**SBA Exemplar**

**Project Title:** Designing a Basketball Hoop - Why Use a Circle?

**Introduction:** The purpose of this project was to determine the most suitable shape for a

basketball hoop. The number of goals scored using the traditional hoop was

compared to the number scored using square, rectangular and hexagonal hoops.



**Data Collection:** The area enclosed by the circular hoop was calculated and hoops were made using frames to enclose an area. The dimensions of the frames were calculated to ensure that a standard basketball could pass through each frame.

The area enclosed by a standard basketball hoop is 1641 cm2. Efforts were made

to use dimensions which would give this approximate area. The hoops in the

different shapes were made with the enclosed areas shown.

|  |  |  |  |
| --- | --- | --- | --- |
| Circle | Square | Rectangle | Hexagon |
|  |  |  |  |

**Data Collection Sheet**

|  |  |
| --- | --- |
| Name of Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| ***Shape***  Circle | ***No. of goals*** |
| Square |  |
| Rectangle |  |
| Hexagon |  |

**Presentation Data**: The table below shows the number of goals scored by each student, using

each of the hoops. Each student made 25 goal attempts for each shape.

Hence, there was a total of 300 goal attempts made.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ***Number of Goals Scored*** | | | | |
| ***Student*** | ***Circle*** | ***Square*** | ***Rectangle*** | ***Hexagon*** | ***Total*** |
| Alan | 22 | 14 | 09 | 15 | ***60*** |
| Briana | 20 | 12 | 06 | 10 | ***48*** |
| Chris | 17 | 11 | 04 | 14 | ***46*** |
| ***Total*** | **59** | **37** | **19** | **39** | ***154*** |
| ***% success by shape*** | ***78.7*** | ***49.3*** | ***25.3*** | ***52.0*** |  |
| ***% of scored goals***  ***(out of 154)*** | ***38.3*** | ***24.0*** | ***12.3*** | ***25.3*** |

The graph below shows the percentage of goals scored for each of the shapes*.*



**Analysis of Data:** The data collected from the experiment revealed that of the three students, Alan

scored the most goals and Chris the least. Although some students were more

successful in scoring, for each student, the most goals were scored with the

standard basketball hoop which was in the shape of a circle where the success rate

was 79 percent. Overall, out of the 154 goals scored, 38.3 percent were with using

the circle, 25.3 percent with the hexagon, 37 percent with the square and 24

percent with the rectangle.

**Discussion of Findings/** While it is possible to construct a basketball hoop using many different shapes

**Conclusion:** all shapes will not give the same results. A rectangular shaped hoop is the least suitable shape and the circular hoop, the most preferred.

Hence, in constructing a basketball hoop, the most appropriate shape to ensure success in scoring goals is a circle