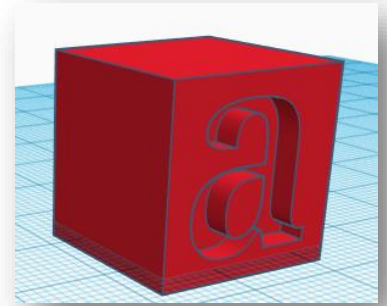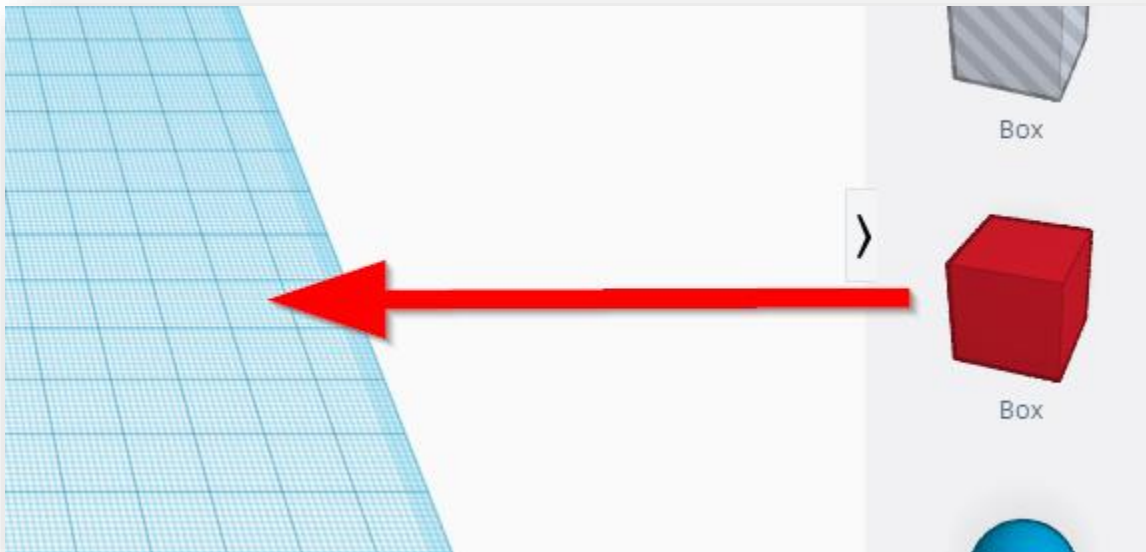# Creating Braille Blocks in TinkerCAD
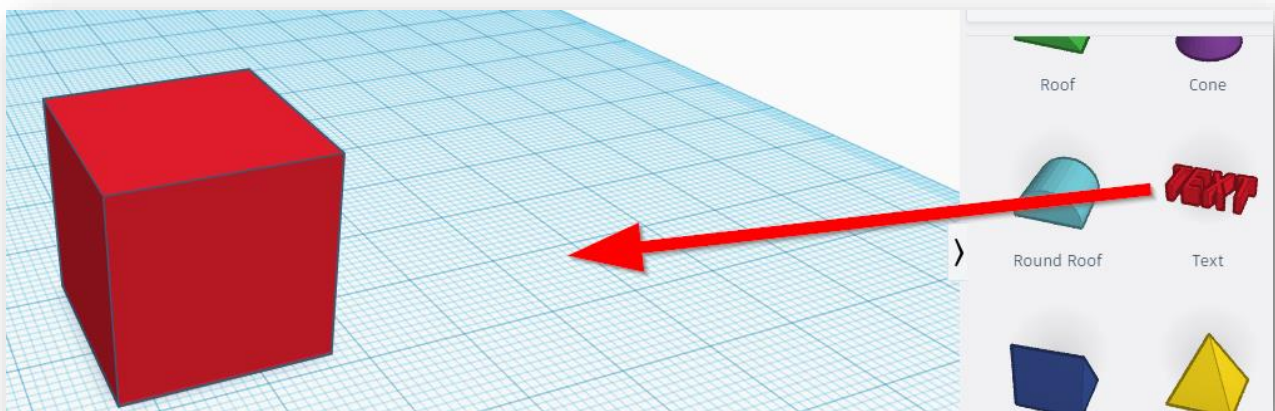
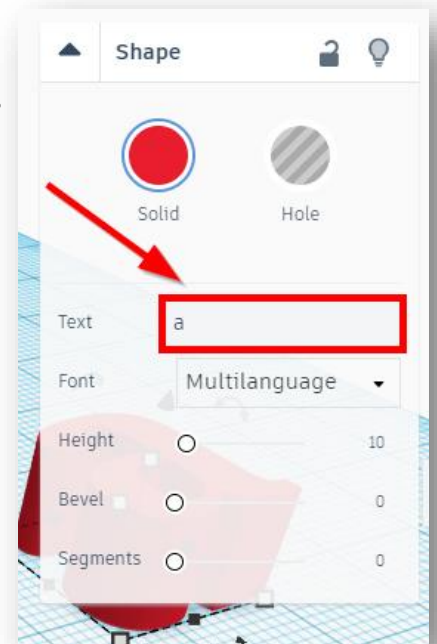**Goal**: *To create a letter recessed (set into) a block*

