

Brainstorm

*Make sure to include any sketches that might be helpful to help you remember your brainstorming process. You can make a rough draft map if the visual helps your brainstorming process. **The paint colors you specify here are final, so choose carefully!!***

What ideas do you have for theme? What colors, symbols, images, songs, characters, etc go with your theme? How do you want to include the theme elements?

Ideas for Pinball Game Name:

What color do you want the main part of your table to be? What color do you want your flippers to be? What accent paint colors will you want (for hand painting)?

What mechanical components do you want to use? Do you want ramps? Traps? Targets? Bumpers? Holes? Spinners?

What electronic components do you want to use? How? How do you want to make use of regular, single-color LEDs? Multicolor LEDs? Piezo sensors? Switches?

What will be your scoring mechanism? Will you use buttons? Time? Sensors? How? Will you only add to the score, or also subtract? Is there a way for a player to “beat” your game?

How will game play proceed? How many tries does a player have to launch the ball? How will they know when the ball is dead? How will they know when the game is over?

What other ideas do you have?

Feature Proposal

Your pinball table can have up to 8 features, consisting of one or more sensors and the events they trigger. Possible sensors are: long wire switches, short switches, rolling switches, contact switches, and piezos (used as analog or digital).

Some possible events to consider: Adding points, subtracting points, adding a life, subtracting a life, turning on or off individual lights (red, yellow, green, or blue), changing the colors of RGB LEDs, turning on a patterned light sequence, starting a tune, playing a sound effect.

	Type of Sensor	What happens when it is triggered?
a		
b		
c		
d		
e		
f		
g		
h		

Draw a map of your pinball machine. It does not have to be pretty, but indicate where all electronic, mechanical, and large decorative components are. Don't forget the backboard!

In engineering, it is often necessary to prioritize some features of a project over others. Label each feature (both on the table and on the map) with a priority number. When you start prototyping, you will add features in order of priority.

Pin Reservations

Assignment	PIN	PIN	Assignment
Speaker	13	12	Shift Register Clock
-	3V3	11	Shift Register Latch
-	REF	10	Shift Register Data
	A0	9	Scoreboard Data
	A1	8	Scoreboard Clock
	A2	7	
	A3	6	
	A4	5	
	A5	4	
	A6*	3	
	A7*	2	
-	5V	GND	-
	RST	RST	Reset
-	GND	RX0	-
-	VIN	TX1	-

*not usable as digital; analog-only.

- All analog (A) pins can only be used as inputs.
- Digital pins may be used as inputs or outputs.
- RX0 and TX1 can be used as digital pins in the absence of serial communication.

Supply Request

	Electronic Supplies	Mechanical and Decorative Supplies
a		
b		
c		
d		
e		
f		
g		
h		