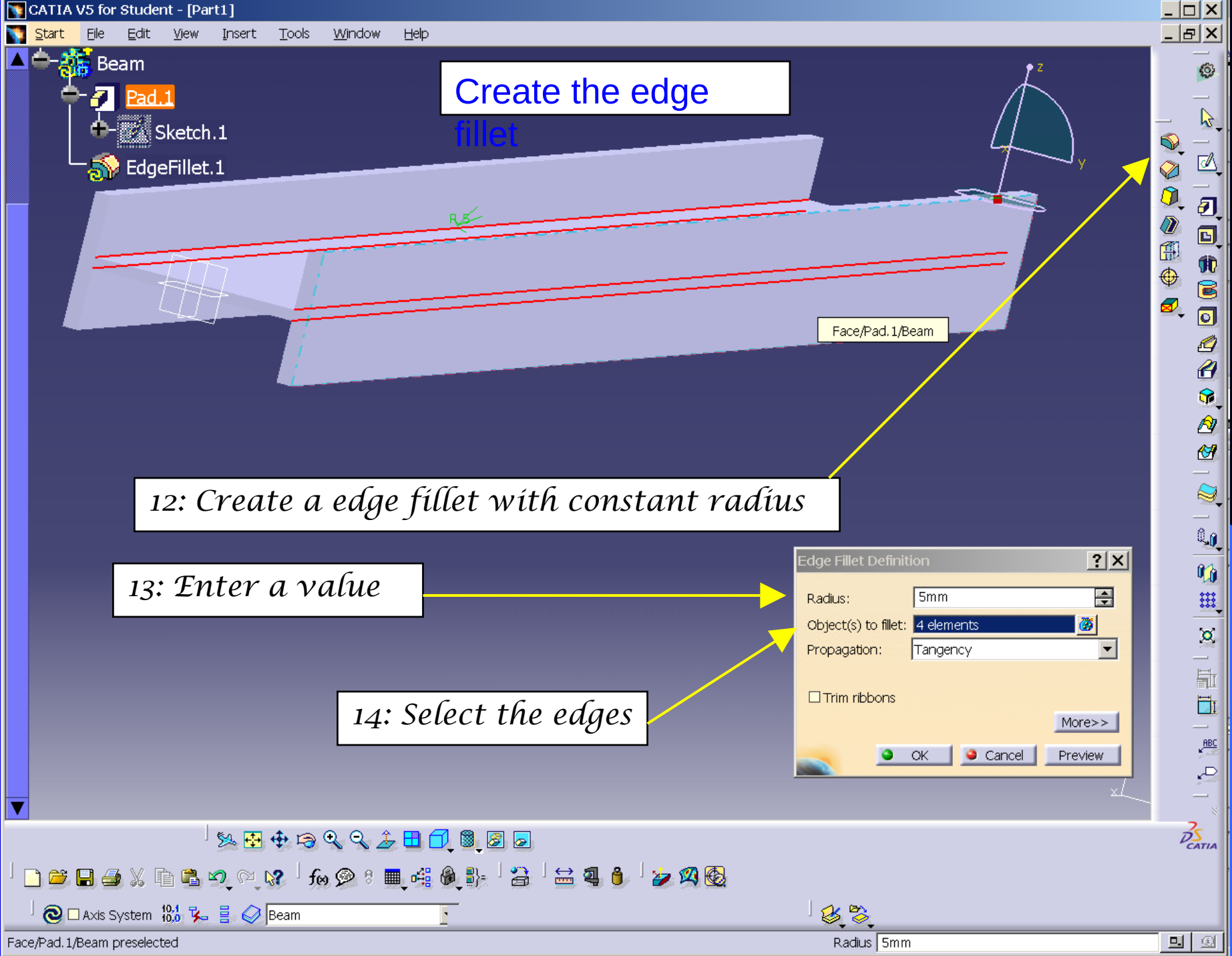

*5: Add some Symmetry constraints*
*Select the two lines first then the symmetry axis*

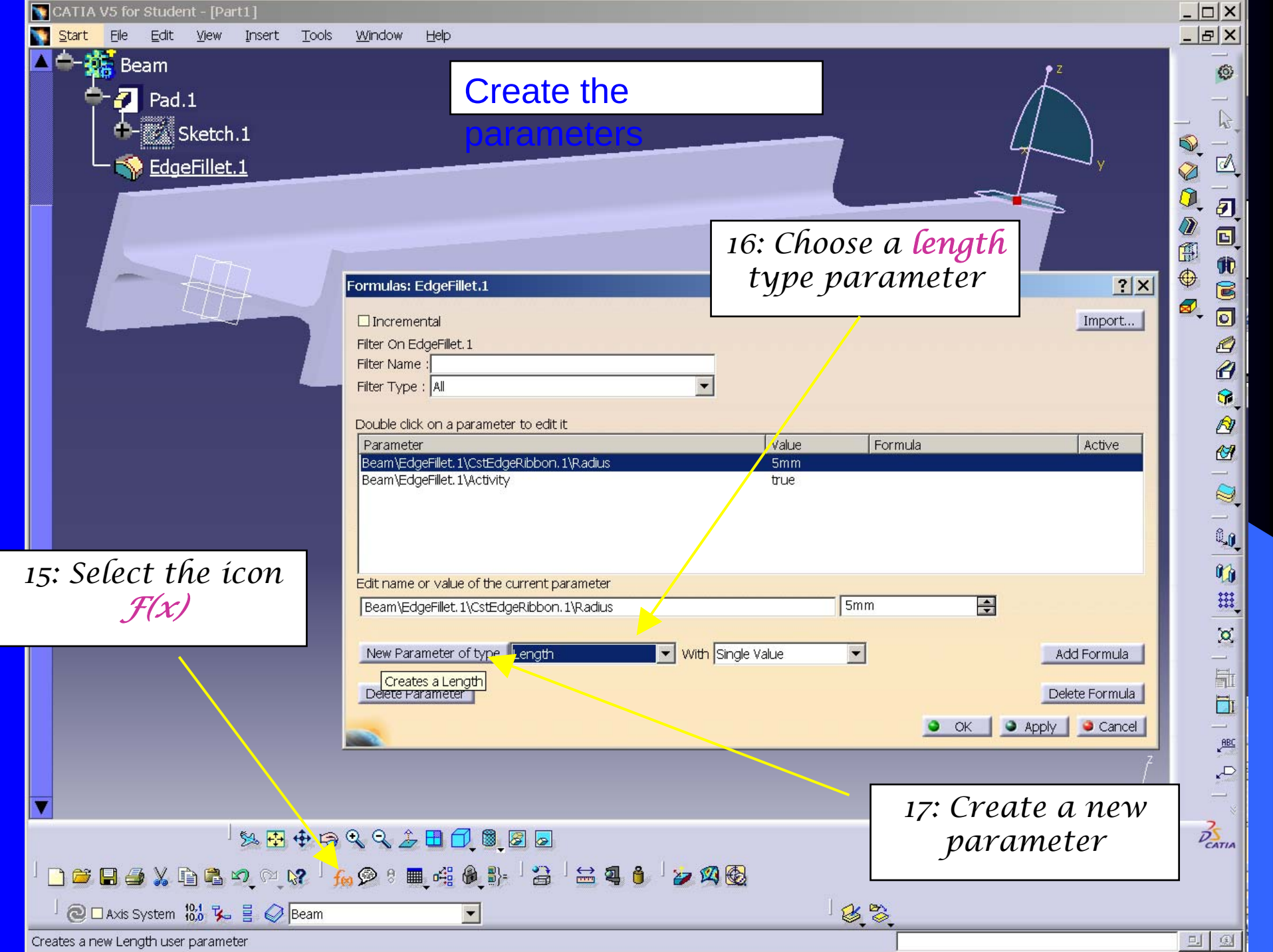
Creates a symmetry constraint

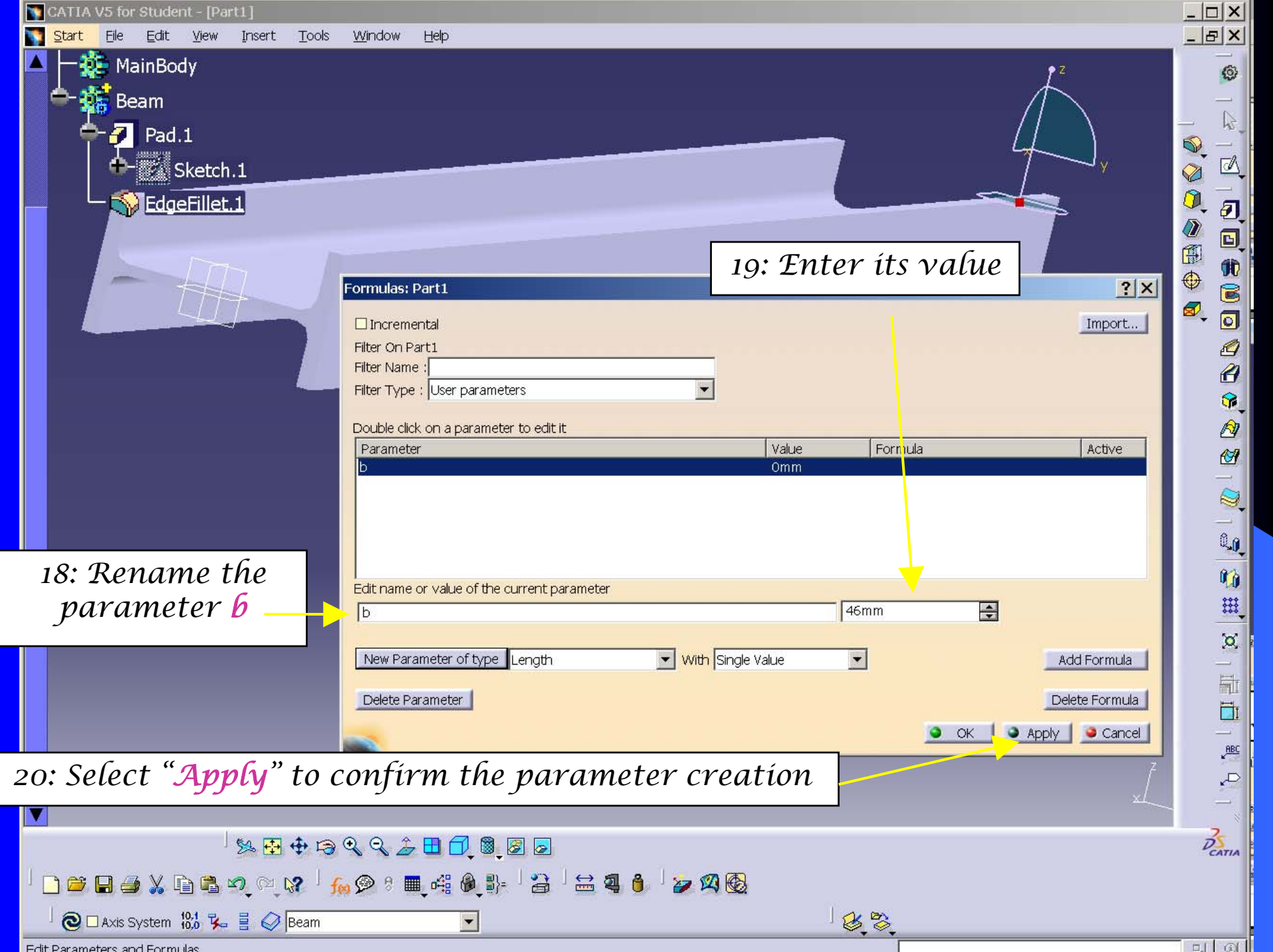

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
MainBody
Beam
Sketch.1
AbsoluteAxis
Geometry
Constraints
39.324
19.26
79.839
20.45
6: Create all the dimensionnal constraints
Select an object or a command