1. Drag and drop the **Box** onto the **Workplane**. The box will already have dimensions of 20 mm x 20 mm x 20 mm. (Keep these dimensions)
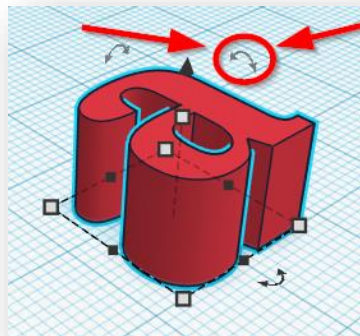

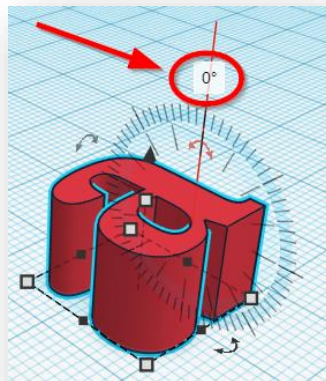2. Select **Text** from the right and drag and drop it in the Workplane

3. Highlight the text and type in the letter of your choice.
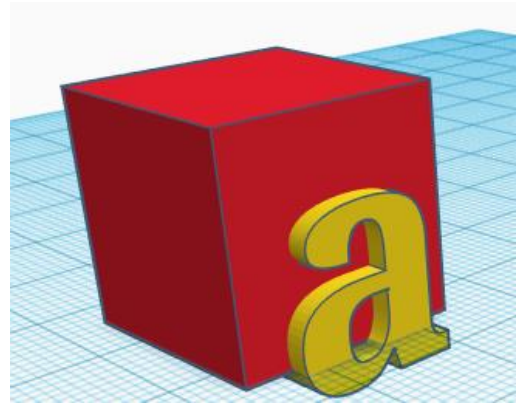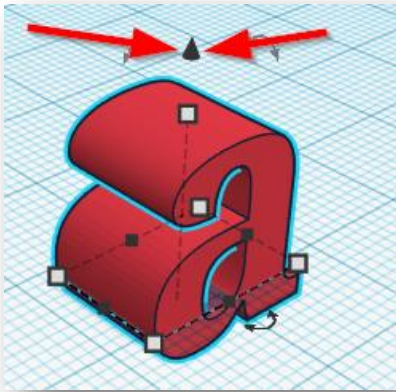
The letter **must be lowercase**.

