

- 1) Draw a sketch of a pentagon (Step1.jpg)
- 2) Create a planar surface body from the sketch (Step2.jpg)
- 3) Save as a part file (Step3.jpg)
- 4) Use the function "Create Assembly From Part" (Step4.jpg)
- 5) Click the green check mark to insert and fix the pentagon in the assembly (Step5.jpg)
- 6) Control-drag a copy of the pentagon into the assembly from the feature tree (Step6.jpg)
- 7) Orient it so that two edges are close to each other (Step7.jpg)
- 8) Mate the two edges with a coincident relation (Quickest way is to control-select both and choose the mate-icon from the pop-up menu) (Step8.jpg and Step9.jpg)
- 9) Control-drag another copy of the pentagon into the assembly (Step10.jpg)
- 10) Mate it to one edge on the fixed pentagon and one edge on the movable pentagon. This fully defines the model (Step11.jpg and Step12.jpg)
- 11) Control-drag the next three pentagons into the assembly and constrain their edges with coincident mates (Step13.jpg and Step14.jpg and Step15.jpg)
- 12) Inserting the last piece will probably over-define the assembly. This warning is not critical, but you can make it disappear by deleting a mate, if you wish.
- 13) Highlight and right-click all the parts in the feature tree and select the function: "Form New Subassembly Here". This allows us to save time and sweat by reusing existing geometry (Step16.jpg)
- 14) Control-drag a copy of the new subassembly into the assembly (Step17.jpg)
- 15) Orient it so that it matches the fixed part (Step18.jpg)
- 16) Mate three sets of corner points to each other to fully define the model. You have now created an assembly with a surface model of a dodecahedron (Step19.jpg)
- 17) Save the assembly as a PART file with the option "Exterior Faces" selected. You don't need to save the assembly itself as it's just an intermediate model (Step20.jpg)
- 18) Open the part file you just saved (Step21.jpg and Step22.jpg)
- 19) Use "Knit Surface" with the "Try to form solid" option selected while selecting all 12 surfaces from the Surface folder in the feature tree, to turn this surface model into a solid model (Step23.jpg)
- 20) Select all external surfaces and apply a Fillet of 1 mm (Step24.jpg and Step 25.jpg)
- 21) You have created the solid dodecahedron without sweat or mathematics ;-)