Solid Edge Building Brick Tutorial
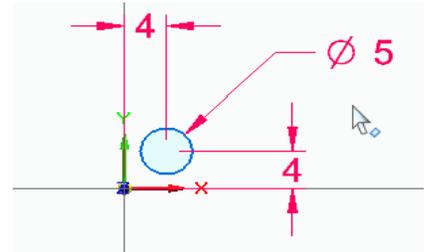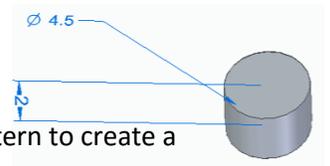
- Start by creating a NEW part file using a Metric Part template
  - Draw a Ø 5 mm circle on the Top plane (x,y plane) with its center located 4mm x 4mm from the origin point of the base coordinate system.

- **Extrude** the region 4.0 mm to create a cylinder
 - Modify the diameter to 4.5 mm and the height to 2.0 mm

- Select the cylinder in the graphics window or from the Pathfinder and select pattern to create a **Rectangular Pattern**
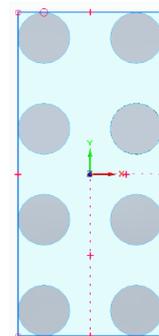 - Select the fixed option

  - Select the 2x4 count
  - Distance should be 8.00 mm in both directions
  - Redefine the origin for the pattern to keep centered on the base coordinate system by using the **Rectangular- Reference Point** Command
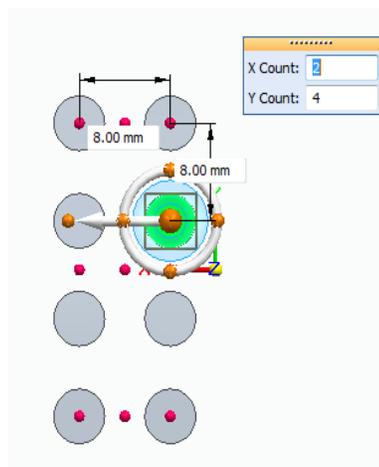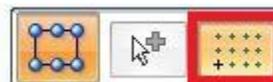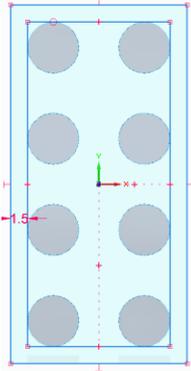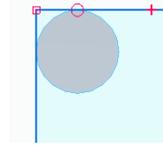
- From the top view, sketch a rectangle by center and make tangent to the outside edge of the cylinders
  - Click to place

- Manually create a [tangent](#) relationship to the top silhouette point of the initial cylinders

- [Offset](#) that rectangle 1.5 mm to the outside

- Use the **[extrude command > chain option](#)** to extrude the rectangle downward 10 mm
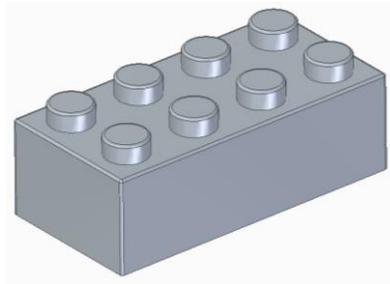
- Delete the sketch
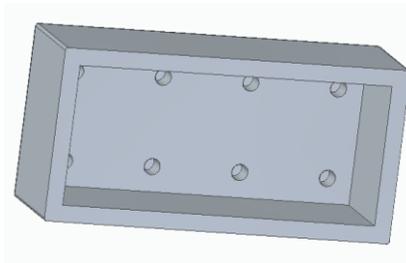
- Add [0.25 mm rounds](#)
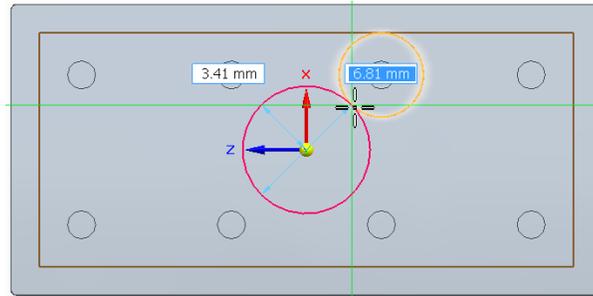 - Use **All Rounds** selection option to pick the part to select outside edges
  - Before accepting the selection, change to **Face** selection and deselect the bottom face
  - Accept the selection

- Create a [thin wall feature](#) of 1.5 mm and open the bottom face of the brick