4. When the letter is selected, you'll see white boxes, black boxes, curved arrows and a black cone, these are called **handles**. To rotate the letter to make it standing click on the curved arrow at the middle of the letter.
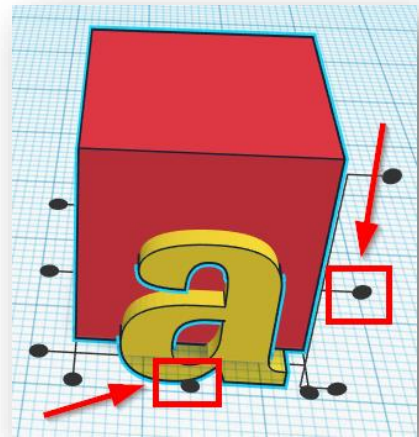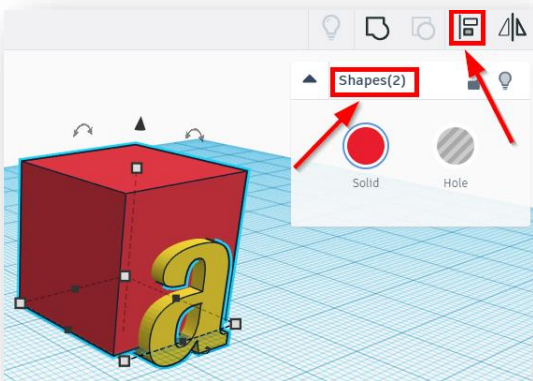
5. After clicking once on this curved arrow, change the **degree measure to 90°**.
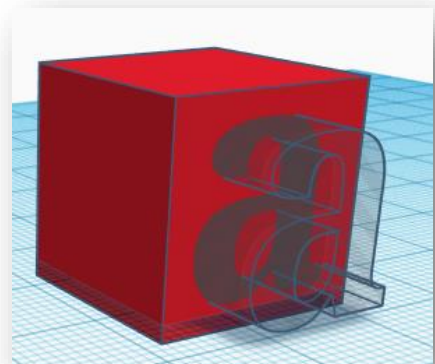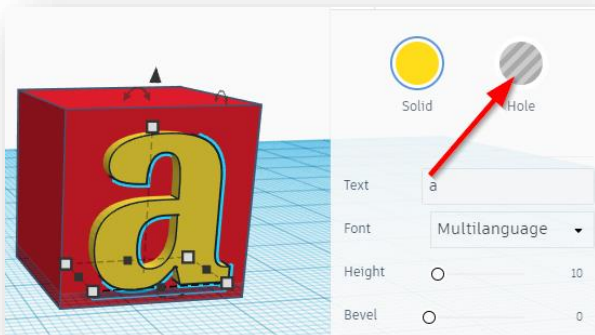
6. Position the letter to be on a side of the box. Use the **black cone** to move the letter up and down.

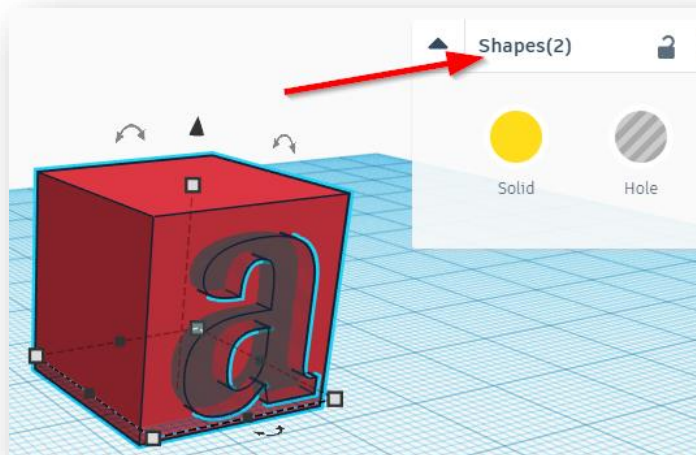7. Select both shapes by clicking on one shape, hold shift, and select the second shape. At the top right where the color of the shape is, it will show that two shapes are selected, **Shapes(2)**. Click the **Align** button ( ), and click on both of the highlight dots below. This will center the letter onto your box.
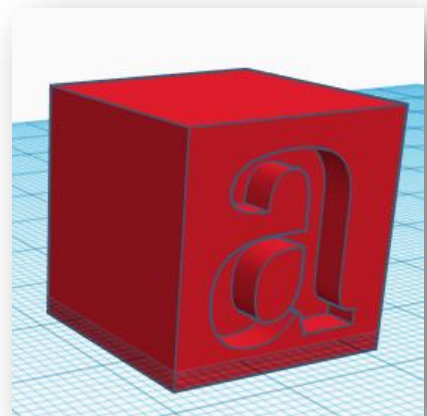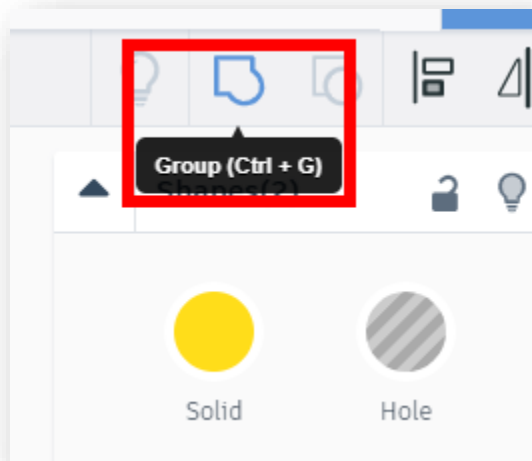

