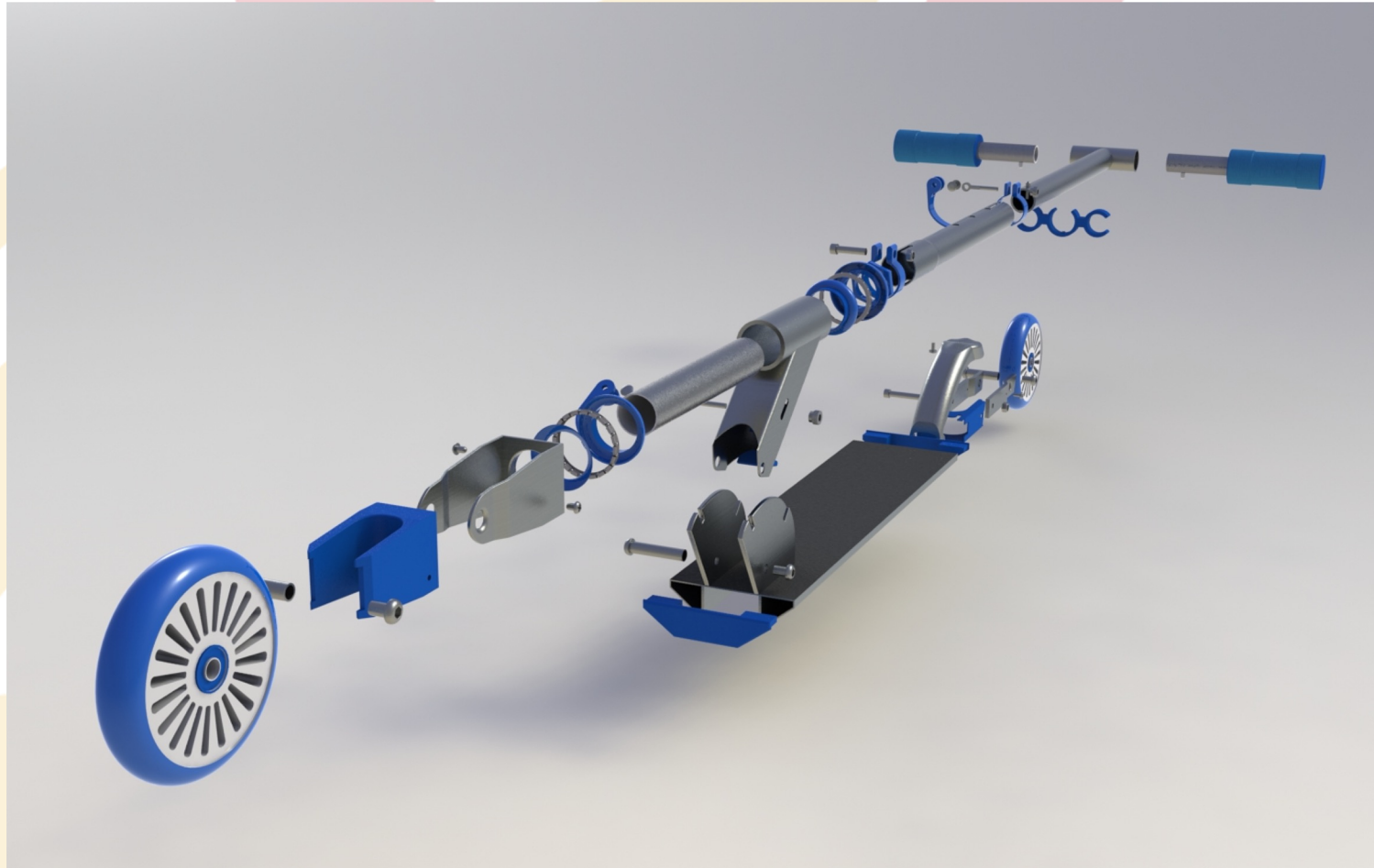