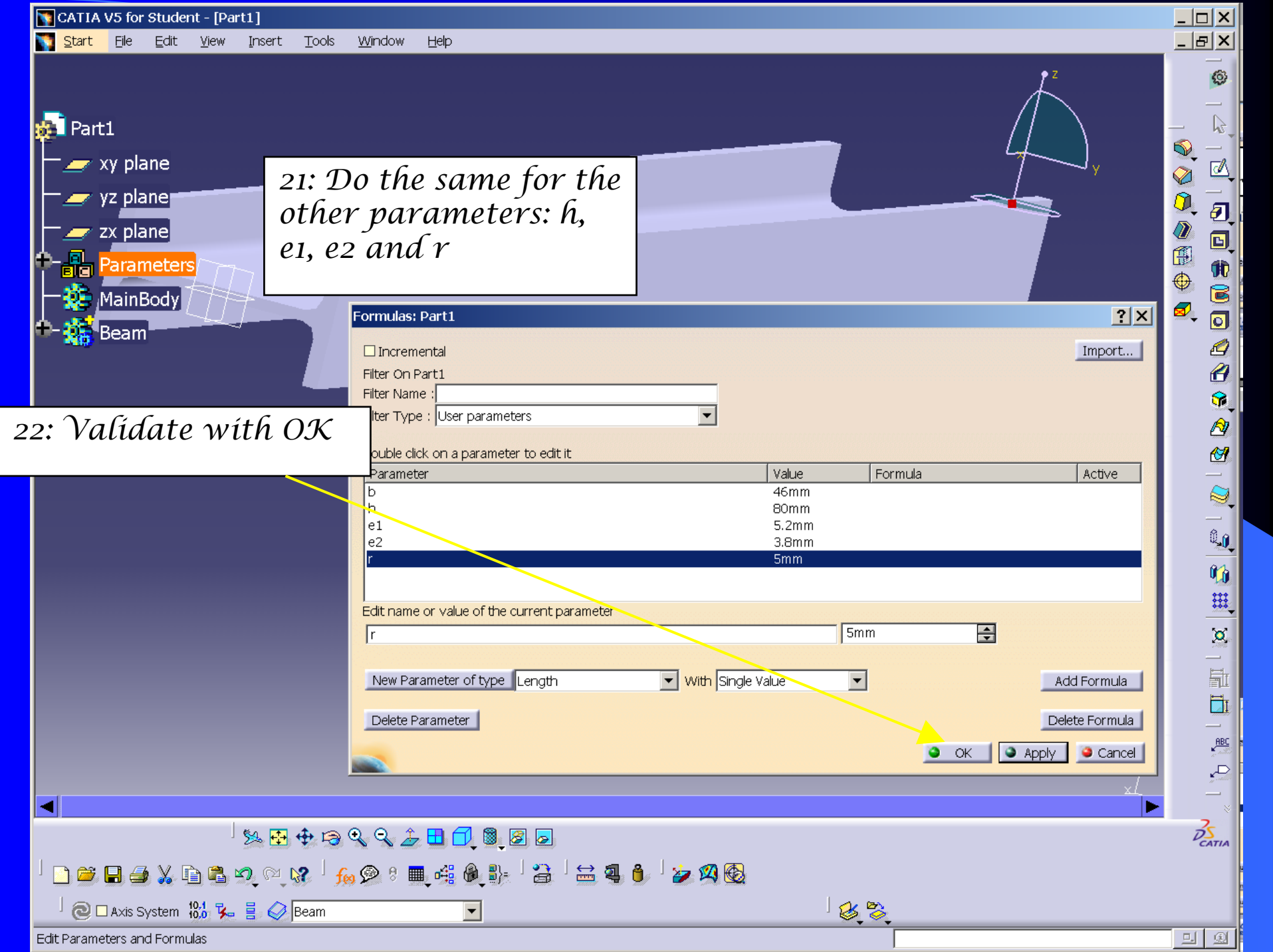

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
MainBody
Beam
Sketch.1
AbsoluteAxis
Geometry
Constraints
7: Edit the cotation and enter the correct values
80
5.2
46
8: Exit the sketcher
Length.23/Sketch.1/Beam selected

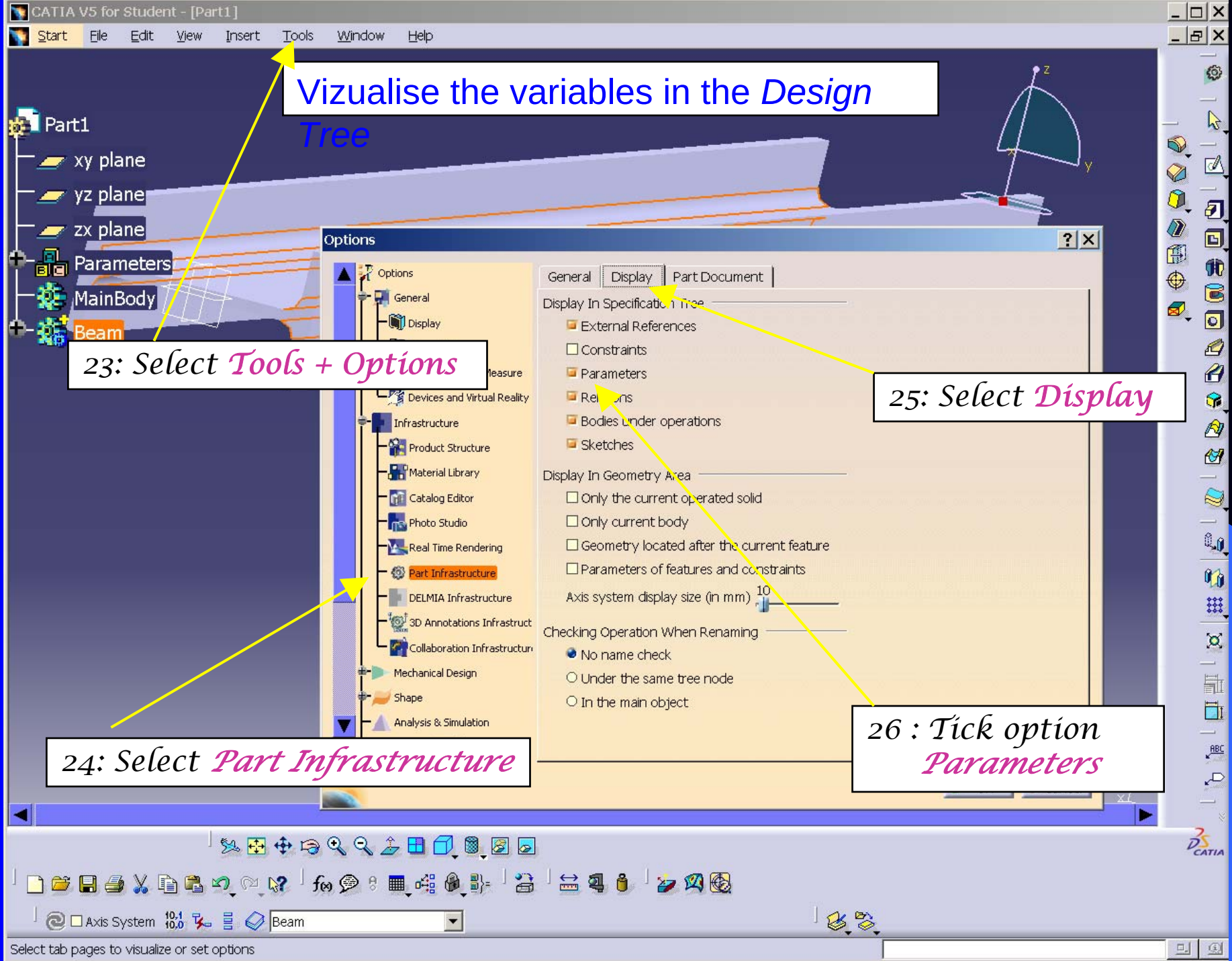

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
xy plane
yz plane
zx plane
MainBody
Beam
Pad.1
Sketch.1
Extrude the profile
9: Extrude the profile
10: Choose a length
11: Select a profile
Pad Definition
First Limit
Type:
Dimension
Length:
800mm
Limit:
No selection
Profile/Surface
Selection:
Sketch.1
Reverse Side
Mirrored extent
Reverse Direction
More>>
OK
Cancel
Preview
Axis System
Beam
Enter desired data to modify the pad
Dim1
800mm