8. Select only the letter and click on **Hole**. This will make your letter transparent.

9. Select your letter. While holding down **Shift**, select the box. You'll see **Shapes(2)**, if done correctly.
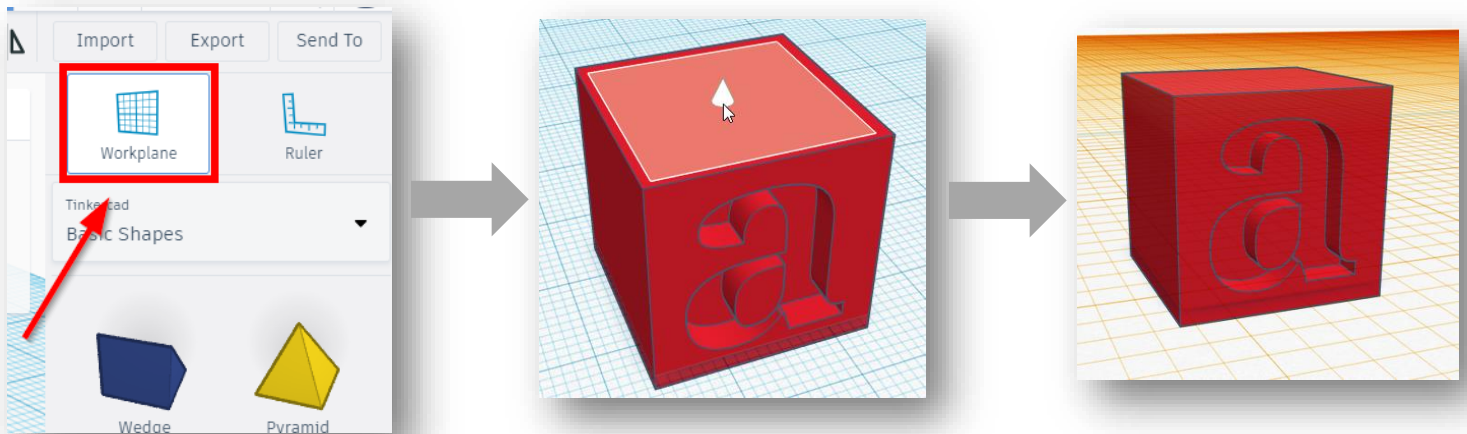

10. Click on the **Group** button to group your letter (hole) and box together. This will cause a recessed letter in the side of your box where the letter was inserted.
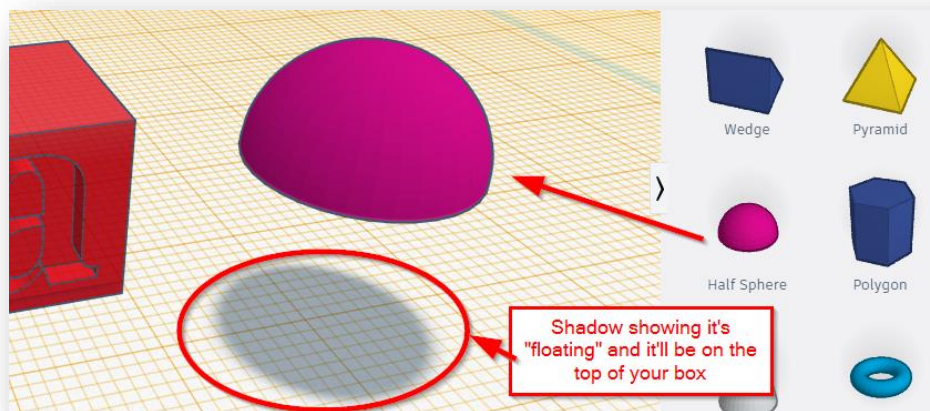
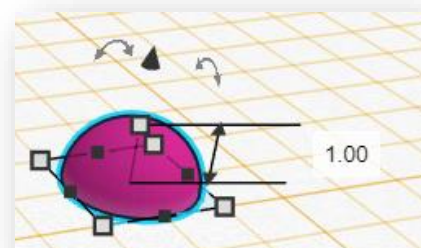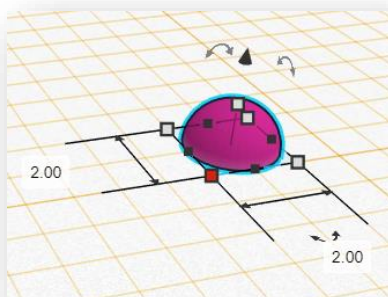## Goal: *To create raised dots on a block to create a letter in braille*

