

Activity 1.5.5a Pegboard Toy Working Drawings

Introduction

Having the ability to take something that you have designed and create a 3D model of it is exciting and fun to do. In the last activity, you made a 3D model of a pegboard toy on the computer. Computer models can be used for testing and evaluating purposes. However, often engineers make prototypes and test them out in real life. Such was the case with the Wright brothers when they made prototypes of their airplane designs and tested them. They modified their prototypes, made revisions, and then made new prototypes. They did this using a working drawing, which is a multiview drawing with dimensions. Such drawings are called “working drawings” because they are used to make the prototype of the design.

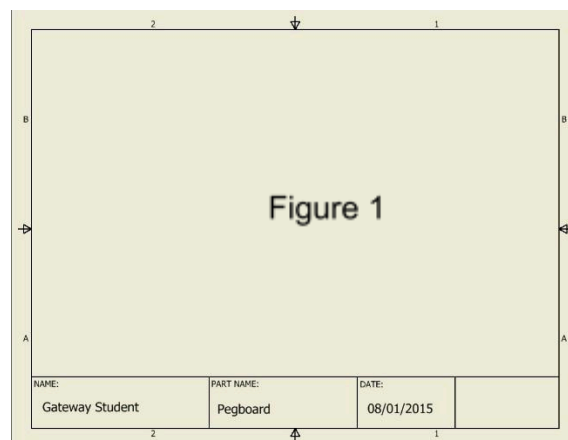
Equipment

- PLTW Gateway notebook
- Pencil
- Completed Activity 1.5.5 Pegboard Toy
- Computer with 3D modeling program


Procedure

In this activity you will create a working drawing and an assembly drawing, which could then be used to make a prototype of your design.

1. Open your 3D modeling program.
2. First create the working drawing. Click on New, and then select the .idw template created by your teacher. Your screen should look similar to Figure 1.



3. From the Place Views panel, select Base.

4. A Drawing View pop-up menu will appear. Select Open an Existing File. 
- a. From the File menu you can import
 - i. A part file (i.e., File extension .ipt)
 - ii. An assembly file (i.e., File extension .iam)
 - iii. A presentation file (i.e., File extension .ipn)
5. Find and select Pegboard.ipt.
6. In the Drawing View window, set Scale to 1/2 and make sure Front View is highlighted. Lastly, select OK.

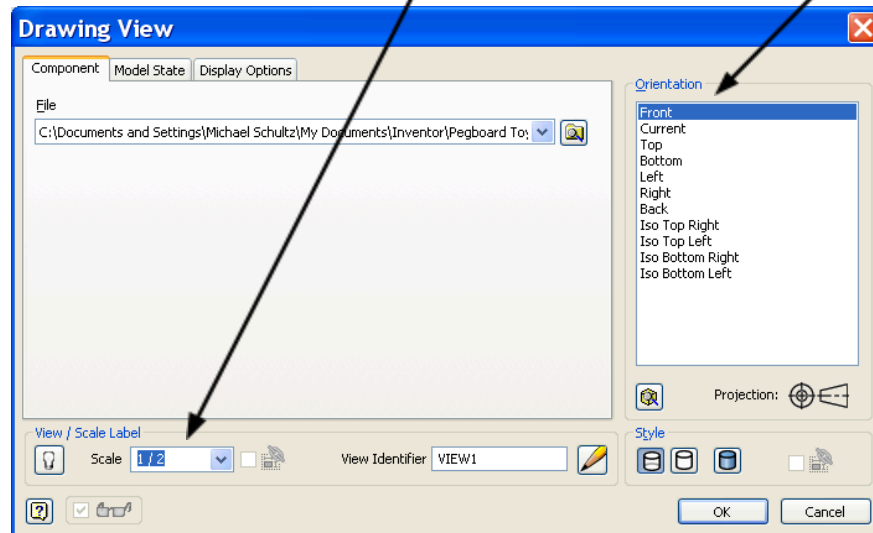


Figure 2

7. Move the Pegboard to the lower, left hand corner and left mouse click to place the view.
8. From the Place Views panel, select Projected.
9. Click on the Front view of Pegboard and move your mouse straight up from the Front view then left click to place the Top view.
10. Move your mouse down and then to the right of the Front View then left click to place the Right Side view.
11. Finally, move your mouse straight up from the Right Side view and left click to place the Isometric view.
12. After all views are placed then right click and select Create.
13. Double click on the Isometric view and set the Style to Shaded.
14. Your drawing should look similar to Figure 3.

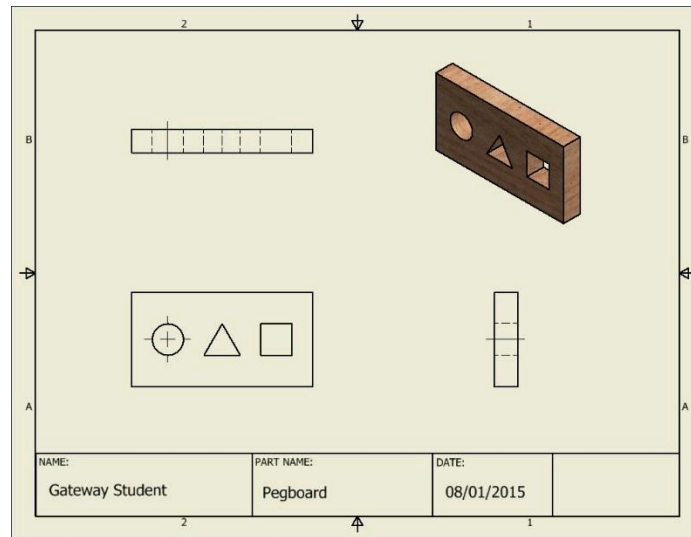


Figure 3

15. Before continuing on to the next step, select Save As. Name your drawing Pegboard.idw.

- a. When initially saving use Save As to set path to correct folder and to name the file. Only use Save As on the initial save.

