

Creative Educational Experience



Topic: Mathematics

Title: Folding Surface Area (5th – 8th grade)

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Activity: This activity runs about 60 minutes and builds intuition for surface area and volume with modular origami (paper folding). Students are shown how to construct Sonobe units and build their own cube. The surface area and volume can be computed with measuring devices or mathematical theory depending on what the teacher would like to emphasize. The Sonobe units can then be used to construct other geometric three dimensional objects whose surface area and volumes are easy to compute and analyze.

Lecture Notes:

Provide everyone with 6 pieces of square paper (a pair of three colors each).

(20 min) Have them fold six Sonobe units and construct a cube.

(10 min) The patterns on each side suggest a nice way of computing surface area.

(15 min) In partners build a $1 \times 1 \times 2$ box, or in groups of three build $1 \times 1 \times 3$.

(10 min) Collect surface area & volume data on board.

Note that double volume does not mean double surface area.

(5 min) Show them other star things that can also be made with Sonobe units.

Note directions for 3D objects are provided for in SonobeObjects.pdf