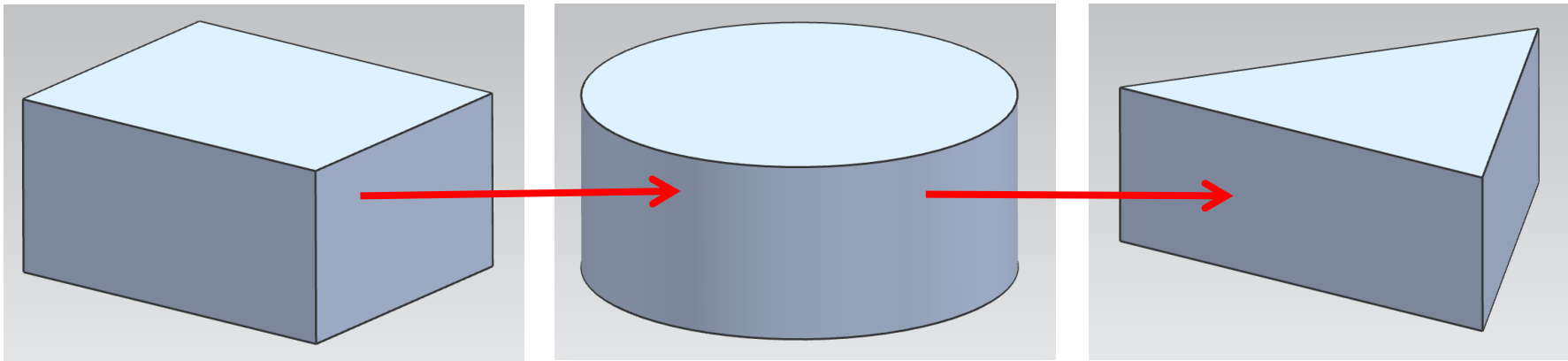




Target

- It should be possible to change the form of an extrude feature by changing a simple parameter – e.g. from rectangular to cylindrical or triangular.



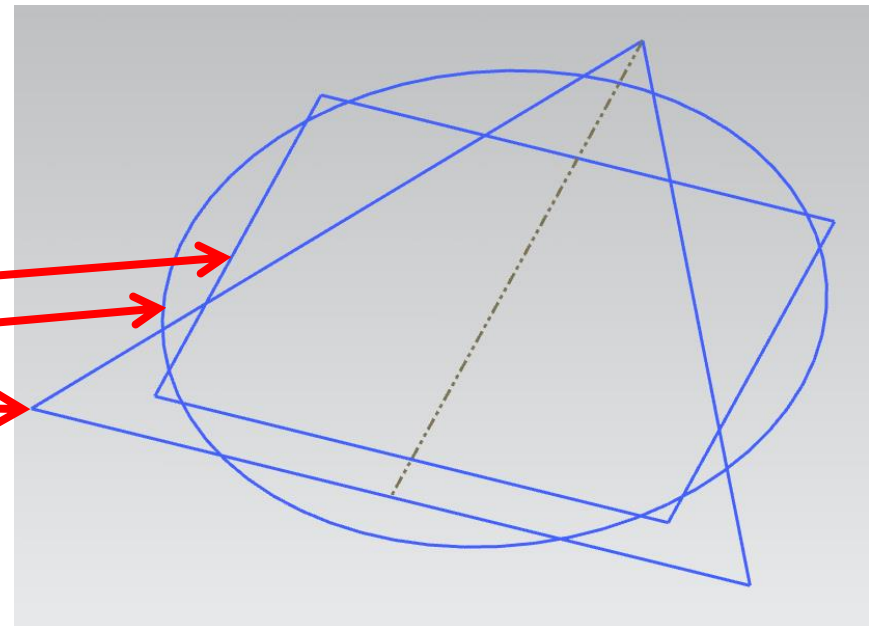
one and the same feature with different forms



Simple example

- First of all we have to create 3 sketches within our example-part (RECTANGLE, CIRCLE, TRIANGLE).

