

Name: \_\_\_\_\_ Period: \_\_\_\_\_

## Design a Carnival Game!

KP's Arcade is hosting a carnival at JHS this Friday, and YOU need to help provide the games. The main attraction will be Penny Toss, but if you have other ideas for non-spiky throwing or spinning games that can be placed on a desk or the floor, Ms. Armstrong will hear these out.

**Your Task:** Design and create a game board for Penny Toss

**Timeline:** one and a bit days for design and creation of game board, one-ish day for testing/playing

### **Project Guidelines:**

- Total area of the game board must be between  $70 \text{ in}^2$  and  $93.5 \text{ in}^2$ . (That's the area of an  $8.5" \times 11"$  sheet of paper)
- Board design must include at least one trapezoid, one quadrilateral, one triangle, and one circle. Bonus for a regular polygon with 5 or more sides as well as other creative/interesting shapes.
- Board can be divided into as many sections as you'd like but should be labeled 1, 2, or 3 (like a dart boards). Landing a penny in Section 1 is worth 5 points, a penny in Section 2 is worth 20 points, and a penny in Section 3 is worth no points.
- Players should have a 30-40% chance of landing a penny in Section 1, a 10-20% chance of Section 2, and the remaining chance for Section 3. This is to keep scoring relatively consistent across carnival games.

**Final Product:** Each individual will submit 1) their game board, 2) area calculations for the main shapes chosen for the board, 3) calculations for the theoretical probabilities of each section, and 4) experimental probability data and calculations for their board.

### **Grading:**

	Your Score	Max Score
1. <b>Game board</b> includes required shapes, meets probability guidelines, and is accurately drawn and labeled.		1
2. <b>Area calculations</b> are provided for each major shape on game board with area formulas, shape dimensions, results labeled with accurate units.		1
3. <b>Theoretical probability calculations</b> are provided for each section of the game board and include all formulas used and results clearly labeled.		1
4. <b>Experimental probability data and calculations</b> are submitted for 20 random trials for penny toss.		1
<b>Final Score</b>		4