1. To easily get the dot on top of your box, click on the **Workplane** button at the top right and click on the top of your box. The workplane will now be orange and on top of your box.
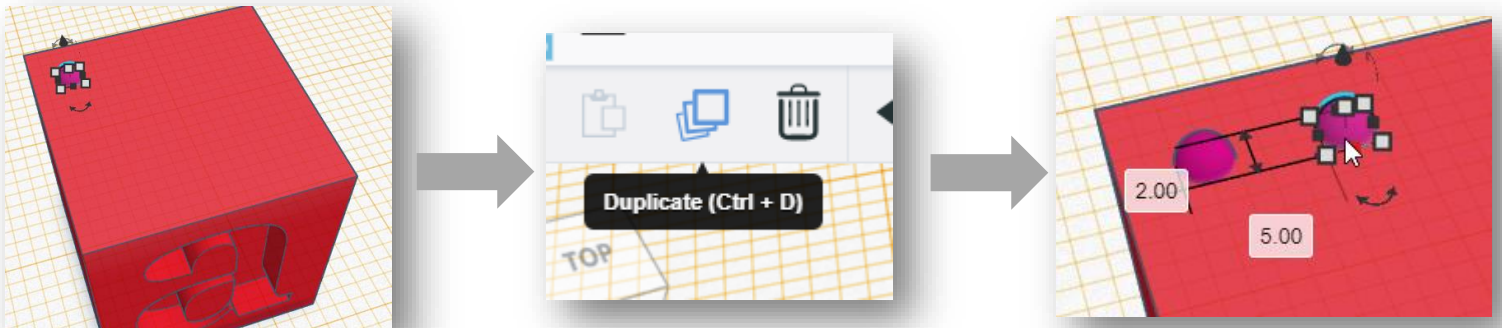

2. Drag and drop the **Half Sphere** onto the **Workspace**.

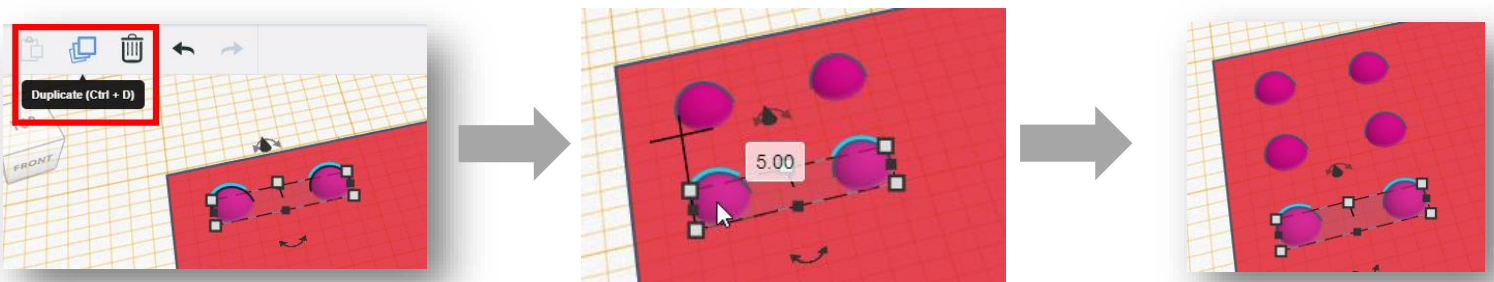Shadow showing it's "floating" and it'll be on the top of your box