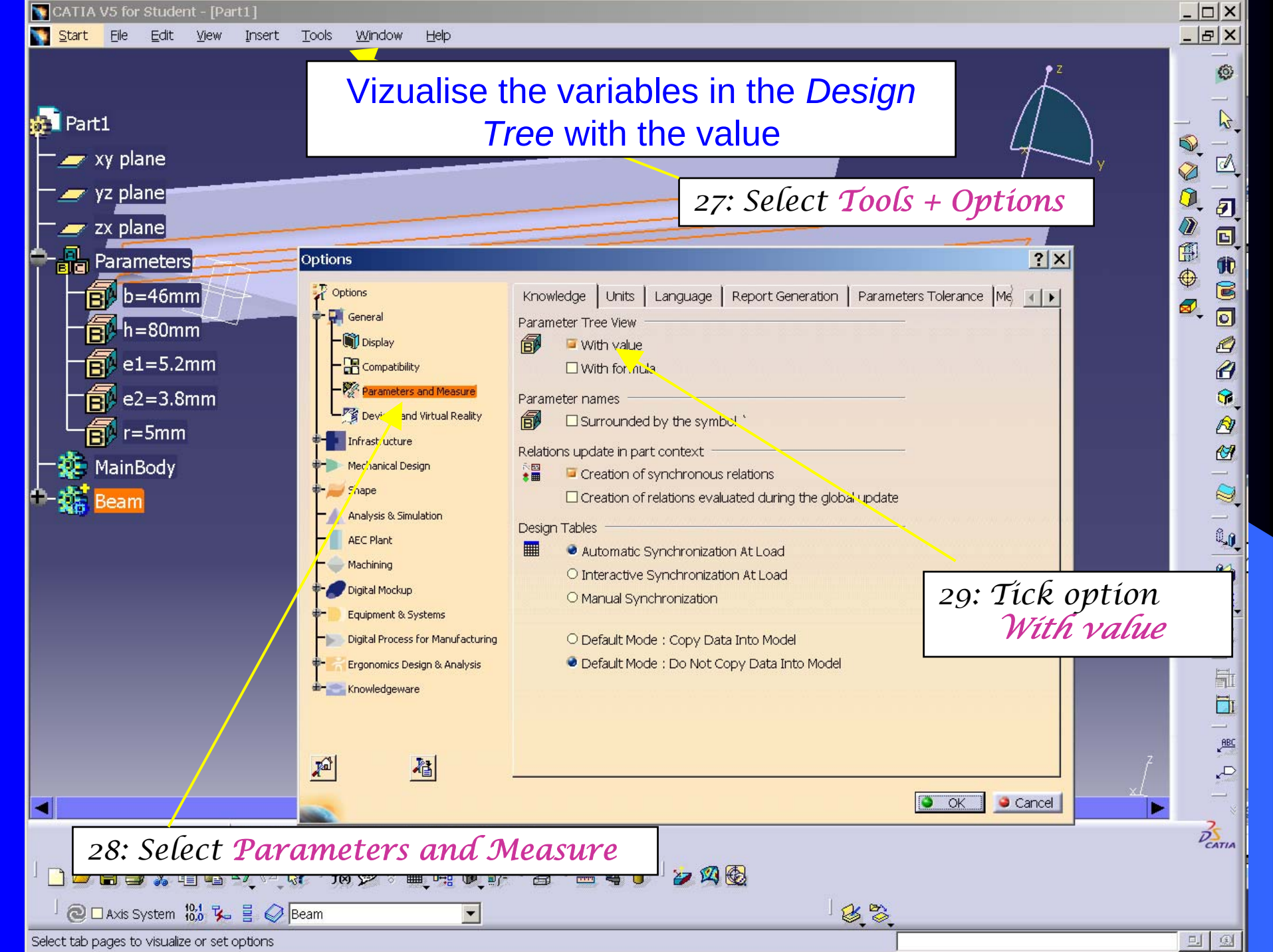

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Beam
Pad.1
Sketch.1
EdgeFillet.1
Create the edge fillet
Face/Pad.1/Beam
12: Create a edge fillet with constant radius
13: Enter a value
14: Select the edges
Edge Fillet Definition
Radius:
5mm
Object(s) to fillet:
4 elements
Propagation:
Tangency
Trim ribbons
More>>
OK
Cancel
Preview
Axis System
Beam
Face/Pad.1/Beam preselected
Radius
5mm

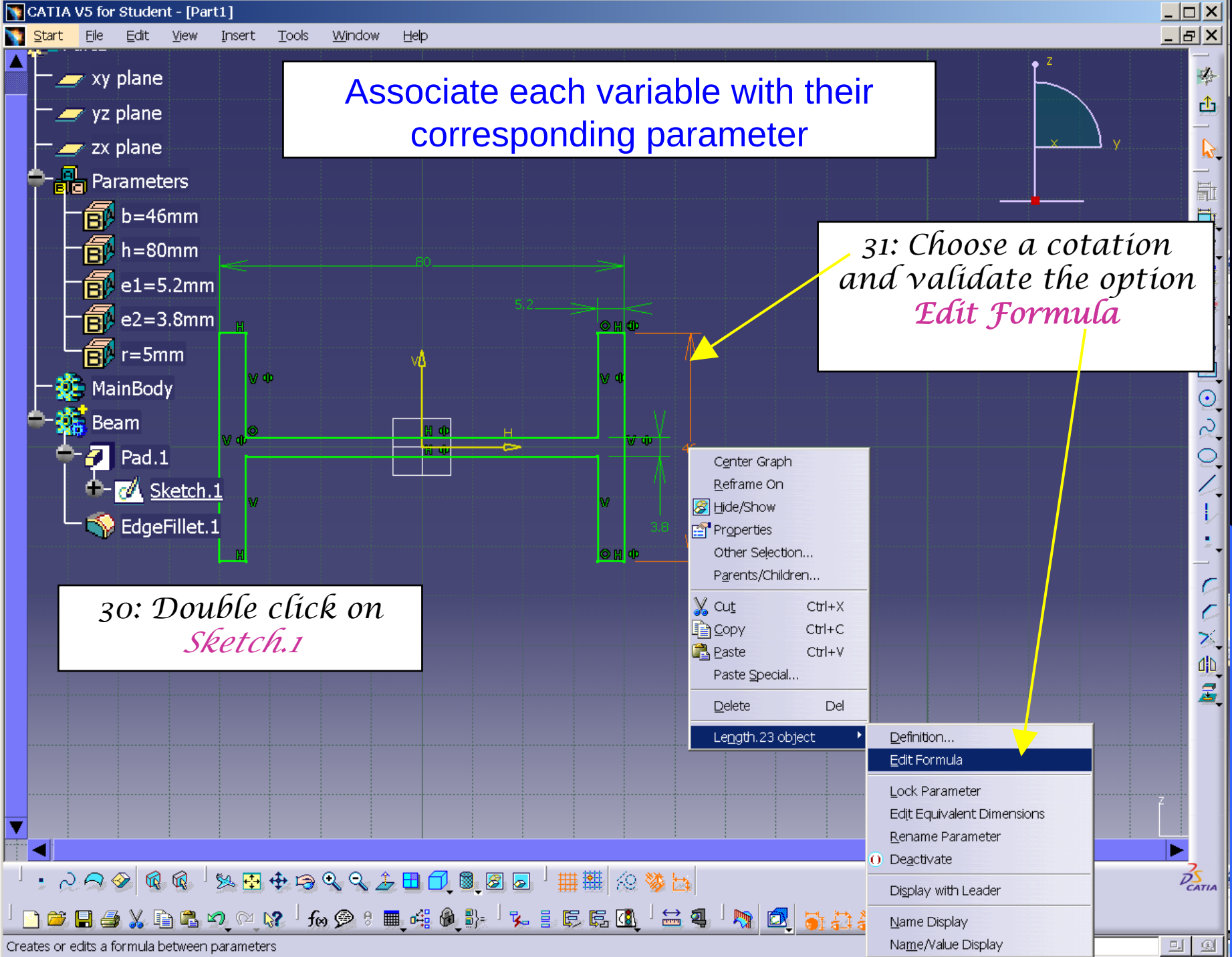

CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Beam
Pad.1
Sketch.1
EdgeFillet.1
Create the parameters
16: Choose a length type parameter
Formulas: EdgeFillet.1
Incremental
Import...
Filter On EdgeFillet.1
Filter Name :
Filter Type : All
Double click on a parameter to edit it
Parameter
Value
Formula
Active
Beam\EdgeFillet.1\CstEdgeRibbon.1\Radius
5mm
Beam\EdgeFillet.1\Activity
true
Edit name or value of the current parameter
Beam\EdgeFillet.1\CstEdgeRibbon.1\Radius
5mm
New Parameter of type
Length
With
Single Value
Add Formula
Creates a Length
Delete Parameter
Delete Formula
OK
Apply
Cancel
15: Select the icon F(x)
17: Create a new parameter
Axis System
Beam
Creates a new Length user parameter