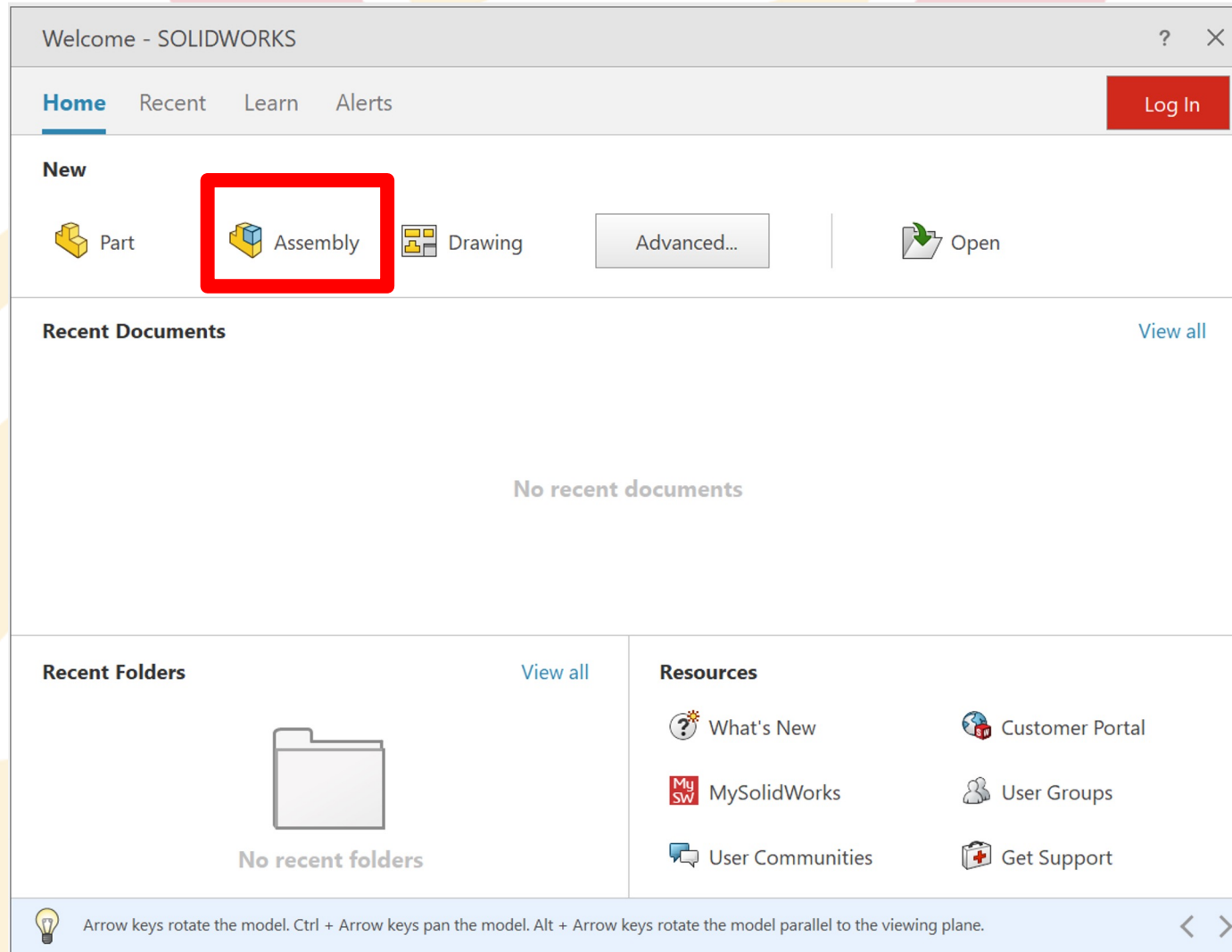