16. Select the Annotate tab on the ribbon. Using the Annotate panel tools, do your best to make your drawing match what is shown in Figure 4. Remember, the working drawing is used by someone to manufacturing the part, so accuracy is extremely important.

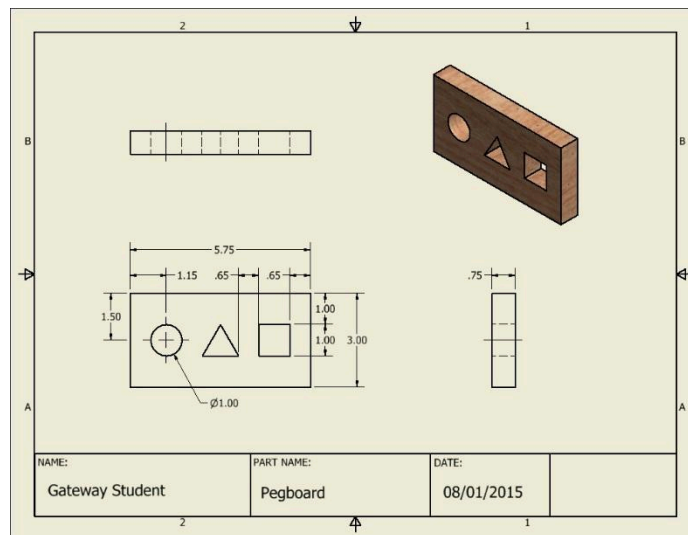


Figure 4

Your teacher may request that you print your drawings. Check to verify if this needs to be completed now.

1. Next, create the assembly drawing.
2. Click on New and select the .idw that was created by your teacher.

3. From the Place Views Ribbon select Base.
4. Select Open an Existing File and find the pegboard assembly, Pegboard Toy.iam.
5. In the Drawing View window set Scale to 1/2, Orientation to Iso Top Right and Style to shaded. Lastly, select OK.

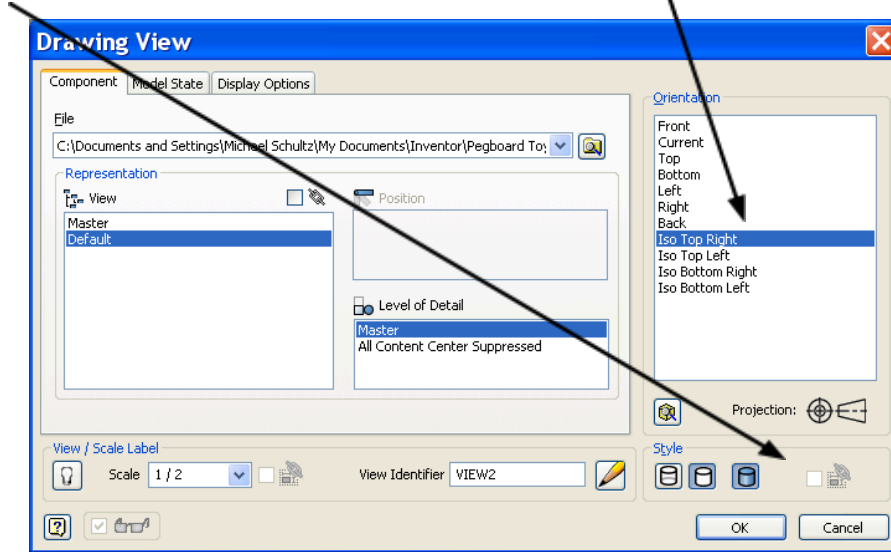


Figure 5

6. Move the exploded view to one side of the drawing in order to make room for the Parts List and Balloons.
7. Switch to the Annotate Ribbon.
8. Select Parts List. Select Browse for File and find the Pegboard Toy.iam. Select OK. Select OK again to enable BOM (Bill Of Materials) view and then place the parts list in a blank area of the drawing.
9. Select Balloon. Click on the edge of a part. Notice how a leader had been placed at the point you clicked. Move your mouse slightly away from the part and left click again; this positions the Balloon. Right mouse click and select Continue.
10. Continue placing balloons until all parts are labeled. Your drawing should look similar to Figure 6.

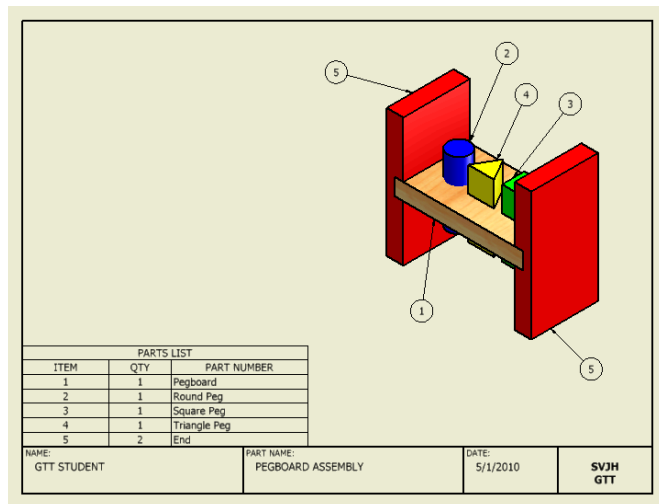


Figure 6

Your teacher may request that you print your drawings. Check to verify if this needs to be completed now.

Conclusion

1. Why is it important to have working drawings of an object that you intend to create?
2. What is the purpose of balloons and a parts list in a working drawing?
3. What do each of these file extensions mean? When do you use each of these file types?
 - .ipt
 - .iam
 - .idw