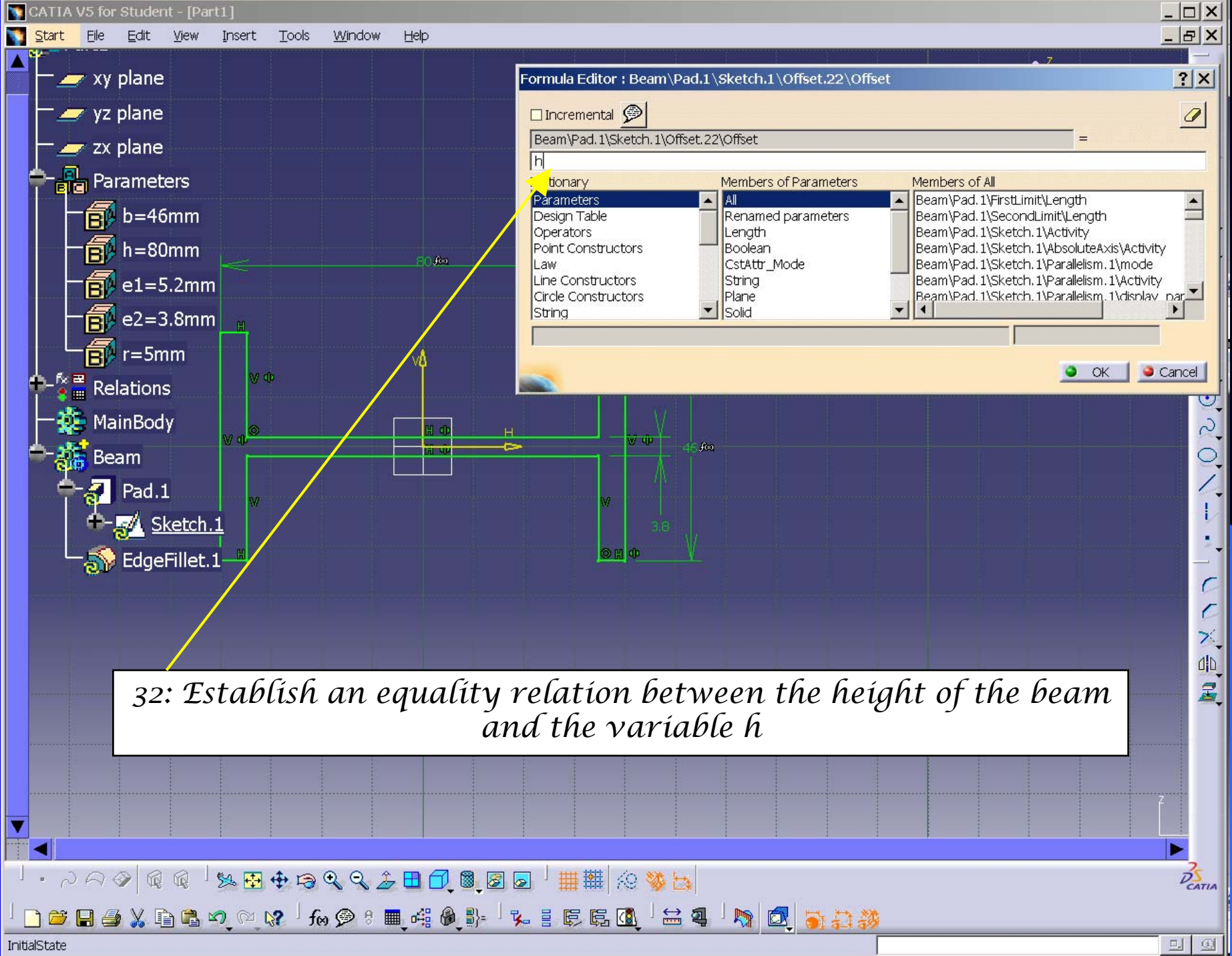

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
MainBody
Beam
Pad.1
Sketch.1
EdgeFillet.1
19: Enter its value
Formulas: Part1
Incremental
Import...
Filter On Part1
Filter Name :
Filter Type : User parameters
Double click on a parameter to edit it
Parameter
Value
Formula
Active
b
0mm
18: Rename the parameter b
Edit name or value of the current parameter
b
46mm
New Parameter of type
Length
With
Single Value
Add Formula
Delete Parameter
Delete Formula
OK
Apply
Cancel
20: Select "Apply" to confirm the parameter creation
Axis System
Beam
Edit Parameters and Formulas


CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Part1
xy plane
yz plane
zx plane
Parameters
MainBody
Beam
21: Do the same for the other parameters: h, e1, e2 and r
22: Validate with OK
Formulas: Part1
Incremental
Import...
Filter On Part1
Filter Name :
Filter Type : User parameters
ouble click on a parameter to edit it
Parameter Value Formula Active
b 46mm
h 80mm
e1 5.2mm
e2 3.8mm
r 5mm
Edit name or value of the current parameter
r 5mm
New Parameter of type Length With Single Value
Add Formula
Delete Parameter
Delete Formula
OK Apply Cancel
Axis System
Beam
Edit Parameters and Formulas

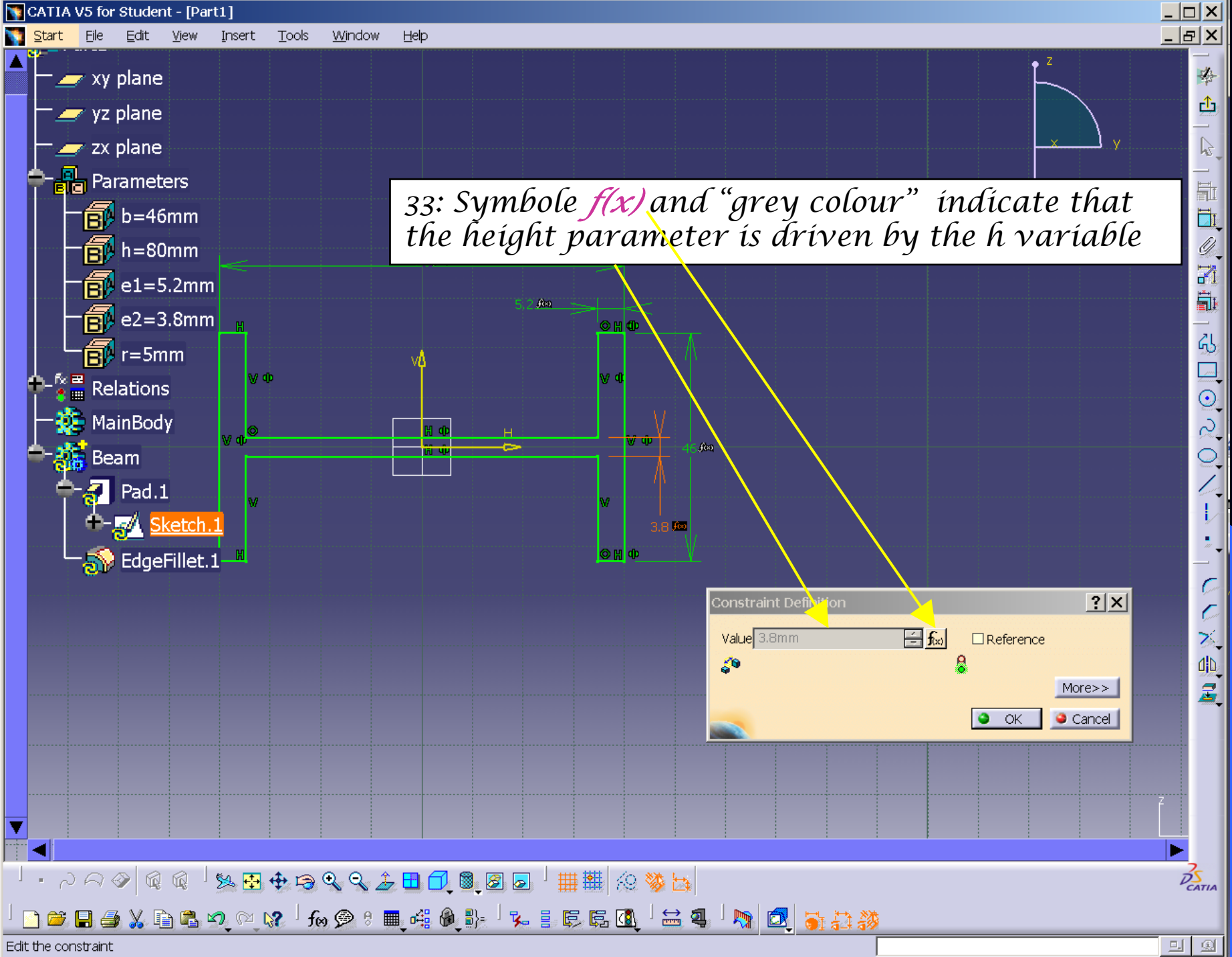

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Vizualise the variables in the Design Tree
Part1
xy plane
yz plane
zx plane
Parameters
MainBody
Beam
23: Select Tools + Options
Options
General
Display
Part Document
Display In Specification Tree
External References
Constraints
Parameters
Bodies under operations
Sketches
Display In Geometry Area
Only the current operated solid
Only current body
Geometry located after the current feature
Parameters of features and constraints
Axis system display size (in mm)
Checking Operation When Renaming
No name check
Under the same tree node
In the main object
Infrastructure
Product Structure
Material Library
Catalog Editor
Photo Studio
Real Time Rendering
Part Infrastructure
DELMIA Infrastructure
Mechanical Design
Shape
Analysis & Simulation
25: Select Display
24: Select Part Infrastructure
26 : Tick option Parameters
Axis System
Beam
Select tab pages to visualize or set options