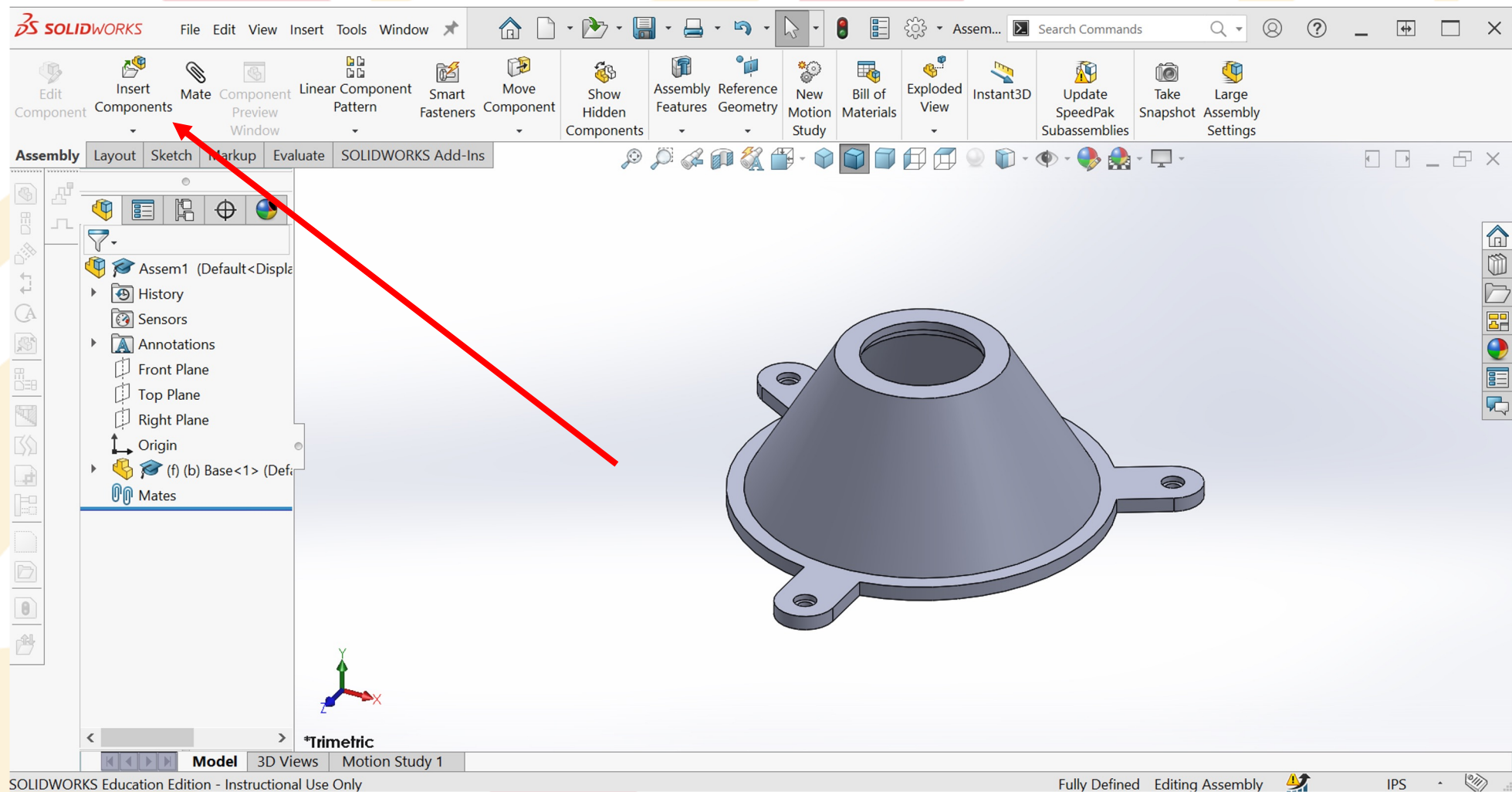