Model History		
		Datum Coordinate System (0)
		Sketch (1) "RECTANGLE"
		Sketch (2) "CIRCLE"
		Sketch (3) "TRIANGLE"





- These 3 Sketches will be merged to a new Group (Format > Group > New Group).
This is not a Feature-Group – only an Object-Group!
- Know you will find these group in the folder „Groups“ within the Part-Navigator.

The screenshot illustrates the process of creating a new object group in a CAD application. On the left, the 'Model History' tree shows three sketches: 'Sketch (1) "RECTANGLE"', 'Sketch (2)', and 'Sketch (3)'. A context menu is open over these sketches, with 'New Group' highlighted. A red arrow points from 'New Group' to the 'New Group' dialog box in the center. The dialog box has 'Objects' set to 'Select Object (3)' and 'Settings' with 'Name' set to 'FORM-SKETCHES' and 'Apply Group Display Properties' checked. Another red arrow points from the 'New Group' dialog to the 'Groups' folder in the 'Model History' tree on the right, which now contains a new group 'FORM-SKETCHES' containing the three sketches.

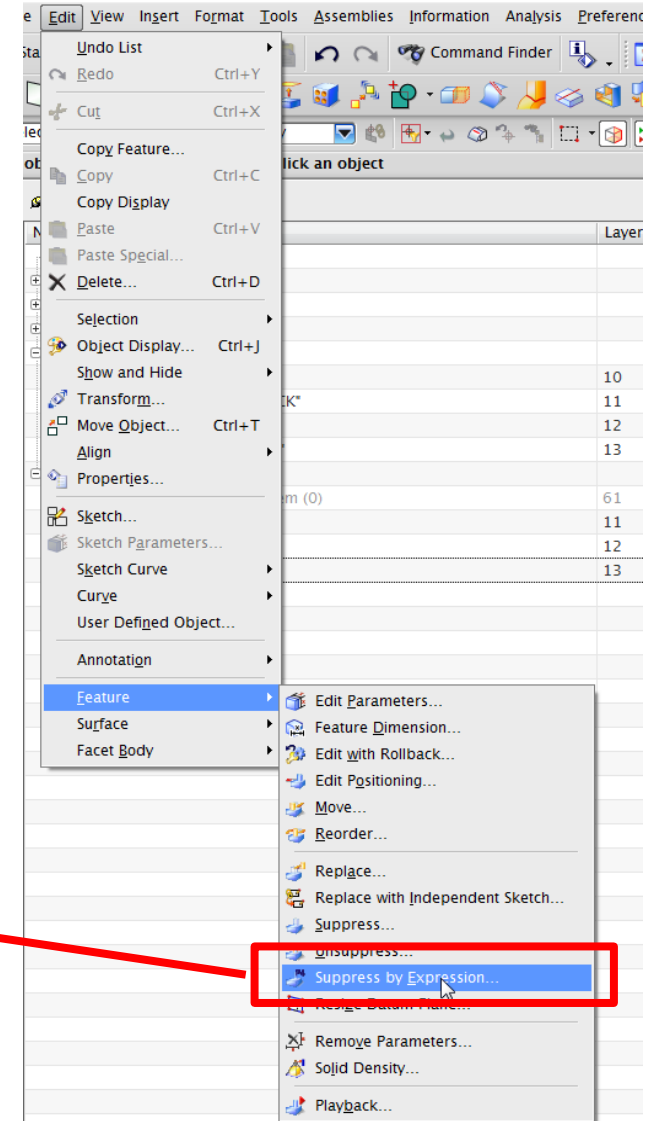
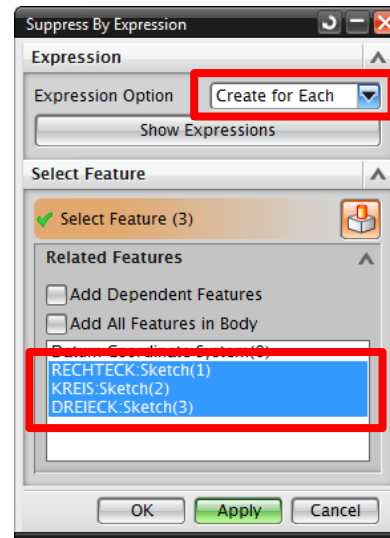
Model History	
✓ Datum Coordinate System (0)	61
✓ Sketch (1) "RECTANGLE"	11
✓ Sketch (2)	
✓ Sketch (3)	