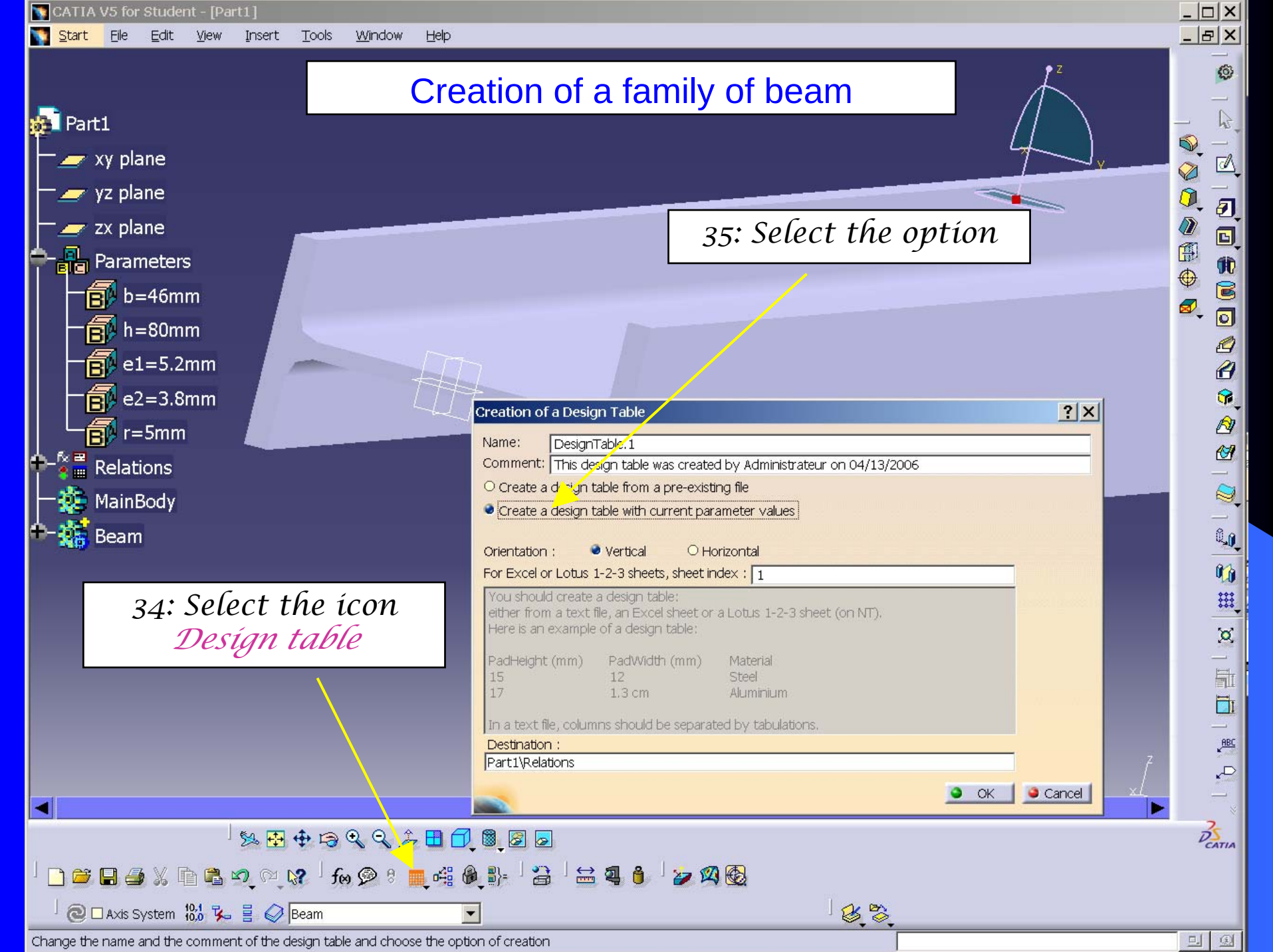

CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Vizualise the variables in the *Design Tree* with the value
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
MainBody
Beam
27: Select *Tools + Options*
Options
Options
General
Display
Compatibility
Parameters and Measure
Infrastructure
Mechanical Design
Shape
Analysis & Simulation
AEC Plant
Machining
Digital Mockup
Equipment & Systems
Digital Process for Manufacturing
Ergonomics Design & Analysis
Knowledgeware
Knowledge
Units
Language
Report Generation
Parameters Tolerance
Parameter Tree View
With value
Parameter names
Surrounded by the symbol
Relations update in part context
Creation of synchronous relations
Creation of relations evaluated during the global update
Design Tables
Automatic Synchronization At Load
Interactive Synchronization At Load
Manual Synchronization
Default Mode : Copy Data Into Model
Default Mode : Do Not Copy Data Into Model
OK
Cancel
29: Tick option *With value*
28: Select *Parameters and Measure*
Axis System
Beam
Select tab pages to visualize or set options

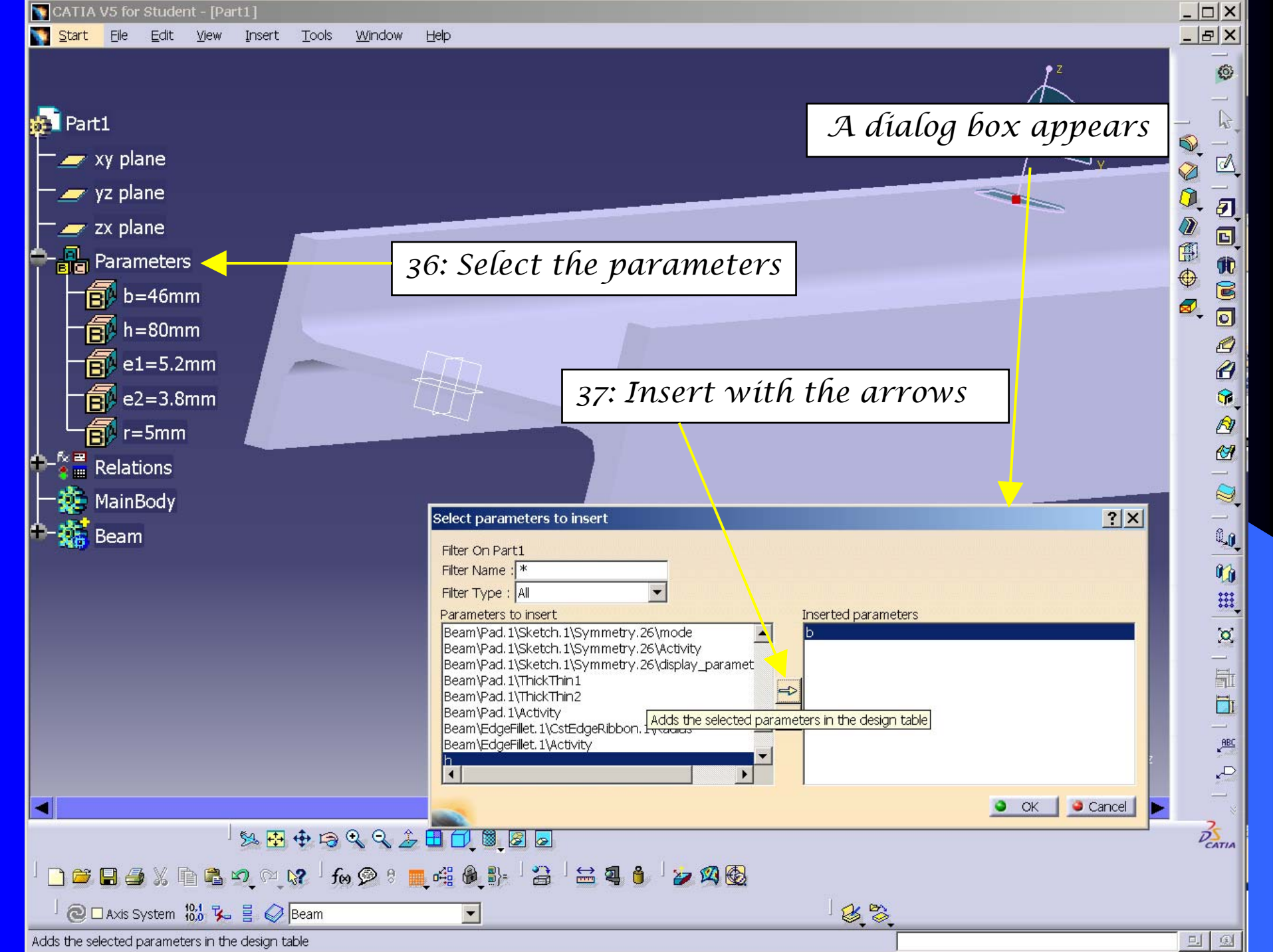

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
MainBody
Beam
Pad.1
Sketch.1
EdgeFillet.1
Associate each variable with their corresponding parameter
30: Double click on Sketch.1
31: Choose a cotation and validate the option Edit Formula
Center Graph
Reframe On
Hide/Show
Properties
Other Selection...
Parents/Children...
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Paste Special...
Delete Del
Length.23 object
Definition...
Edit Formula
Lock Parameter
Edit Equivalent Dimensions
Rename Parameter
Deactivate
Display with Leader
Name Display
Name/Value Display
Creates or edits a formula between parameters

