

# Part Families

Part families can be useful when it is necessary to produce several models that share common characteristics. Generally, parts that are defined by “chart drawings” are good candidates for part families.

To use part families, you need to create parameters that will define part geometry. For instance, for a family of flat washers, you might define expressions called ID, OD and TH.

- **Tools -> Expressions** to create the parameters

Next, create a sketch of the washer profile and use the expressions ID, OD to define the dimensions of the washer. Use the chart below as a guide. Be sure to assign units of length.

Extrude the profile to thickness TH.

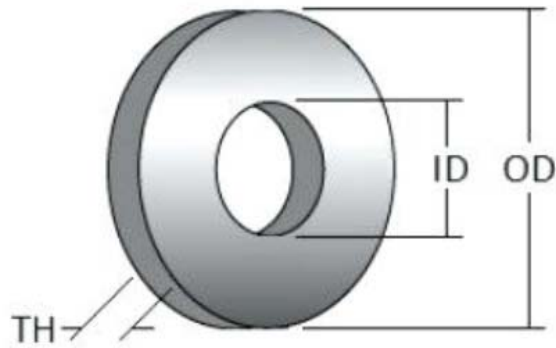
Now, use the part family tool to create a spreadsheet to define the family.

- **Tools -> Part Families**

Add columns for ID, OD and TH

Excel should load. Enter values for the family of parts.

Notice that Excel now has an add-in called “part families.” This gives you new Excel commands that will generate the family of parts through NX.



USS Flat Washers								
Nominal Washer Size	ID			OD			TH	
	Inside Diameter			Outside Diameter			Thickness	
	Basic	Tolerance		Basic	Tolerance		Max.	Min.
		Plus	Minus		Plus	Minus		
#10	.219	.008	.005	.500	.015	.005	.065	.036
1/4	.312	.015	.005	.734	.015	.007	.080	.051
5/16	.375	.015	.005	.875	.030	.007	.104	.064
3/8	.438	.015	.005	1.000	.030	.007	.104	.064
7/16	.500	.015	.005	1.250	.030	.007	.104	.064
1/2	.562	.015	.005	1.375	.030	.007	.132	.086
9/16	.625	.015	.005	1.469	.030	.007	.132	.086
5/8	.688	.030	.007	1.750	.030	.007	.160	.108
3/4	.812	.030	.007	2.000	.030	.007	.177	.122
7/8	.938	.030	.007	2.250	.030	.007	.192	.136
1	1.062	.030	.007	2.500	.030	.007	.192	.136

## Assignment:

Make a part family of the Lego block you made in the previous assignment (Parametric Lego Block). Make a minimum of 10 distinct part configurations. Name the parts UUID\_HW14\_2x2, UUID\_HW14\_2x4....etc.

Make at least two blocks with the short configuration.

Note: The parts created for the part family will be used in another lab (Lego Block Assembly).