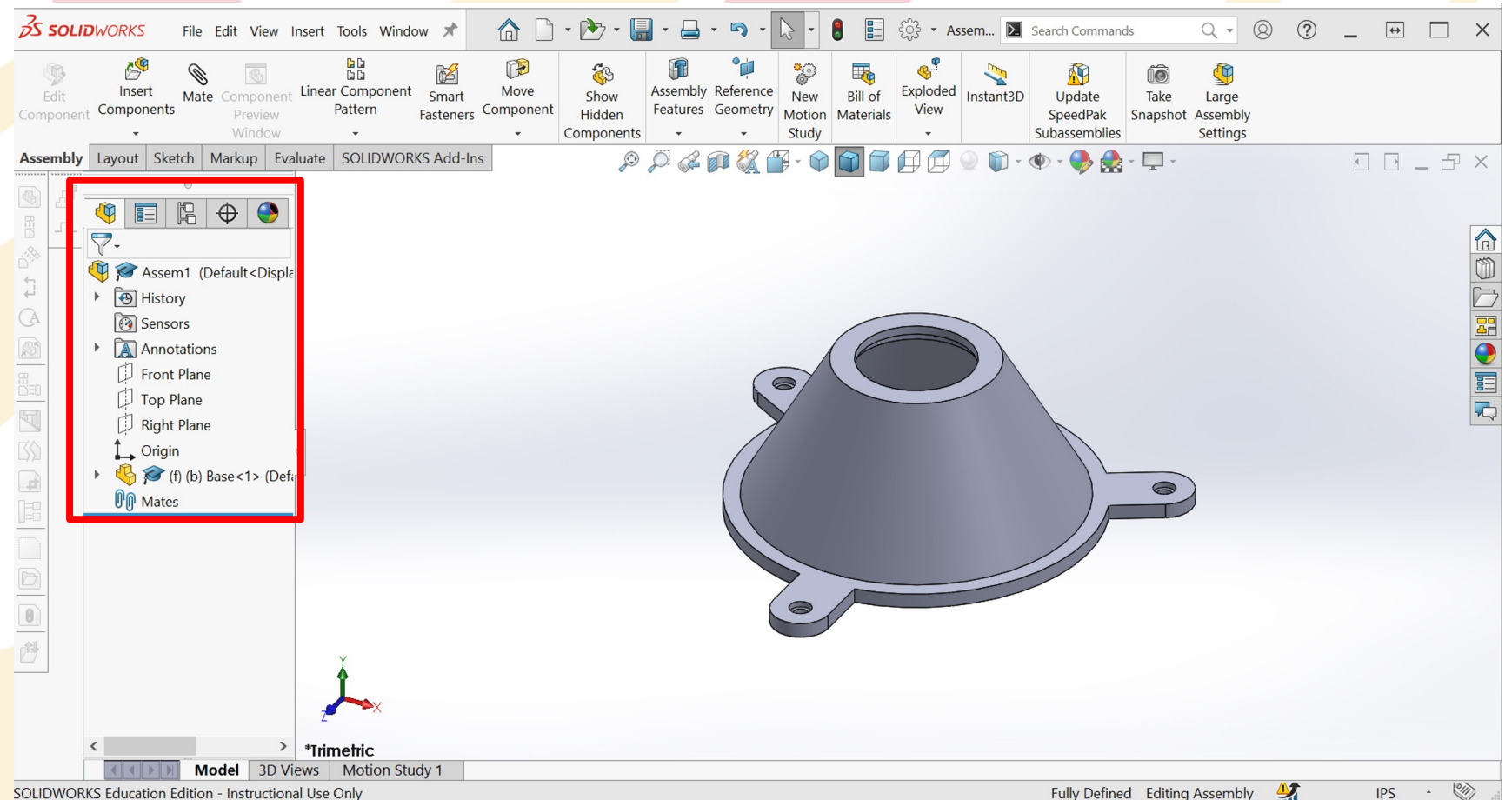# Assembly in SolidWorks