Groups	
✓ Group "FORM-SKETCHES"	10
✓ Sketch (1) "RECTANGLE"	11
✓ Sketch (2) "CIRCLE"	12
✓ Sketch (3) "TRIANGLE"	13

Model History	
✓ Datum Coordinate System (0)	61
✓ Sketch (1) "RECTANGLE"	11
✓ Sketch (2) "CIRCLE"	12
✓ Sketch (3) "TRIANGLE"	13



- Following all 3 Sketches will get a Suppression-Status by Expression (Edit Feature > Suppress by Expression).
- In the dialog-window, the „Expression Option“ should be set to „Create for Each“. Thereby all selected features in the „Select Feature“ area will have their own suppression-status.
- Click „OK“ to end the dialog.





- In the Part-Navigator now all 3 Sketches are shown with a soft changed symbol (dotted rectangle with a green hook in front of the feature).
- In the Expression-List (Tools > Expressions) we see the Suppression Status of all 3 features at first with a value of „1“.
- „1“ means > not suppressed, „0“ means > suppressed.

Model History	
Datum Coordinate System (0)	61
Sketch (1) "RECTANGLE"	11
Sketch (2) "CIRCLE"	12
Sketch (3) "TRIANGLE"	13

Listed Expressions				
All				
Name	Formula	Value	Units	Type
p0 (RECTANGLE:Sketch(1) Horizontal Dimension between Line1 and Line1)	100	100	mm	Number
p1 (RECTANGLE:Sketch(1) Perpendicular Dimension between DATUM1 and Line4)	p0/2	50	mm	Number
p2 (RECTANGLE:Sketch(1) Vertical Dimension between Line4 and Line4)	80	80	mm	Number
p3 (RECTANGLE:Sketch(1) Perpendicular Dimension between DATUM2 and Line1)	p2/2	40	mm	Number
p4 (CIRCLE:Sketch(2) Diameter Dimension on Arc1)	120	120	mm	Number
p5 (TRIANGLE:Sketch(3) Horizontal Dimension between Line7 and Line7)	140	140	mm	Number
p6 (TRIANGLE:Sketch(3) Perpendicular Dimension between DATUM4 and Line7)	50	50	mm	Number
p7 (RECTANGLE:Sketch(1) Suppression Status)	1	1		Number
p8 (CIRCLE:Sketch(2) Suppression Status)	1	1		Number
p9 (TRIANGLE:Sketch(3) Suppression Status)	1	1		Number

Type: Number Length: mm

Name: Formula: OK Apply Cancel



- In the next step you will create a steering-expression – here „Form“ – with a dimension of “Constant” and a value of “1”. This is important, cause we will use it for the suppression-status of the sketches, which are also only “Constant”
- With a Comment on the parameter, you can change the parameter easily later.

