## Colorado Science and Engineering Fair

## 2023 <br> Team Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Redefining Basketball Bank Shots by: Applying Geometrical Mathematical Models
Team Leader's Name: Joshua Wells
Team Member 1: Zander Braun Team Member 2:
School and City: Weldon Valley School, Weldona
Sponsor's Name: Krista M. Dunn
Category: Mathematics \& Computer Sciences
Division: Junior (6th - 8th grades)
Abstract (250 words or less):
The purpose of this investigation was to discover which angle on the basketball court would be the best location to make the most bank shots and if doing a mathematical analysis would be a good way to test this experiment. We hypothesized that the 45 degree angle would be the most successful angle.

This experiment involved three steps: creating a scale size model, analyzing using geometry and algebra, and testing it out on a real court. Our control was the distance of the player shooting the ball which we used 3 meters from the center of the basket for angles 90, 75, 60, 45 and 30 degrees. The 90 degree angle was our baseline angle where all relative probability was compared against for results.

The data collected did not support our original hypothesis. The scale size model showed that the 30 degree angle had the best probability and our geometrical analysis showed that the 60 degree angle had the best probability of bank shots. The real court test also showed that 30-degree angle was the best location for more banked shots.

The findings led us to believe that a mathematical analysis can show which angle on the court helps improve the probability of making a bank shot on the court. Using the results of our study, we feel that shooting at the 30 degree angle will help our team score more baskets!

We hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. We also attest that the above properly reflects our own work.

Team Leader's Signature: $\qquad$
Team Member 1's Signature:
Team Member 2's Signature:

Date:
Date:
Date:

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[^0]:    In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with your Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.