Creating an Assembly

Inserting Parts

o Click "Browse if parts do not show in dialog box
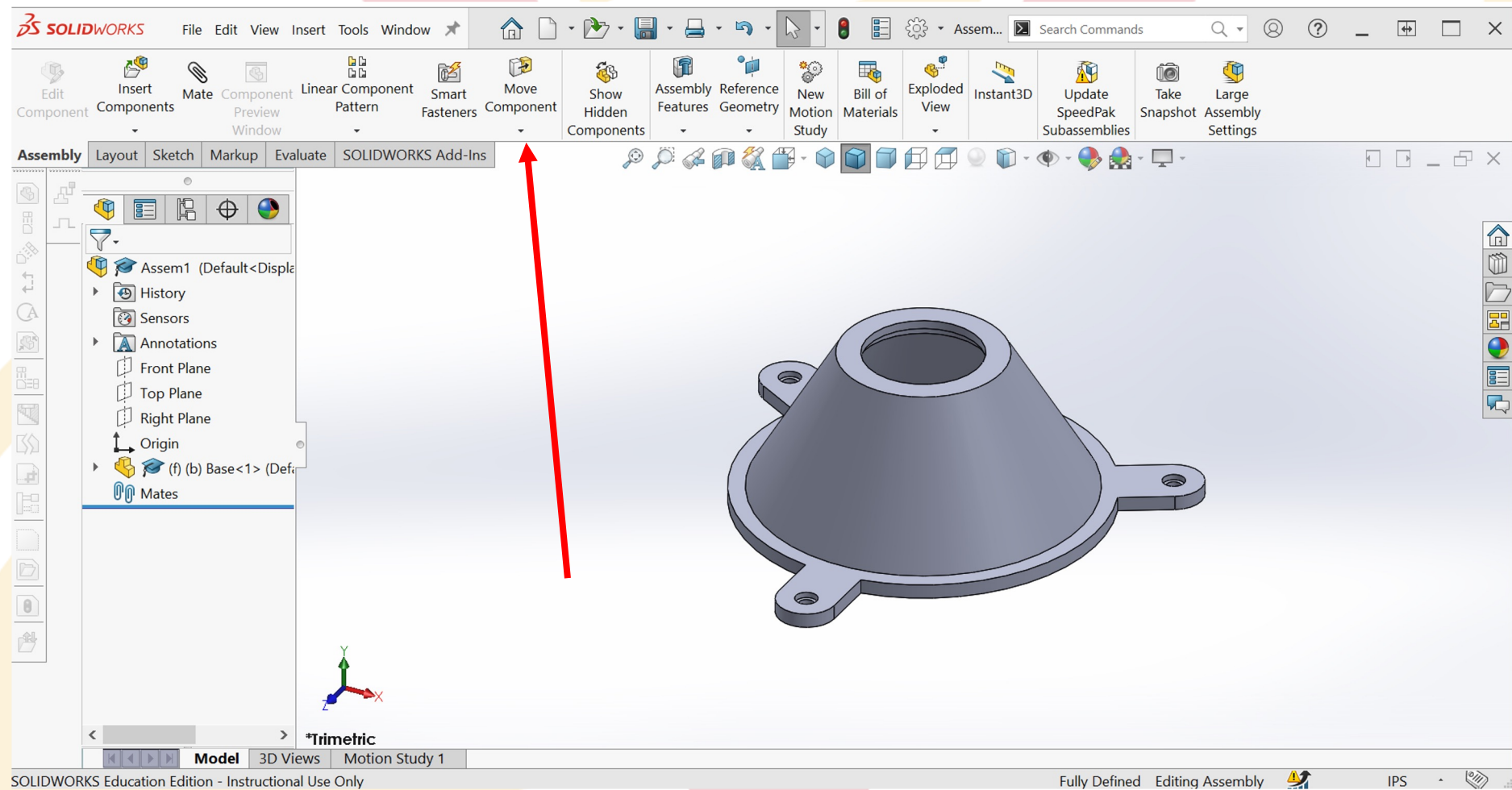
The Assembly Tree

○ The design tree stores all information regarding the parts, mates, materials, and history of the assembly

○ Very useful for manipulating parts

Move Component

Design for Manufacturing

⦿ Tolerances

⦿ Manifold vs Non-manifold

⦿ Part Influence on Assembly

⦿ Assembly Steps

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Geometric Dimensioning and Tolerancing

- Tolerances in a design tell the inspector how much variance or imperfection is allowable before the part must be considered unfit for use.

- Tolerance is the difference between the maximum and minimum limits on the dimensions of the part.

- Since parts are never perfect, a datum feature is used during inspection, to substitute for the perfect datum of the drawing.

- Datum features are simply referred to as datums
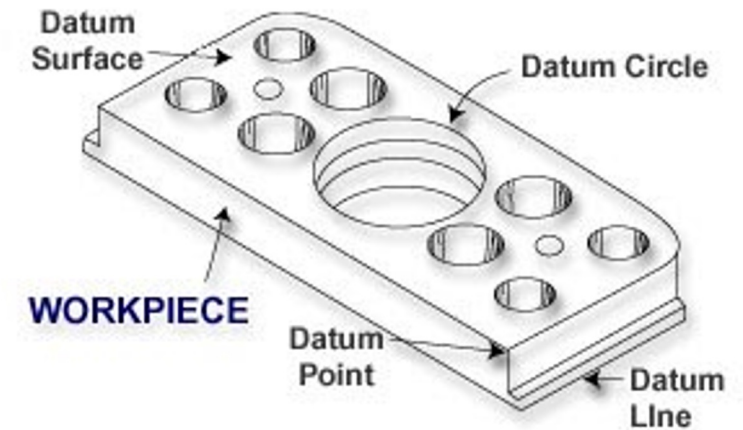
Plus / Minus Tolerancing

- When the part is produced in a manufacturing process, there will be errors.

