

Introduction

Isoperimetric inequality means that: Among all the projects with the small perimeter, the ball has the largest volume. All objects have the same circumference, the disk has the largest area

Problem / Purpose

- Using the same amount of material to build a roof, which shape of a roof will cover the most of the area?

Hypothesis

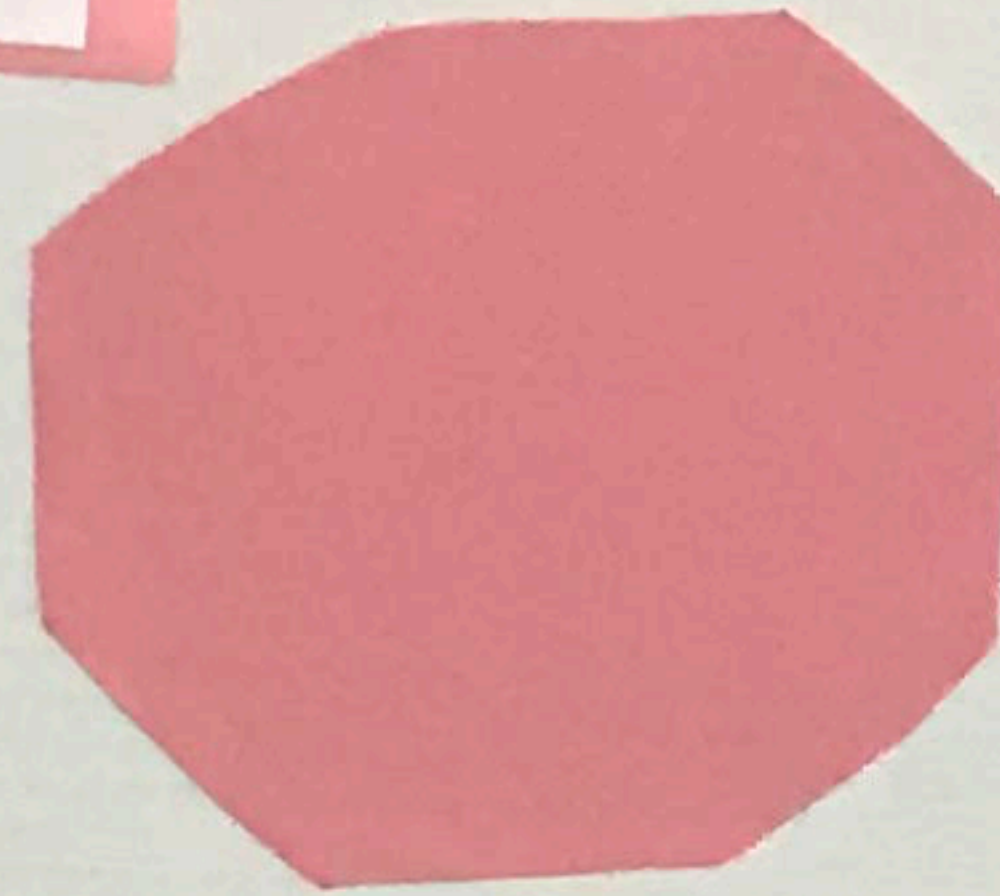
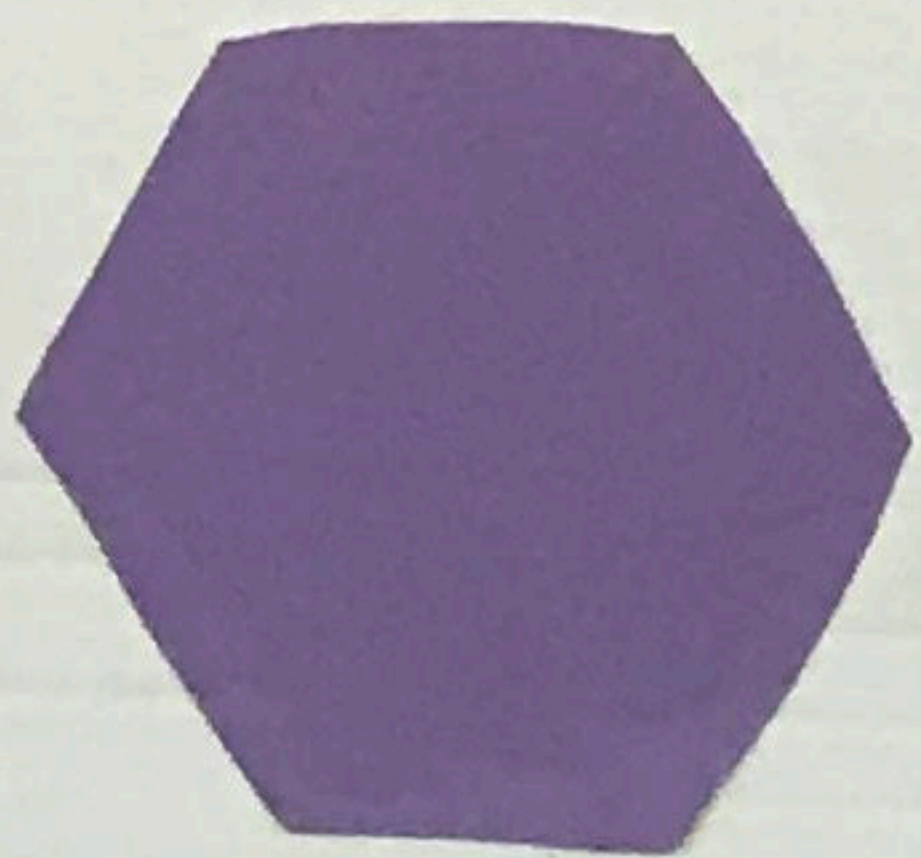
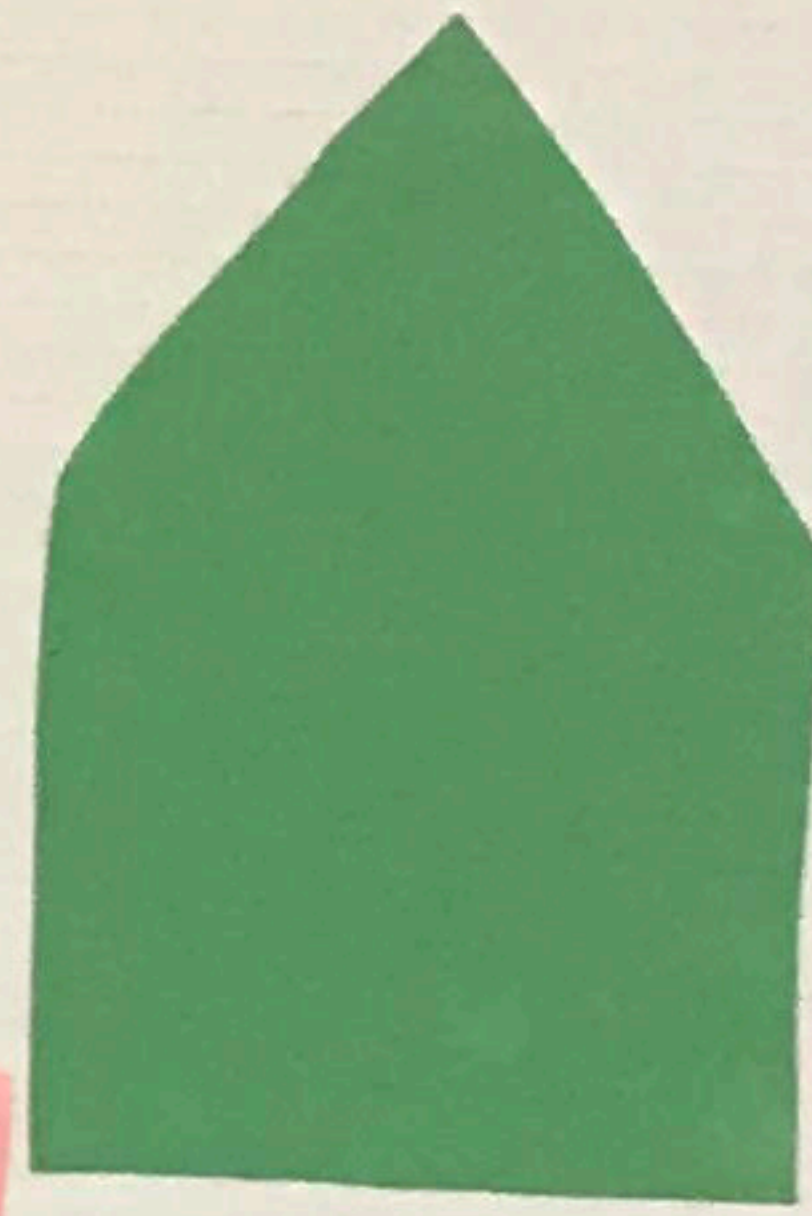
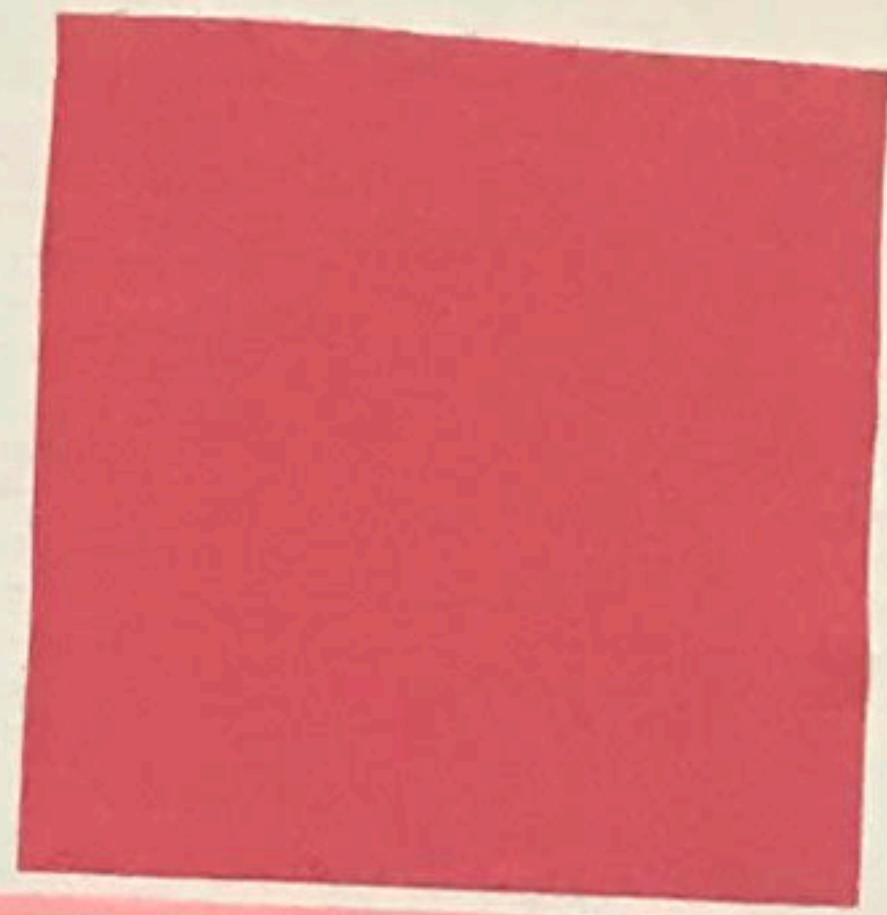
- If I build the roof with a disk shape, then it will cover more area, because the disk has the most area

Materials

Construction Paper
Scissors
glue
Box

Isoperimetric Inequality

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Data Table

Shape of Roof	Number of sides	Area of the roof	perimeter
triangle	3	93.45cm ²	44cm
square	4	121cm ²	44cm
pentagon	5	133cm ²	44cm
hexagon	6	138cm ²	44cm
octagon	8	146cm ²	44cm
disk	infinite	154	44cm

Procedure

- Gather all necessary materials
- Use the scissors to cut different types of regular polygons and keeping the perimeters
- Compare the area of the polygons
- Put the shapes in different roof structures
- make the models of roofs

Variables

- Independent - The shape of the roof-number of sides of the roof(Disk, triangle, square, pentagon, hexagon, octagon)
- Dependent - area of the roof
- Constant - same amount of material and perimeter of the shape

Conclusion

- My hypothesis was correct, the disk has the largest area
- This is true because the more sides, the more area. The disk has no sides, but infinite. So, it will always have the largest area.

Result

- The more sides the larger the area
- Also you can see that the disk has the largest area so, if you want to build a roof, then you might want a circle shape.