- Sketch a circle on the center of the inside of the brick that will just fit between the bumps.
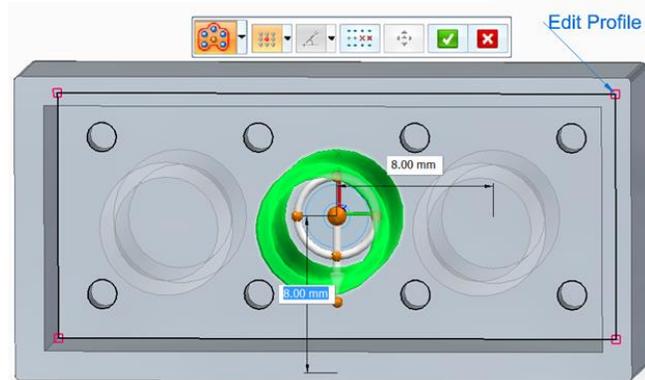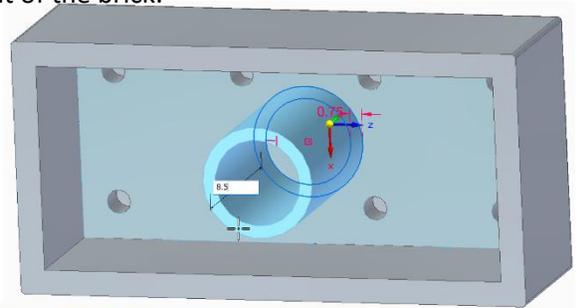

- Offset the circle 0.75 mm
  - This will have a thinner wall section to avoid sink marks on the outside of the brick during molding.

- Extrude the ring region between the circles to the same height of the brick.

- Select the last protrusion and create a **FILL Pattern**

  - 8.00 x 8.00 mm to add one on either side

- Sketch a Text profile on top of one of the bumps
  - F3 to lock to the face
  - "EDGE" in Comic Sans font that is 1.00 mm tall
  - Use the center option for the anchor point from the Quick Bar
  - Place out in space

- Select the text sketch from the Pathfinder to get the steering wheel on the center anchor point.
    - Pressing the SHIFT key, select the plane in the center of the steering wheel twice to flip it in the plane of the sketch
    - Select the plane and drag the sketch to the center of a bump

- Use **Extrude > Chain** selection to extrude the text .10 mm upward

- Edit the initial pattern
    - Add the last text protrusion to the select set
    - Select the matching instance for the parent location for the text
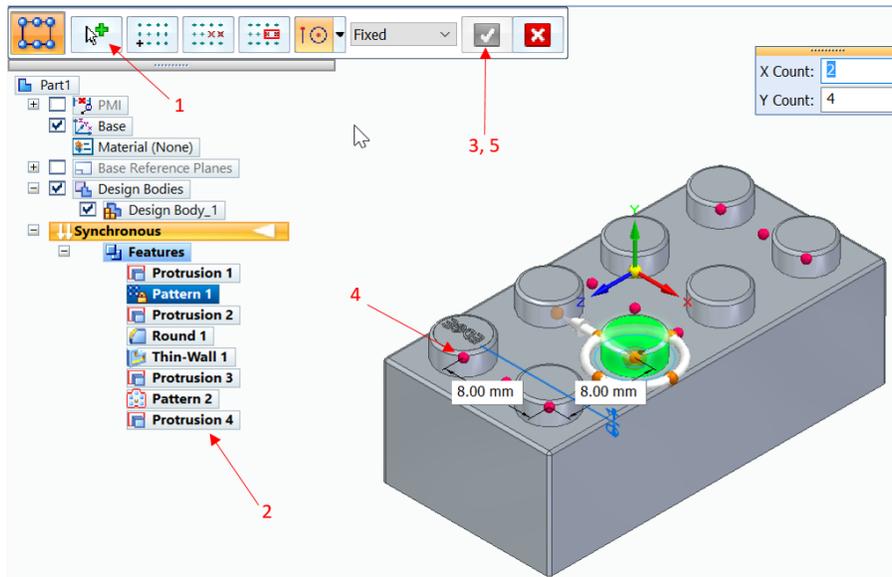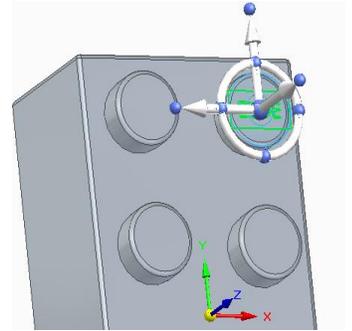
- [Assign ABS plastic](#) to the part

- [Save](#) as 2x4 BRICK.
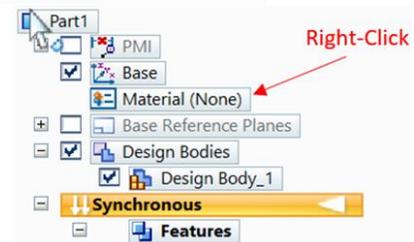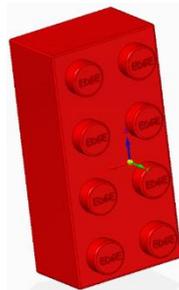
Before Tutorial

Select the following link to install the free Siemens [Solid Edge 3D CAD software](#) for your classroom ([www.siemens.com/plm/solid-edge-highschool](#)).   Students can download and install their own free copy of [Siemens Solid Edge](#). ([www.siemens.com/plm/solid-edge-student](#)).

After Tutorial

Help your students improve their 3D Spatial Thinking and Creativity with more examples on the [GearupU website](#). Developed by a Utah State design and engineering teacher focusing on STEM to STEAM, GearupU exposes students to a world of amazing patterns, shapes and artistic designs and gets them excited about STEM. Students with no background in 2D or 3D design should start with Class 1.