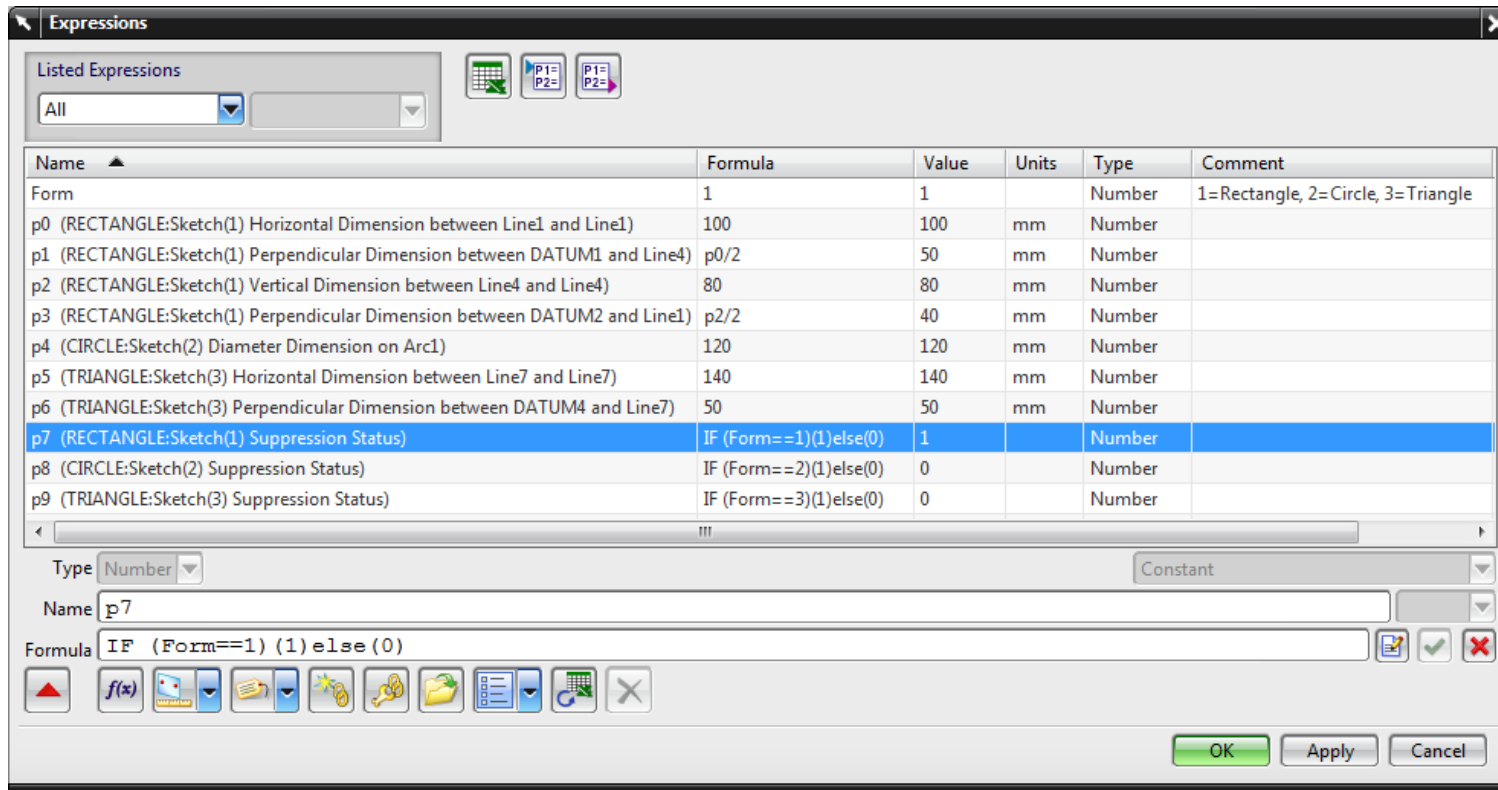
Name	Formula	Value	Units	Type	Comment
Form	1	1	mm	Number	1=Rectangle, 2=Circle, 3=Triangle
p0 (RECTANGLE:Sketch(1) Horizontal Dimension between Line1 and Line1)	100	100	mm	Number	
p1 (RECTANGLE:Sketch(1) Perpendicular Dimension between DATUM1 and Line4)	p0/2	50	mm	Number	
p2 (RECTANGLE:Sketch(1) Vertical Dimension between Line4 and Line4)	80	80	mm	Number	
p3 (RECTANGLE:Sketch(1) Perpendicular Dimension between DATUM2 and Line1)	p2/2	40	mm	Number	
p4 (CIRCLE:Sketch(2) Diameter Dimension on Arc1)	120	120	mm	Number	
p5 (TRIANGLE:Sketch(3) Horizontal Dimension between Line7 and Line7)	140	140	mm	Number	
p6 (TRIANGLE:Sketch(3) Perpendicular Dimension between DATUM4 and Line7)	50	50	mm	Number	
p7 (RECTANGLE:Sketch(1) Suppression Status)	1	1		Number	
p8 (CIRCLE:Sketch(2) Suppression Status)	1	1		Number	
p9 (TRIANGLE:Sketch(3) Suppression Status)	1	1		Number	

Type: Number
Name: Form
Formula: 1
Constant

OK Apply Cancel



- These steering-expression will know joined with a „IF-THEN-ELSE“ condition to the suppression-status of the sketches.
- The first suppression-status for the rectangle will ask if the „Form“ is 1 (means rectangle), the second will ask if the „Form“ is 2 (means circle) and the third will ask if the „Form“ is „3“ (means triangle).