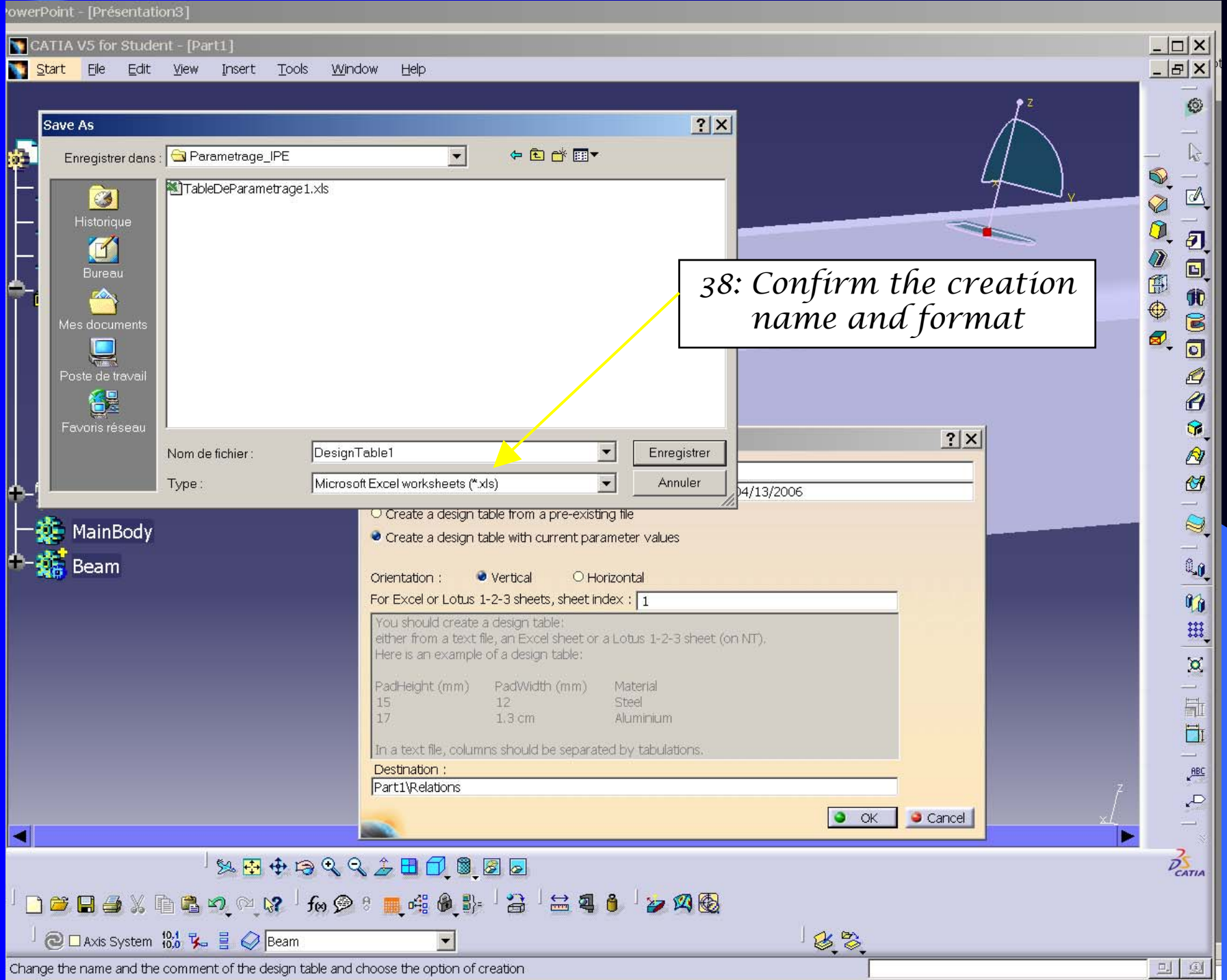


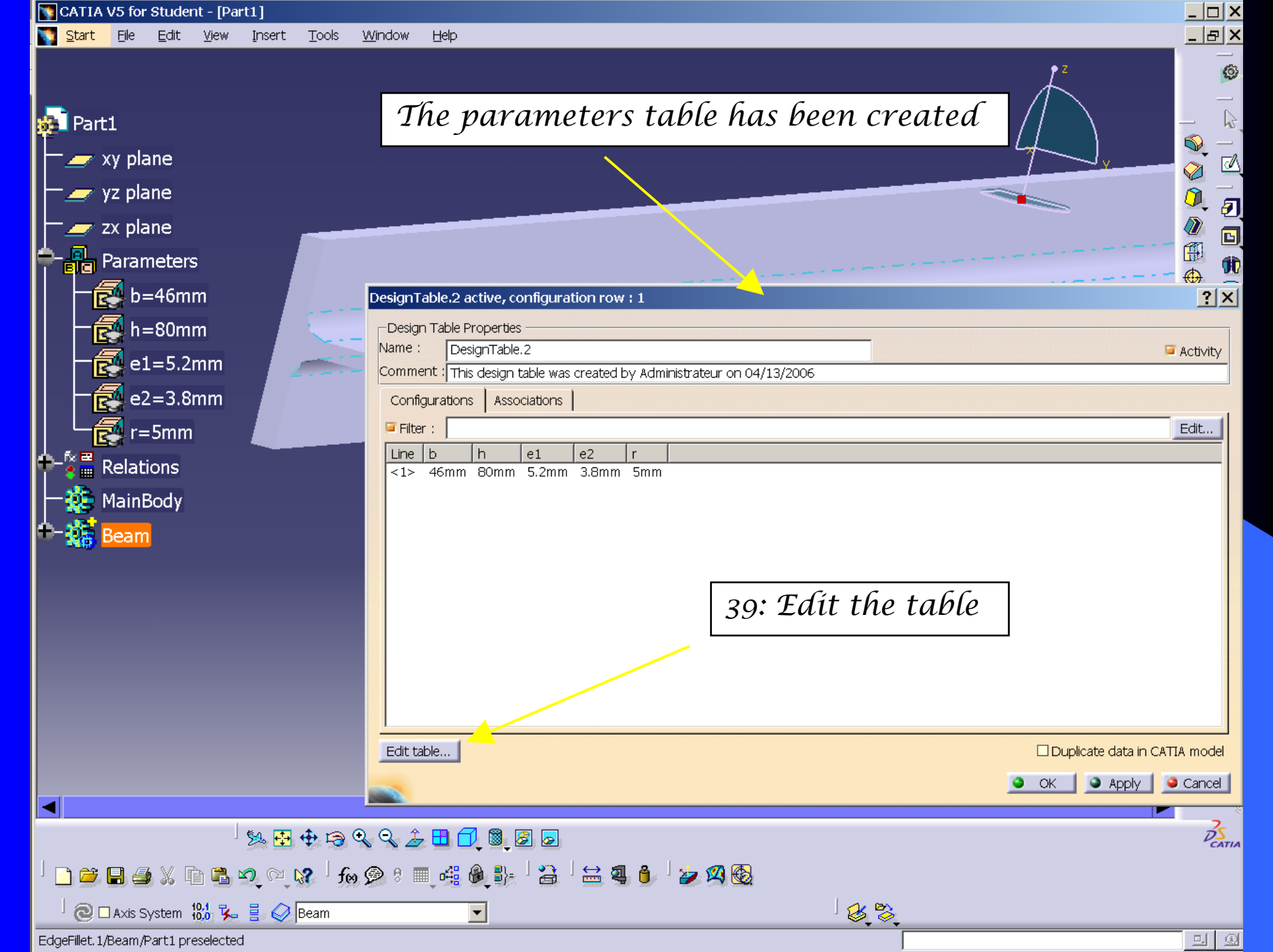

*32: Establish an equality relation between the height of the beam and the variable h*

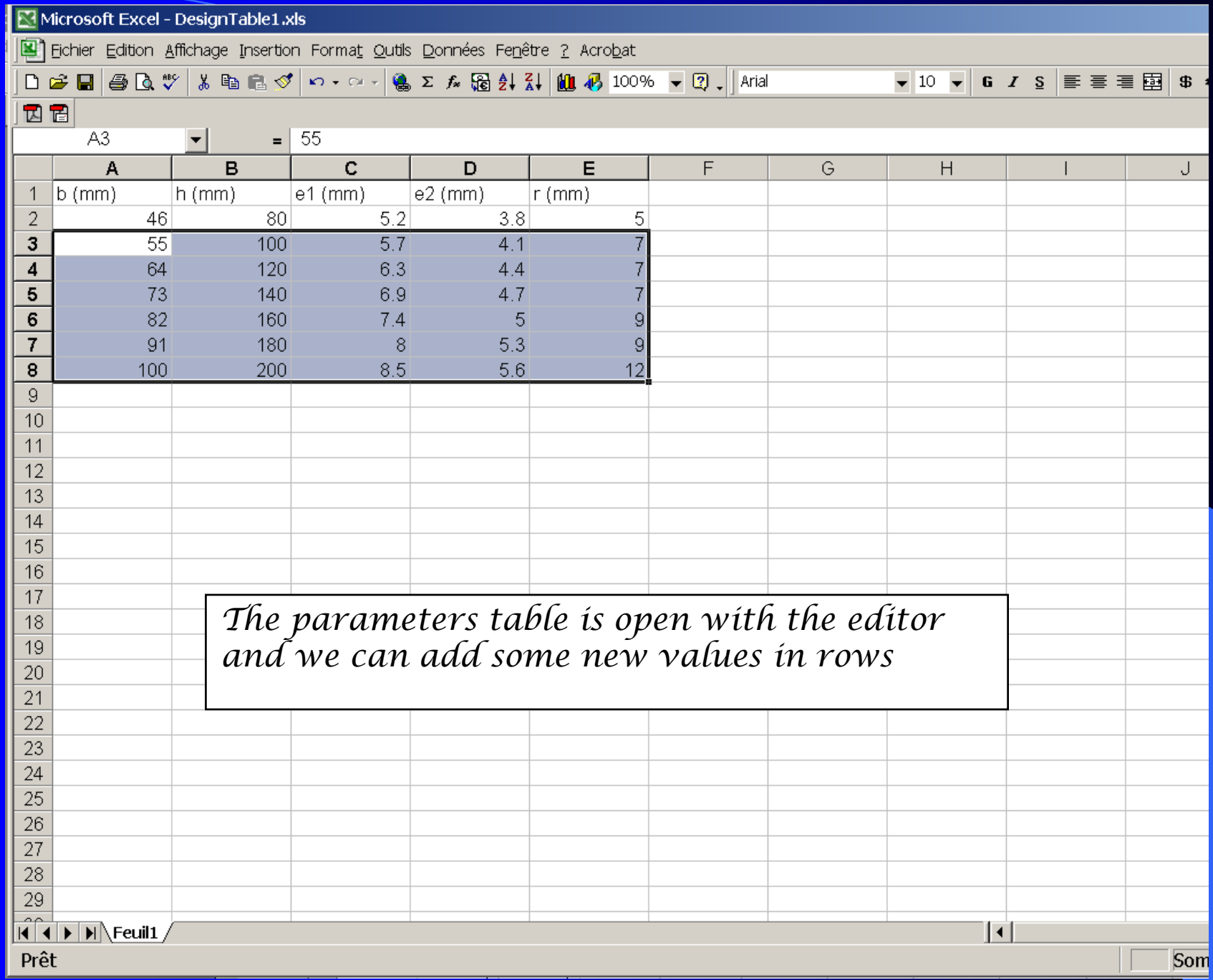

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
MainBody
Beam
Pad.1
Sketch.1
EdgeFillet.1
33: Symbole f(x) and "grey colour" indicate that the height parameter is driven by the h variable
Constraint Definition
Value
3.8mm
Reference
More>>
OK
Cancel
Edit the constraint

