Challenge Overview:

Design a mechanically functional pinball machine using your choice of CAD software. It must be designed for use with a standard 1-1/16" diameter pinball. You will also choose and apply a creative theme to your pinball machine, with game components to match your theme. Good luck!

Design Requirements:

The 3D modeled mechanical pinball machine must include the following components:

- **(1) - Playfield** (angled playing surface) **11" x 17" is recommended** (you may make it bigger if desired).

- **(1) - Ball plunger** (spring-loaded rod used to launch pinball)

- **(1) - Ball launching lane** (lane that plunger launches ball into the playfield)

- **(2) - Flippers** (levers that are used to hit ball back into playfield)

- **(2) - Flipper buttons** (Mechanically controls flippers)

- **At least (3) - Obstacles** (e.g., bumpers, ramps, spinners, gobble holes…)

- **At least (1) - Drain** (area where ball goes when it is lost behind flippers)

- **At least (1) - Reload passageway** from drain to ball plunger start area.

Submission Requirements:

Your final submission must include the following:

- Detailed multi-view drawing of assembled 3D modeled pinball machine.

- Detailed multi-view drawings of the main pinball game components.

- Include all necessary dimensions and annotations.

- Include a brief description of the chosen theme and themed components.
- *Email layout drawings as a .pdf file to coordinator (Ed Garner egarner@falconerschools.org) prior to event **OR** bring drawings to event.

Going Beyond (Optional additions, not required for submission):
- 3D print components and construct the pinball machine.
- Make the game fully functional with an integrated electrical scoring system (e.g., Arduino, VEX, Sparkfun, etc.).

CAD Design Challenge - Pinball Wizard: Grading Rubric:

Grading Criteria	4	3	2	1
Design Requirements	Meets all design requirements.	Meets most design requirements, with minor issues or missing features.	Meets some design requirements, but with significant missing components.	Does not meet minimum requirements, or lacks critical components.
Submission Requirements	All submission materials are complete, including necessary annotations and dimensions.	Most submission materials completed, but some are unclear or disorganized.	Some submission materials completed, some annotations and dimensions.	Submission is missing major features, no annotations or dimensions.
Functionality / Playability	Mechanically functional components / designed with usability in mind.	Mostly mechanically functional design / has some usability features.	Not mechanically functional / has some usability features.	Has no mechanical or usability features.
Creativity	Highly creative theme and component design.	Creative theme and component design.	Basic creativity, minimal effort to develop unique theme or features.	No game theme.
Quality of 3D Models	Models are highly detailed, accurate, and well designed.	Models are well detailed, with minor issues of detail and accuracy.	Models are adequate but lack refinement or have noticeable errors.	Models are incomplete or poorly assembled.