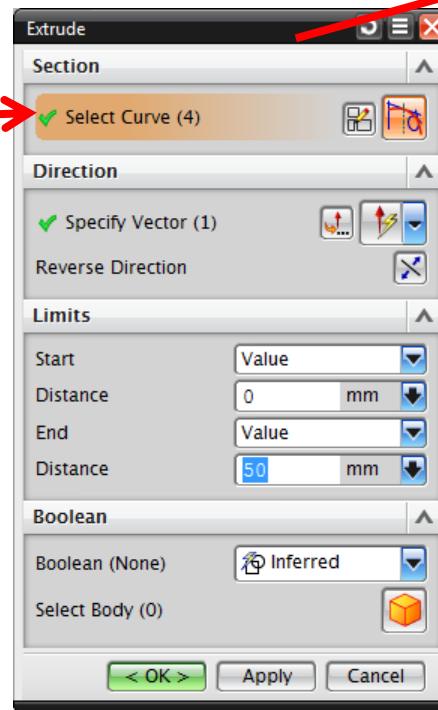
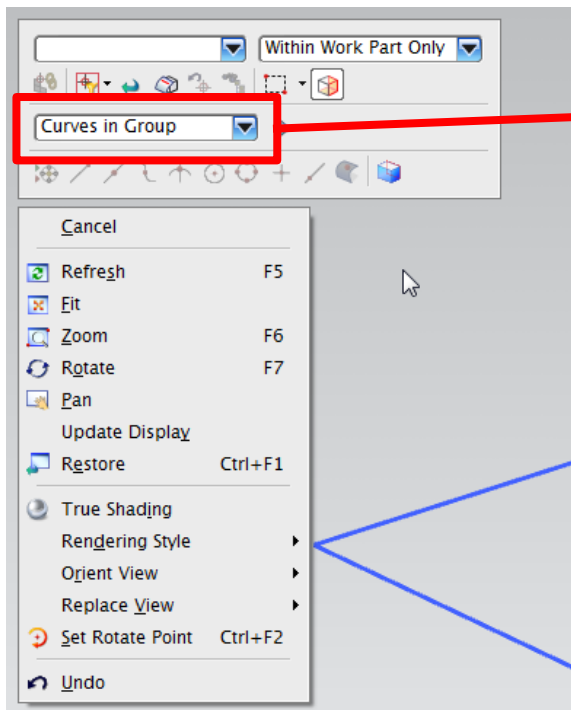


- After that click „OK“ in the Expressions-Editor. Thereby 2 sketches are every time suppressed and one is active, depending on the value of the “Form”-expression.

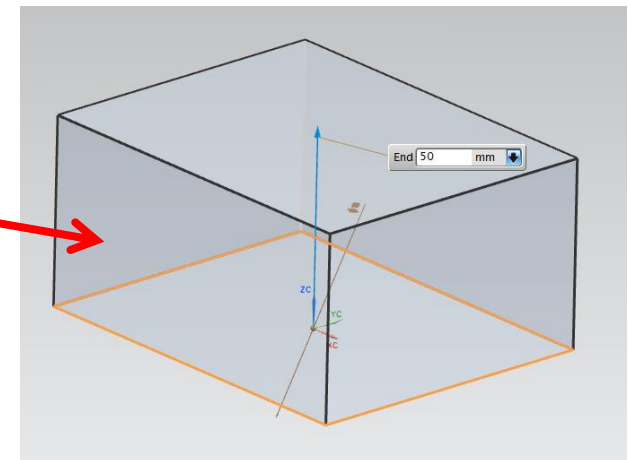
 User Expressions	
= Form=1 //1=Rectangle, 2= Circle, 3= Triangle	
 Groups	
 Group "FORM-SKETCHES"	10
 Sketch (1) "RECTANGLE"	11
 Sketch (2) "CIRCLE"	12
 Sketch (3) "TRIANGLE"	13
 Model History	
 Datum Coordinate System (0)	61
 Sketch (1) "RECTANGLE"	11
 Sketch (2) "CIRCLE"	12
 Sketch (3) "TRIANGLE"	13



- Know we create the Extrusion-Feature (Insert > Design Feature Extrude).
- For this you have to setup the right selection-method for selecting the curves – here „Curves in Group“.
- Then select the group in the Part-Navigator and create the Extrude-Feature.