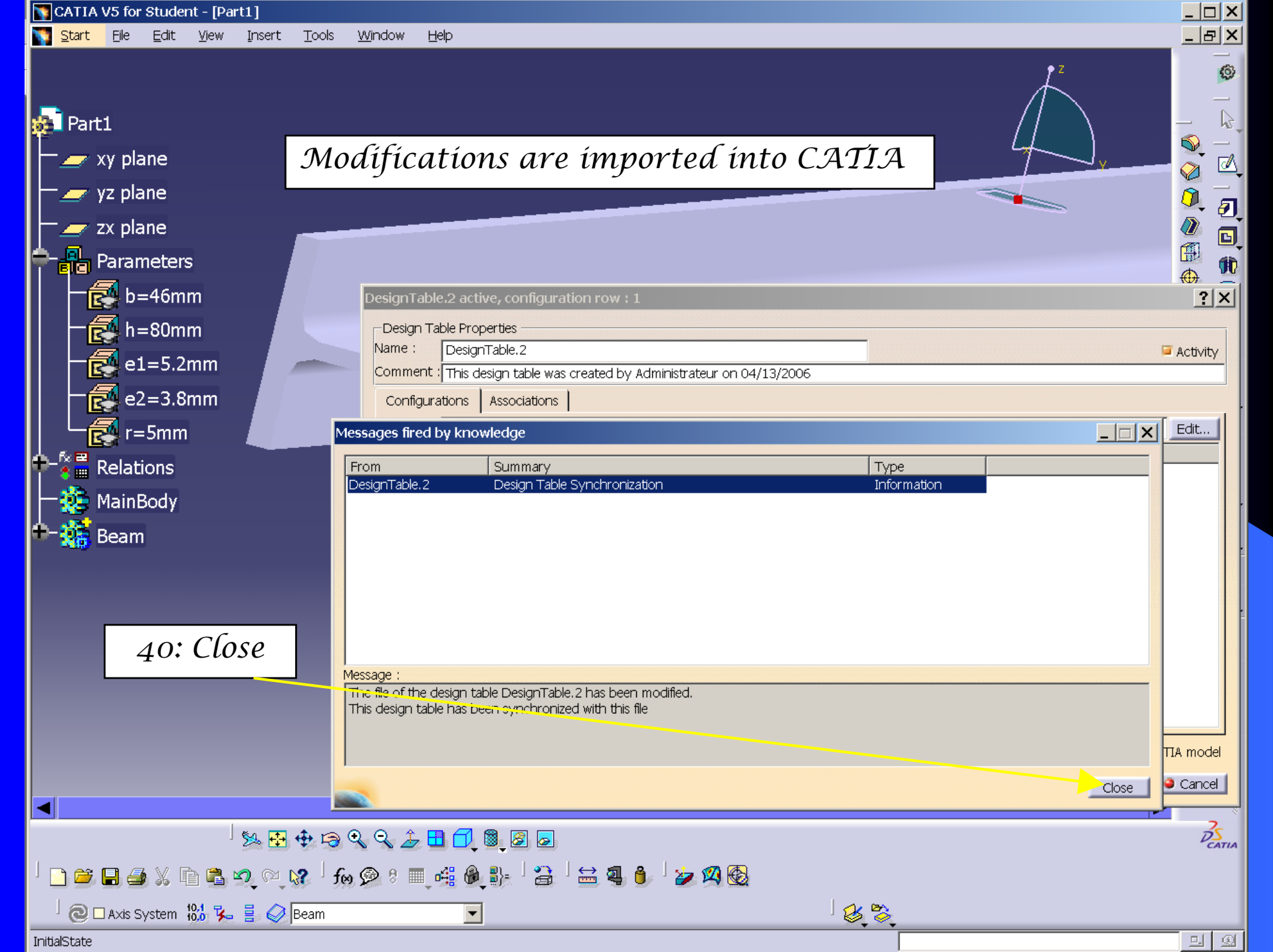

CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Creation of a family of beam
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
MainBody
Beam
35: Select the option
34: Select the icon
Design table
Creation of a Design Table
Name: DesignTable.1
Comment: This design table was created by Administrateur on 04/13/2006
Create a design table from a pre-existing file
Create a design table with current parameter values
Orientation : Vertical Horizontal
For Excel or Lotus 1-2-3 sheets, sheet index : 1
You should create a design table:
either from a text file, an Excel sheet or a Lotus 1-2-3 sheet (on NT).
Here is an example of a design table:
PadHeight (mm) PadWidth (mm) Material
15 12 Steel
17 1.3 cm Aluminium
In a text file, columns should be separated by tabulations.
Destination :
Part1\Relations
OK
Cancel
Axis System
Beam
Change the name and the comment of the design table and choose the option of creation

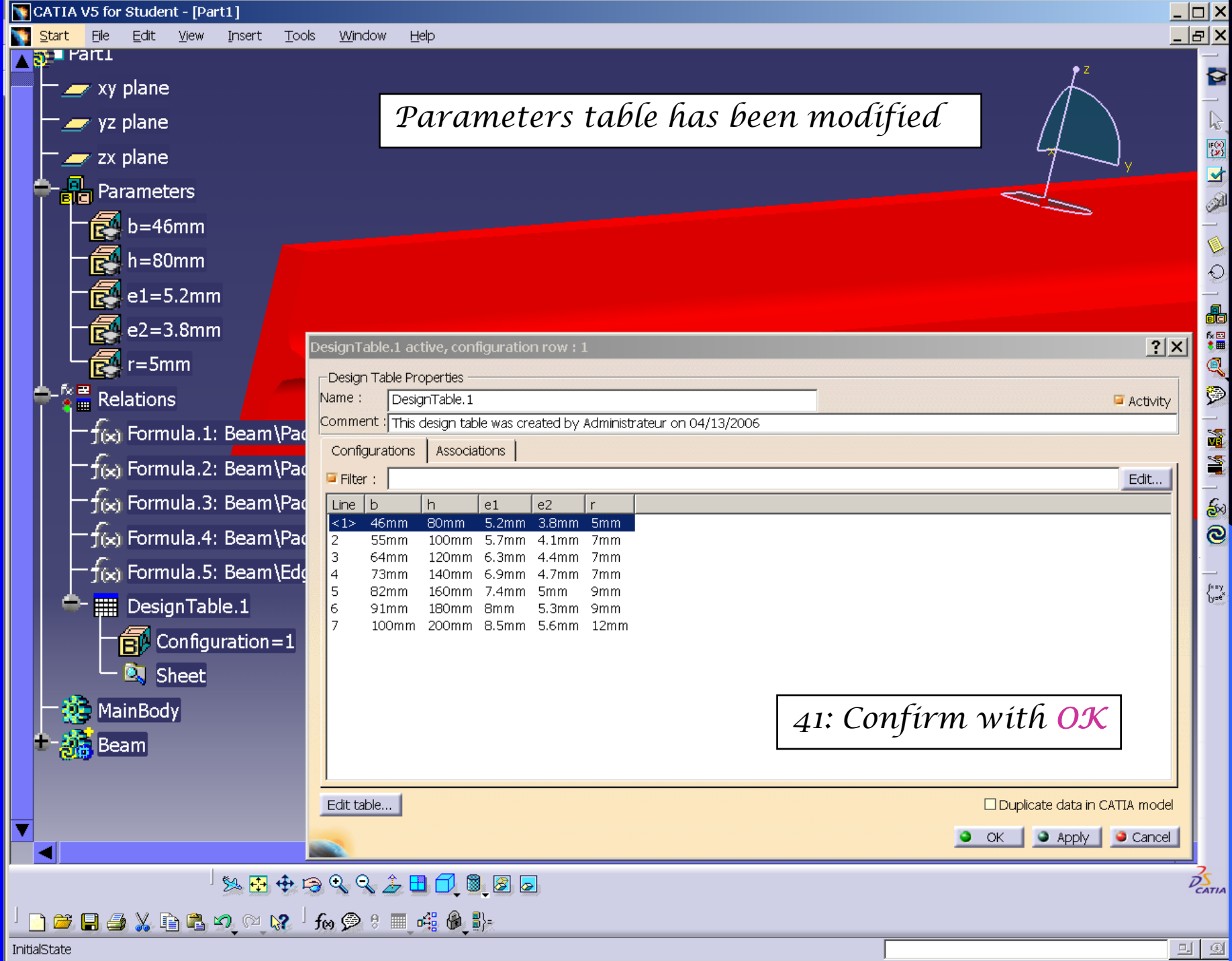

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
MainBody
Beam
A dialog box appears
36: Select the parameters
37: Insert with the arrows
Select parameters to insert
Filter On Part1
Filter Name : *
Filter Type : All
Parameters to insert
Beam\Pad.1\Sketch.1\Symmetry.26\mode
Beam\Pad.1\Sketch.1\Symmetry.26\Activity
Beam\Pad.1\Sketch.1\Symmetry.26\display_paramet
Beam\Pad.1\ThickThin1
Beam\Pad.1\ThickThin2
Beam\Pad.1\Activity
Beam\EdgeFillet.1\CstEdgeRibbon.1\radius
Beam\EdgeFillet.1\Activity
h
Inserted parameters
b
Adds the selected parameters in the design table
OK
Cancel
Axis System
Beam
Adds the selected parameters in the design table

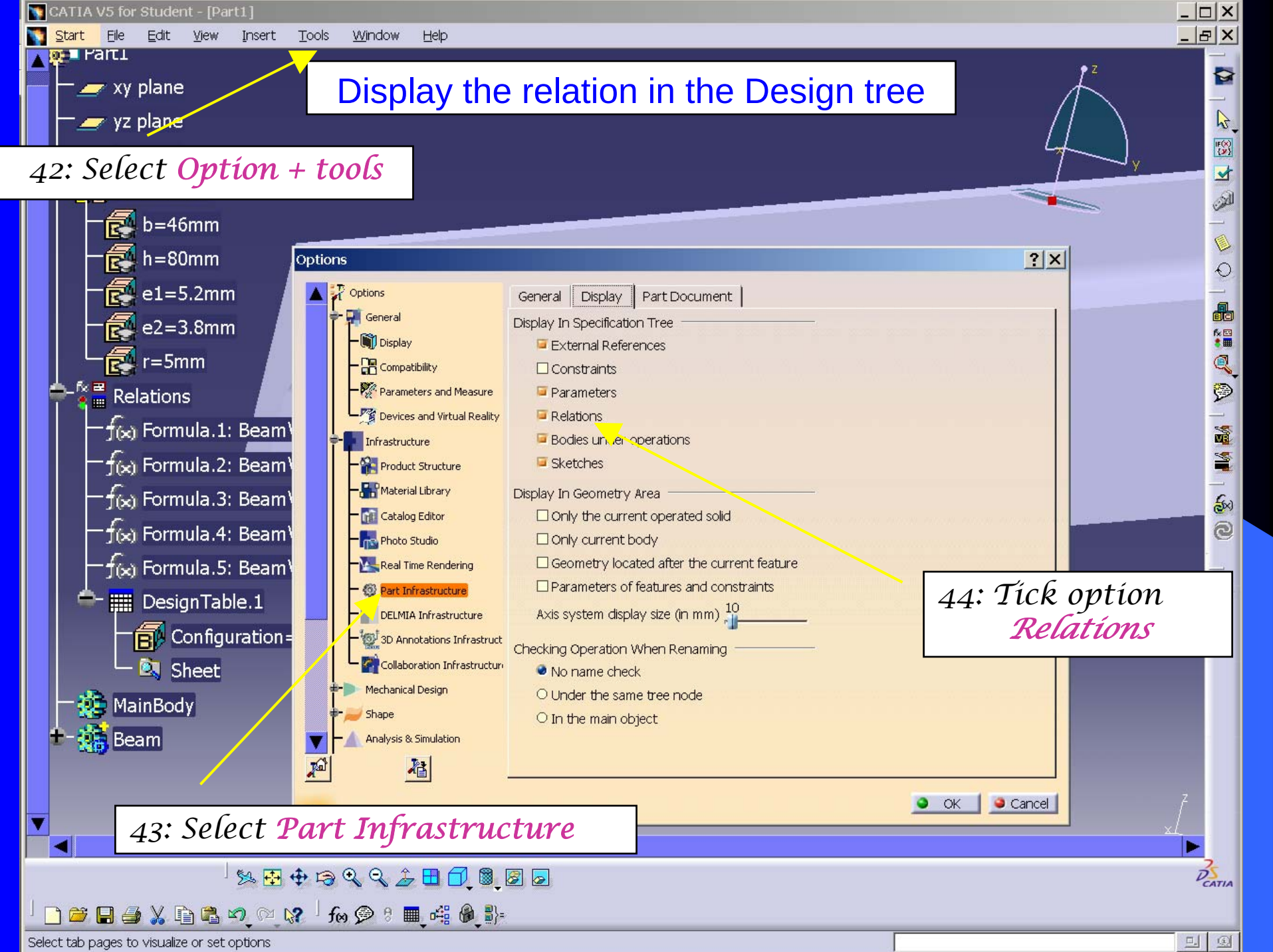

PowerPoint - [Présentation3]
CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Save As
Enregistrer dans : Parametrage_IPE
TableDeParametrage1.xls
Historique
Bureau
Mes documents
Poste de travail
Favoris réseau
Nom de fichier : DesignTable1
Type : Microsoft Excel worksheets (*.xls)
Enregistrer
Annuler
38: Confirm the creation name and format
MainBody
Beam
Create a design table from a pre-existing file
Create a design table with current parameter values
Orientation : Vertical Horizontal
For Excel or Lotus 1-2-3 sheets, sheet index : 1
You should create a design table:
either from a text file, an Excel sheet or a Lotus 1-2-3 sheet (on NT).
Here is an example of a design table:
PadHeight (mm) PadWidth (mm) Material
15 12 Steel
17 1.3 cm Aluminium
In a text file, columns should be separated by tabulations.
Destination :
Part1\Relations
OK
Cancel
Axis System
Beam
Change the name and the comment of the design table and choose the option of creation

