Create and Play Mini Sudoku!
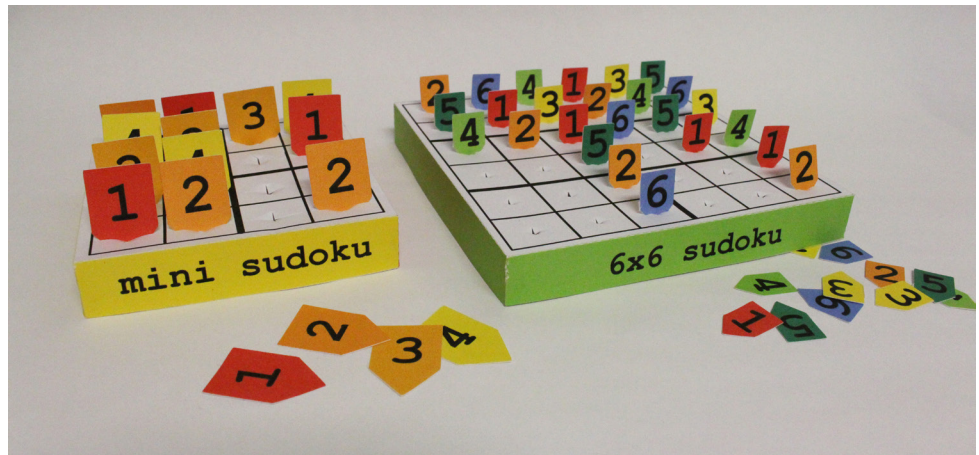
Mini Sudoku is an easy-to-play puzzle game that incorporates addition, deductive reasoning, and trial-and-error. The goal of the puzzle is to fill the game board's empty spaces with numbers, so that each row, column and quarter of the board contains the numbers 1 through 4 only once, and add up to the number 10.

Beginning in Fab@School Maker Studio, create your game board and play by yourself or working together with a friend.

Objectives

- Students use Fab@School Maker Studio to print and fabricate their own Mini Sudoku game board to play and experiment with.
- Students can use their design skills to experiment with modified board designs and brand new games.

Big Idea

Perseverance is critical to solving problems.

Driving Question

If you are ever really frustrated, is it OK to quit?

Learning Standards

CCSS Math

- CCSS.MATH.PRACTICE.MP1
- CCSS.MATH.PRACTICE.MP2
- CCSS.MATH.PRACTICE.MP4
- CCSS.MATH.PRACTICE.MP5
- CCSS.MATH.PRACTICE.MP6
- CCSS.MATH.PRACTICE.MP7
- CCSS.MATH.PRACTICE.MP8

Step 1 - Print and Fabricate Mini Sudoku

1. From the **Main Menu** screen, select **Ready-Made Projects** and choose the tab for **3D Stuff**. Locate the **Mini Sudoku** file and select **Open**. The Mini Sudoku game board and pieces will open in the **Edit Screen**.
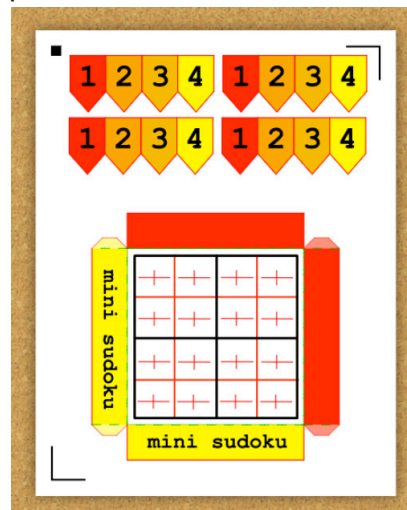
2. Click the **Print** icon to open the print dialog. Select the registration marks for your model of Silhouette digital fabricator. Under **Pages**, specify a page range of **1 to 1** so you are only printing the Mini Sudoku board and pieces. Click **Save to PDF**.
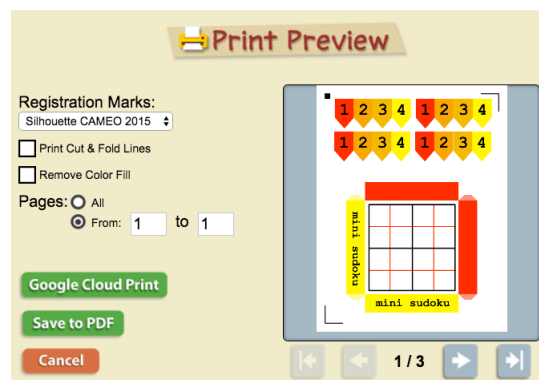
3. Open the saved PDF file on your computer and open the print dialog. Make sure the scale is set to 100%. Print the PDF onto cardstock paper.