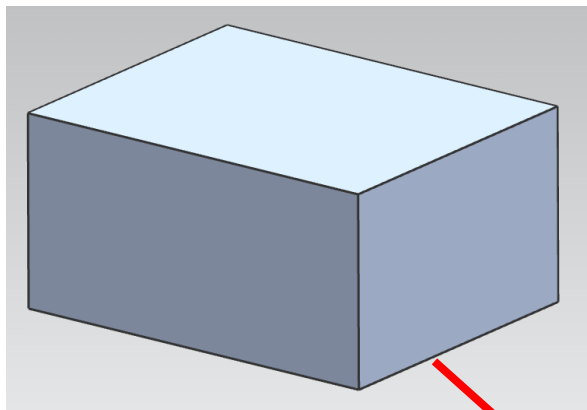


Groups	
Group "FORM-SKETCHES"	10
Sketch (1) "RECTANGLE"	11
Sketch (2) "CIRCLE"	12
Sketch (3) "TRIANGLE"	13
Model History	
Datum Coordinate System (0)	61
Sketch (1) "RECTANGLE"	11
Sketch (2) "CIRCLE"	12
Sketch (3) "TRIANGLE"	13

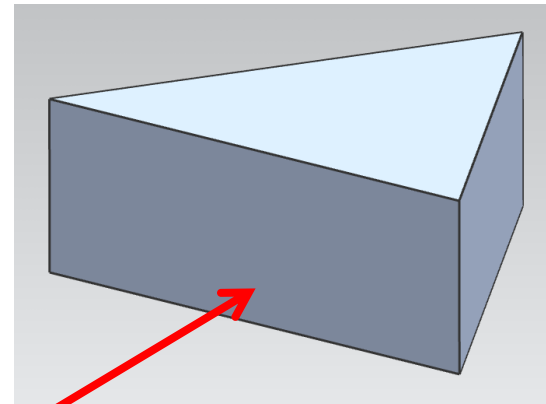




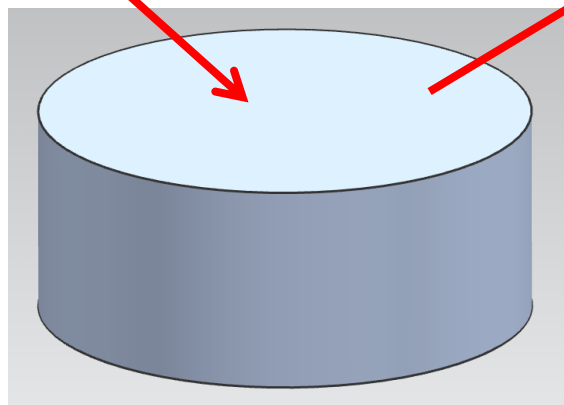
- You can now change the Form of the Extrude, by changing the Expression „Form“.
- A „1“ changes to „Rectangle“, a „2“ changes to „Cylinder“ and a „3“ changes to „Triangle“.



„Form“ = 1



„Form“ = 3



„Form“ = 2

[-] Groups	
[-] Group "FORM-SKETCHES"	10
[-] Sketch (1) "RECTANGLE"	11
[-] Sketch (2) "CIRCLE"	12
[-] Sketch (3) "TRIANGLE"	13
[-] Model History	
[x] Datum Coordinate System (0)	61
[x] Sketch (1) "RECTANGLE"	11
[x] Sketch (2) "CIRCLE"	12
[x] Sketch (3) "TRIANGLE"	13
[x] Extrude (5)	10



Enjoy it!