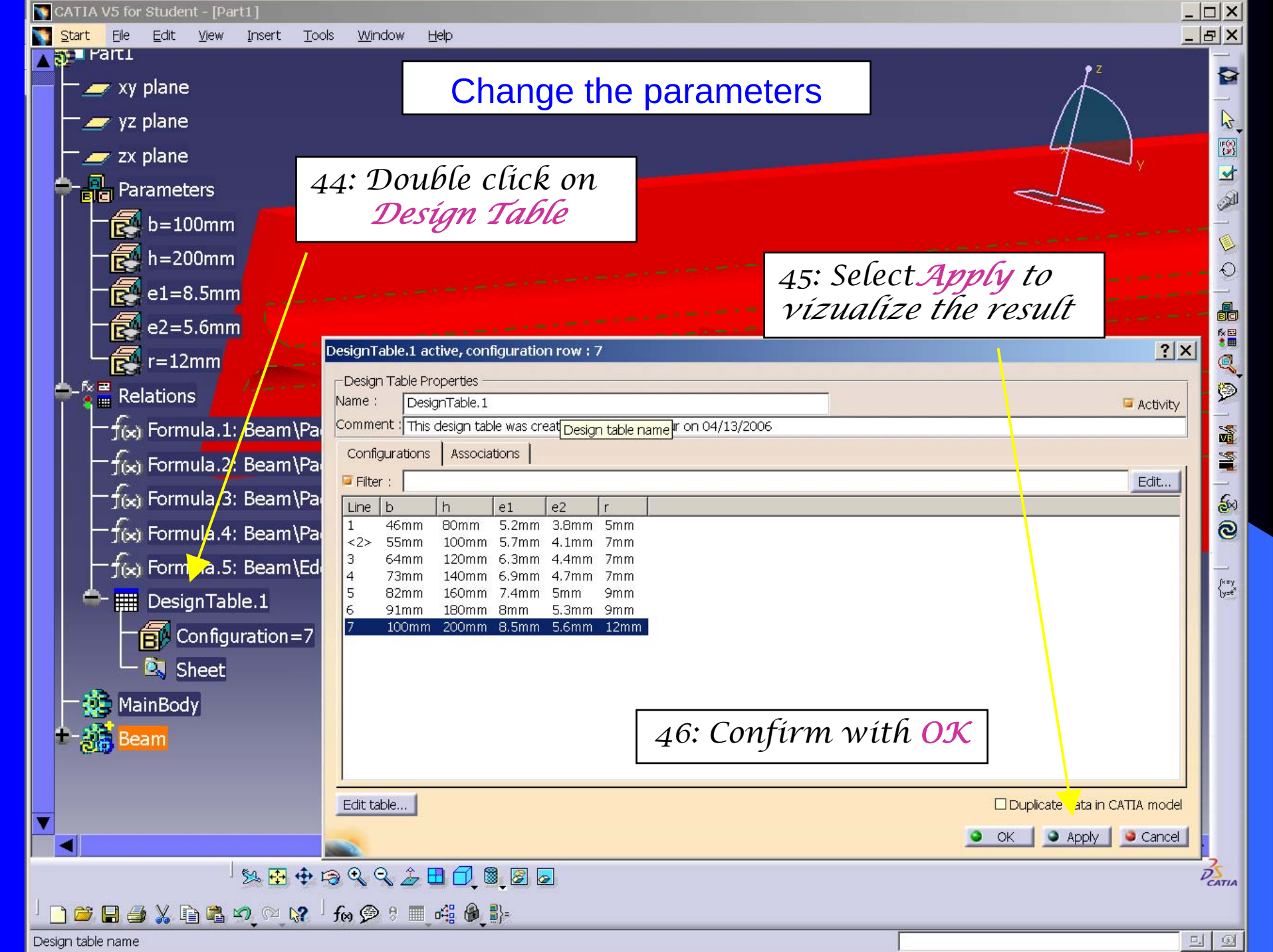

CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
MainBody
Beam
The parameters table has been created
DesignTable.2 active, configuration row : 1
Design Table Properties
Name :
DesignTable.2
Activity
Comment :
This design table was created by Administrateur on 04/13/2006
Configurations
Associations
Filter :
Edit...
Line
b
h
e1
e2
r
<1>
46mm
80mm
5.2mm
3.8mm
5mm
39: Edit the table
Edit table...
Duplicate data in CATIA model
OK
Apply
Cancel
Axis System
Beam
EdgeFillet.1/Beam/Part1 preselected


Microsoft Excel - DesignTable1.xls
Fichier Edition Affichage Insertion Format Outils Données Fenêtre ? Acrobat
A3 = 55
b (mm) h (mm) e1 (mm) e2 (mm) r (mm)
46 80 5.2 3.8 5
55 100 5.7 4.1 7
64 120 6.3 4.4 7
73 140 6.9 4.7 7
82 160 7.4 5 9
91 180 8 5.3 9
100 200 8.5 5.6 12
The parameters table is open with the editor and we can add some new values in rows
Feuil1
Prêt


CATIA V5 for Student - [Part1]
Start
File
Edit
View
Insert
Tools
Window
Help
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
MainBody
Beam
Modifications are imported into CATIA
DesignTable.2 active, configuration row : 1
Design Table Properties
Name :
DesignTable.2
Activity
Comment :
This design table was created by Administrateur on 04/13/2006
Configurations
Associations
Edit...
Messages fired by knowledge
From
Summary
Type
DesignTable.2
Design Table Synchronization
Information
Message :
The file of the design table DesignTable.2 has been modified.
This design table has been synchronized with this file
Close
TIA model
Cancel
40: Close
Axis System
Beam
InitialState


CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Part1
xy plane
yz plane
zx plane
Parameters
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
Formula.1: Beam\Pac
Formula.2: Beam\Pac
Formula.3: Beam\Pac
Formula.4: Beam\Pac
Formula.5: Beam\Edg
DesignTable.1
Configuration=1
Sheet
MainBody
Beam
Parameters table has been modified
DesignTable.1 active, configuration row : 1
Design Table Properties
Name : DesignTable.1
Activity
Comment : This design table was created by Administrateur on 04/13/2006
Configurations
Associations
Filter :
Edit...
Line b h e1 e2 r
<1> 46mm 80mm 5.2mm 3.8mm 5mm
2 55mm 100mm 5.7mm 4.1mm 7mm
3 64mm 120mm 6.3mm 4.4mm 7mm
4 73mm 140mm 6.9mm 4.7mm 7mm
5 82mm 160mm 7.4mm 5mm 9mm
6 91mm 180mm 8mm 5.3mm 9mm
7 100mm 200mm 8.5mm 5.6mm 12mm
41: Confirm with OK
Edit table...
Duplicate data in CATIA model
OK
Apply
Cancel
InitialState


CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Part1
xy plane
yz plane
Display the relation in the Design tree
42: Select Option + tools
b=46mm
h=80mm
e1=5.2mm
e2=3.8mm
r=5mm
Relations
Formula.1: Beam
Formula.2: Beam
Formula.3: Beam
Formula.4: Beam
Formula.5: Beam
DesignTable.1
Configuration
Sheet
MainBody
Beam
Options
Options
General
Display
Compatibility
Parameters and Measure
Devices and Virtual Reality
Infrastructure
Product Structure
Material Library
Catalog Editor
Photo Studio
Real Time Rendering
Part Infrastructure
DELMIA Infrastructure
3D Annotations Infrastruct
Collaboration Infrastructur
Mechanical Design
Shape
Analysis & Simulation
General
Display
Part Document
Display In Specification Tree
External References
Constraints
Parameters
Relations
Bodies under operations
Sketches
Display In Geometry Area
Only the current operated solid
Only current body
Geometry located after the current feature
Parameters of features and constraints
Axis system display size (in mm)
10
Checking Operation When Renaming
No name check
Under the same tree node
In the main object
OK
Cancel
44: Tick option Relations
43: Select Part Infrastructure
Select tab pages to visualize or set options


CATIA V5 for Student - [Part1]
Start File Edit View Insert Tools Window Help
Part1
xy plane
yz plane
zx plane
Parameters
b=100mm
h=200mm
e1=8.5mm
e2=5.6mm
r=12mm
Relations
Formula.1: Beam\Pa
Formula.2: Beam\Pa
Formula.3: Beam\Pa
Formula.4: Beam\Pa
Formula.5: Beam\Ed
DesignTable.1
Configuration=7
Sheet
MainBody
Beam
Change the parameters
44: Double click on Design Table
45: Select Apply to vizualize the result
46: Confirm with OK
DesignTable.1 active, configuration row : 7
Design Table Properties
Name : DesignTable.1
Activity
Comment : This design table was creat
Design table name
r on 04/13/2006
Configurations
Associations
Filter :
Edit...
Line b h e1 e2 r
1 46mm 80mm 5.2mm 3.8mm 5mm
<2> 55mm 100mm 5.7mm 4.1mm 7mm
3 64mm 120mm 6.3mm 4.4mm 7mm
4 73mm 140mm 6.9mm 4.7mm 7mm
5 82mm 160mm 7.4mm 5mm 9mm
6 91mm 180mm 8mm 5.3mm 9mm
7 100mm 200mm 8.5mm 5.6mm 12mm
Edit table...
Duplicate ata in CATIA model
OK
Apply
Cancel
Design table name