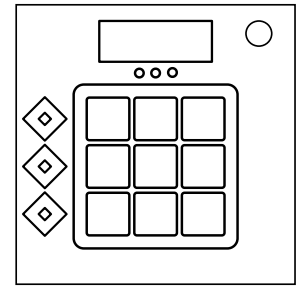# On the Subject of Scratch-Off

Increase your odds of winning by holding the card upside down!

There will be a 3×3 grid of spaces besides three stage LEDs and three colored diamond LEDs. The spaces can be scratched to reveal a symbol beneath them. 7 spaces will contain cash, the other 2 contain skulls.

To solve the module, scratch off at least three spaces which contain cash and press the submit button for three stages. Scratching a space with a skull will incur a strike and reset the grid.

If more than three cash are scratched off, the module will progress one additional stage for each cash after the third.

The locations of three of the cash and one of the skulls can be obtained through the serial number and the three colored LEDs.
To obtain the *initial* positions of the skull and cash, take the digital root of the serial number digits. If this yields zero, use 1. Use the grid in that position in reading order in the below table to obtain the starting positions.

Then, for each LED from top to bottom, apply a transformation to these 4 objects. After all three color operations have been performed, the skull and money are in these resulting positions on the module.

<u>Color Transformations:</u>

- **Red:** Rotate 90° clockwise about the center.
- **Orange:** Rotate 90° counter-clockwise about the center.
- **Yellow:** Reflect around the x-axis.
- **Green:** Reflect around the y-axis
- **Blue:** Move each position one down, wrapping from bottom to top.
- **Purple:** Move each position one right, wrapping from right to left.