4. Click the **Fabricate** icon. Be sure the FabPrintServer app is running and your digital fabricator is connected, turned on, and selected at the top of the Fabricate dialog. Make sure **Use Registration Marks** is selected. Place the printed cardstock on the sticky side of the mat as shown in the dialog. Follow the directions and click **Send to Cutter**.
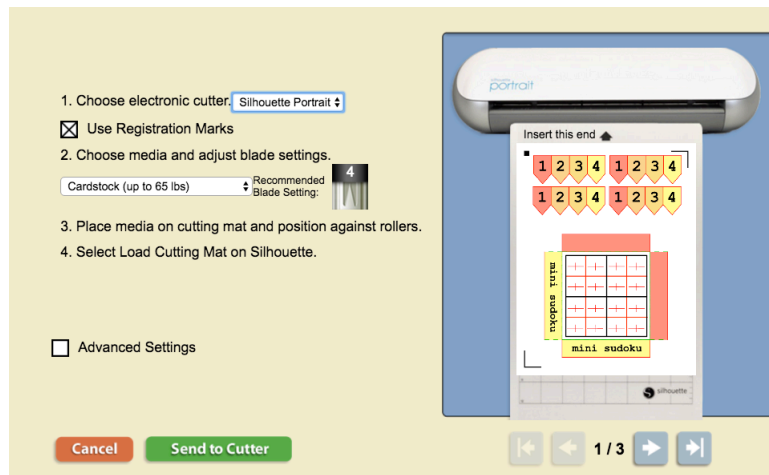
Part 2 - Assemble Mini Sudoku

1. When the project is done fabricating, unload the mat and paper, and peel the game board and pieces from the mat.

2 . Fold all perforated edges on the game board. Glue or tape the small tabs onto the short edges on the side of the game board to construct the corners of the board.

3. Press the tip of a pencil or pen into the plus-shaped slits on the top of the game board to open them slightly. This is to allow the game pieces to be easily inserted into the game board. You are now ready to play Mini Sudoku!

Fab@School Maker Studio Tips

Magnetize: If you want shapes to automatically snap and create fold lines when you drag them together, be sure **Magnetize** tool is on. To learn more about the tool, have students watch the Fab@School Maker Studio Shapes Tutorial video.

Cut Fold Tab: Use the **Cut Fold Tab** tool on the left toolbar to change lines and shape edges into cuts, folds, or tabs. To learn more about cut fold tabs, have students watch the Fab@School Maker Studio Cut Fold Tab Tool Tutorial video.

Math Tools: Try using math tools like the **Grid**, **Ruler**, and **Protractor** on the left toolbar to measure elements of your design. You can also display the dimensions of a selected object by opening **Settings** on the top toolbar, and selecting **Show Dimensions** in the **Genera**l tab.

But Wait, There's More

Try the 6x6 Sudoku Challenge by making a larger game board.

1. Click the **Next Page** arrow on the Page Navigation bar at the bottom of the screen to view the second and third pages of the Mini Sudoku file. The second page contains the 6x6 Sudoku game board, and the third contains the 6x6 Sudoku game pieces.
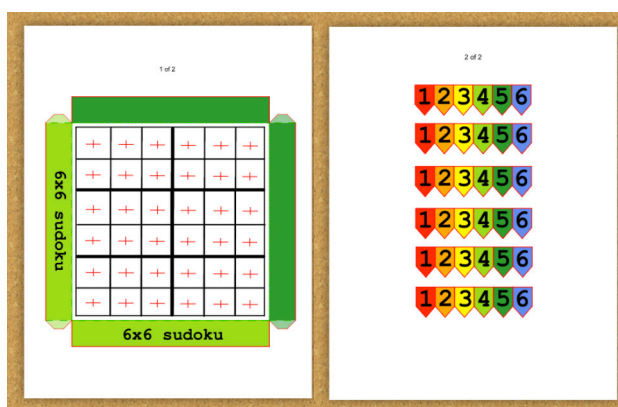
2. Click the **Print** icon to open the print dialog. Select the registration marks for your model of Silhouette digital fabricator. Under **Pages**, specify a page range of **2 to 3** so you are only printing the 6x6 Sudoku board and pieces. Click **Save to PDF**.

3. Open the saved PDF file on your computer and open the print dialog. Make sure the scale is set to 100%. Print the PDF onto cardstock paper.

4. Click the **Fabricate** icon. Be sure the FabPrintServer app is running and your digital fabricator is connected, turned on, and selected at the top of the Fabricate dialog. Make sure **Use Registration Marks** is selected. Place the printed cardstock on the sticky side of the mat as shown in the dialog. Make sure that the preview is displaying the same page as the loaded cardstock. Follow the directions and click **Send to Cutter**.

Can you make a game board that can store the game pieces inside?
The game board almost looks like a box, doesn't it? How can you change the game board so it can store the pieces inside? Have fun and experiment!

Can the game board be even bigger, or different?
A normal Sudoku puzzle has a 9x9 board. It'll take a lot of pieces, but can you make one? Can you change the game board in a way that makes the game easier or harder?

Create Sudoku challenges for your friends to try.
Sudoku puzzles normally have "fixed" numbers than can not be removed during play. Can you make Sudoku challenges by placing a few fixed numbers at the start of the puzzle and then complete the puzzle? Create challenges for your friends to try!