- Even though most errors are undetectable to our eye, the variations can be picked up using precise measurements such as a CMM.

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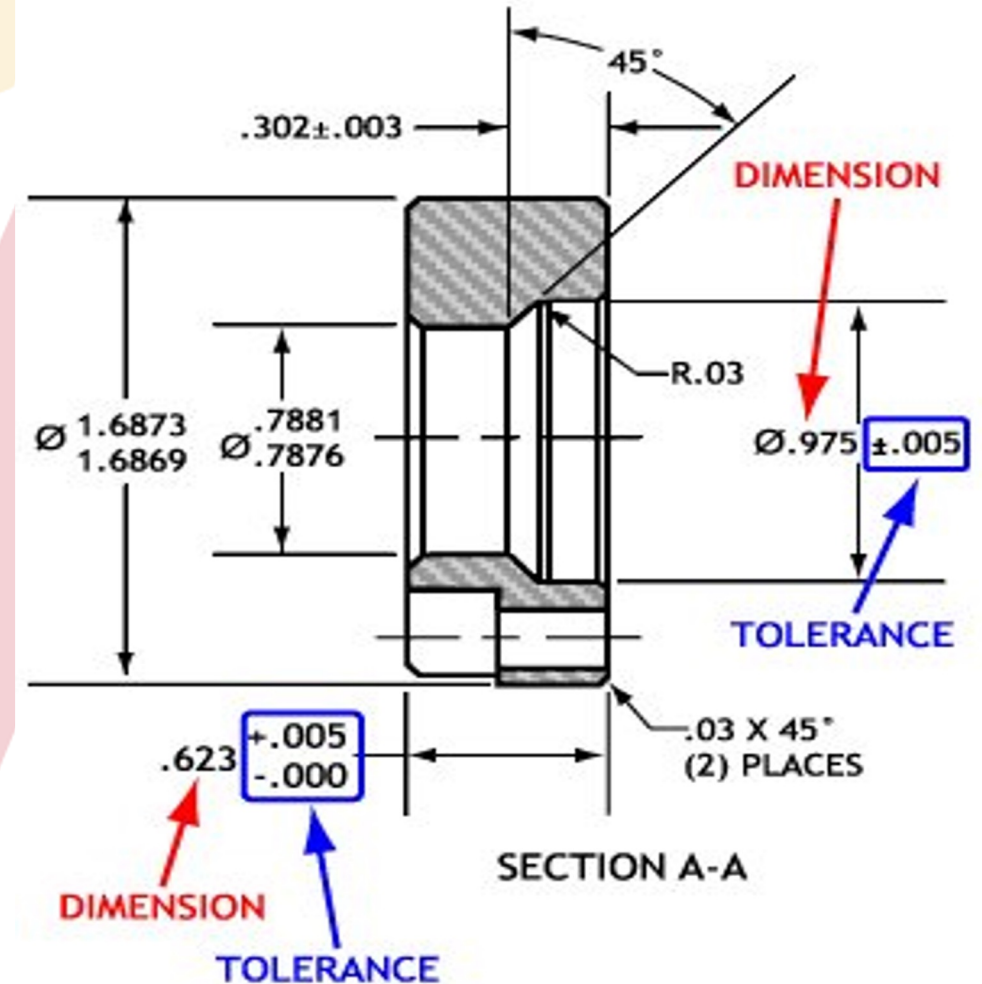
Manifold vs. Non-Manifold

- Think of it as "Manufacturable" vs "Non-Manufacturable"

- Can this part be manufactured?