3. Resize the half sphere using the handles. The length and width needs to be 2 mm each and the height is 1 mm.
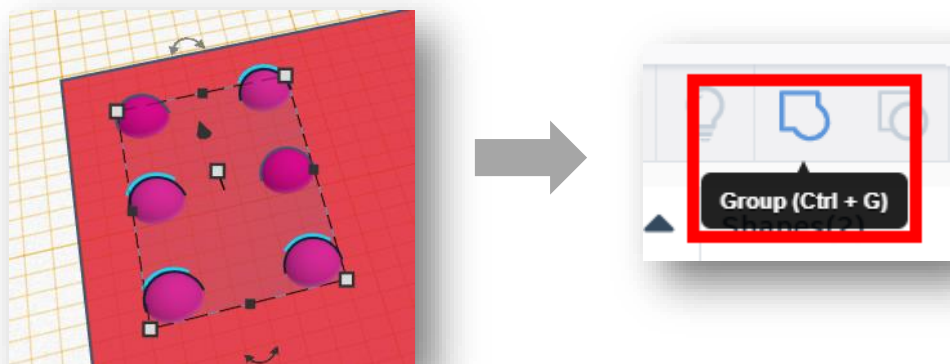
4. Move your braille dot to the top left part of your box. Click the **Duplicate** button. Click and hold on the braille dot, the new copy is right on top. Hold **Shift** on the keyboard and drag the dot until it reads 5 mm away from the first dot.
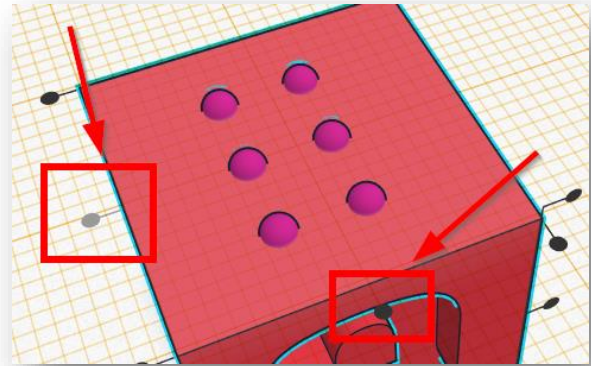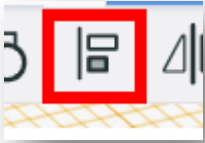

5. Select both dots by selecting one, holding **Shift** and selecting the second dot. Select **Duplicate**. While holding **Shift**, click and drag one of the dots (2 dots will move) 5 mm down. Right after you move the dots, both of the new dots will be highlighted. Click on the **Duplicate** button again, this will make a 3rd row of dots.
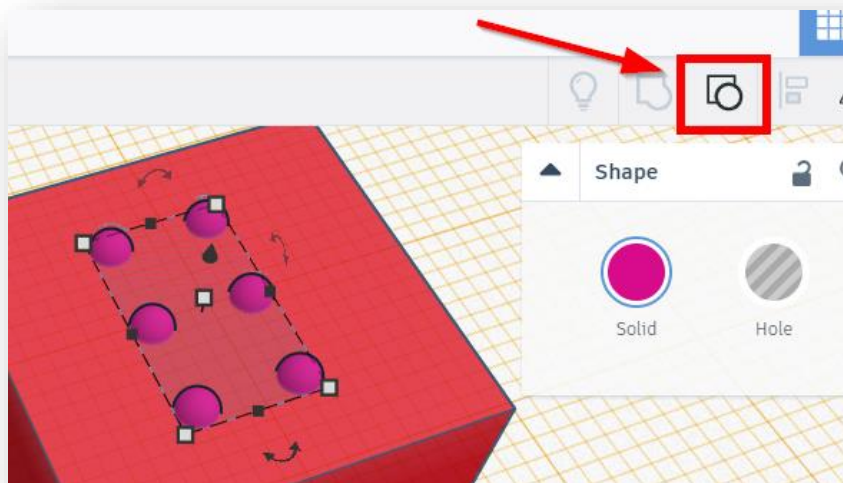

6. Hold **Shift** and select all the dots. Select **Group**.

7. While the dots are still selected, hold **Shift** and select the box. Select the **Align** button. Click on the two highlighted dots, shown below.

8. Click on the braille dots and click the **Ungroup** button.

9. Delete the dots that **do not belong with the letter you chose**. Select **everything** then click group to ensure nothing moves.