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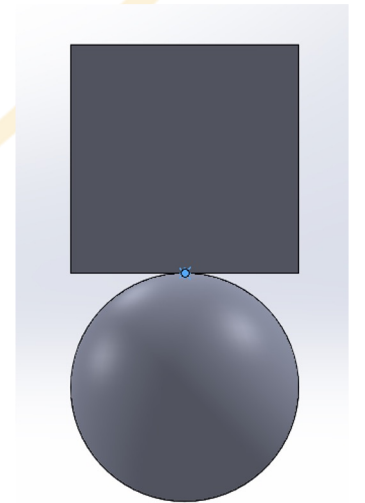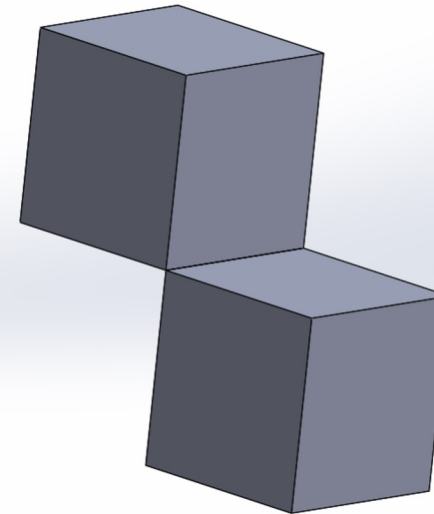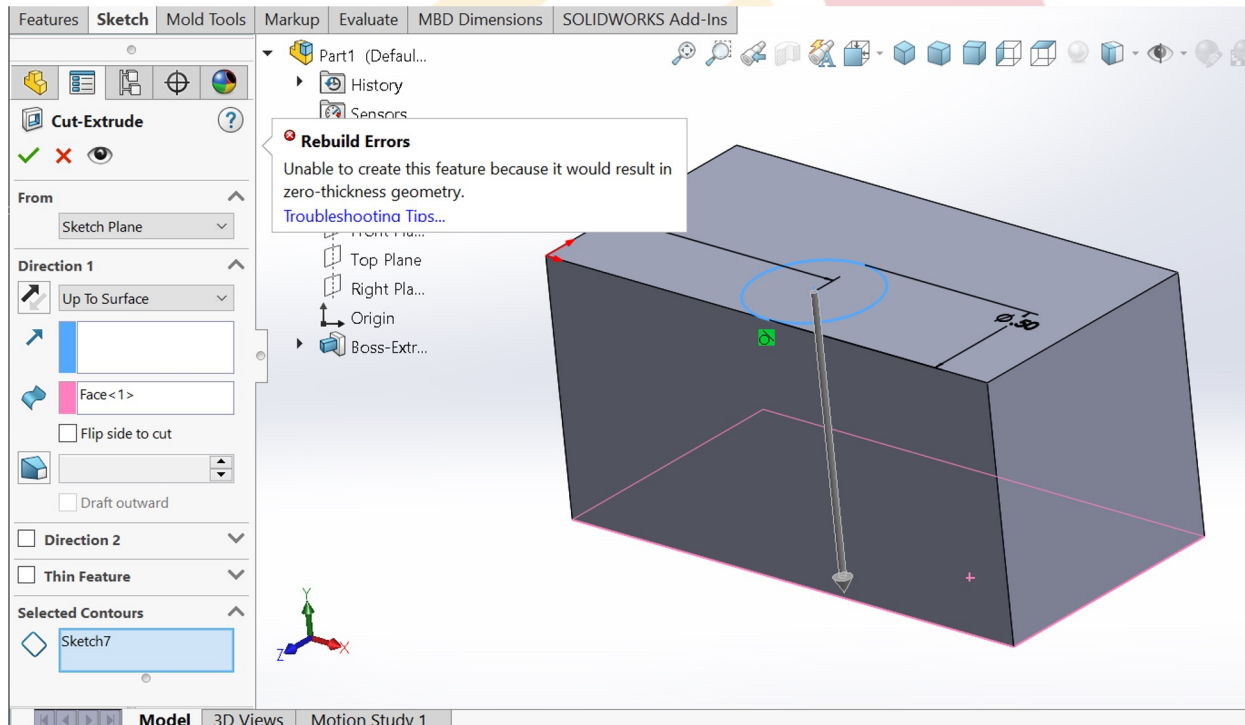
Part Influence on Assembly

- ⊙ Minimize total parts

- ⊙ Use as many standard components as possible

- ⊙ Custom parts increase manufacturing cost

- ⊙ Design parts in a modular fashion

- ⊙ Integrate common parts across product lines

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Assembly Design

⊙ Bottom-up Design

- Traditional method

- Parts are designed first then inserted assembly and mated into position

- Ideal for previously constructed and standard parts

⊙ Top-down Design

- Referred as "in context design"

- Parts' shapes, sizes, and locations designed can be designed in assembly

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Activity

- Complete the Lesson 2: Assemblies tutorial

- Assemble the Vise

  - If your parts do not fit correctly, use the parts that are shared with you to make the assembly

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Vice Assembly