



Paper Spinner

Instructor Guide

Math concepts/skills:

- Properties of geometric shapes
- Angles
- Area of squares & triangles

Objective:

- Students will fold a paper spinner.
- Students will use the area formula to calculate the area of squares and derive an area formula for triangles.

Vocabulary:

- **Area:** The amount of space inside the boundary of a flat (2-dimensional) object.
- **Area of rectangle or square:** $A = w \times h$ (width times height)
- **Area of a triangle:** $A = \frac{1}{2} (b \times h)$ (base times height)
- **Interior angles:** An angle measure inside of a shape. The interior angles of a triangle always add up to 180°
- **Similar:** In Geometry, two shapes are similar when the only difference is size (and possibly the need to move, turn or flip one around).
- **Square:** A four-sided flat shape with straight sides where all sides have equal length and every interior angle is 90° , a right angle. It is a quadrilateral and a regular polygon.
- **Triangle:** A three-sided polygon. There are three special names given to triangles that tell how many sides are equal. There can be 3, 2, or no equal sides/angles.
 - Equilateral triangle: Three equal sides, three equal angles, always 60°
 - Isosceles triangle: Two equal sides, two equal angles.
 - Scalene triangle: No equal sides, no equal angles.

Supplies:

- 6 x 6 paper for model
- 7 x 7 paper for exploration
- Origami tool
- Origami notebook
- Student handout
- Scotch tape
- Skewer and sand paper
- Rulers
- Colored pencils



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Video:

https://www.youtube.com/watch?v=6PVmt_D3KNE

Procedure:

Give each student one sheet of 6 x 6 origami paper.

Guide students through the folding process step by step.

When each student has successfully assembled their paper spinners, hand out the student handout. Student should work together in small groups to answer the questions.

When finished, have students construct a model of their folded unit using the 6 x 6 inch square paper.

Reinforce the center of the paper with a small piece of scotch tape. Use the sandpaper to dull the tip of the skewer. Place the skewer in the center of the paper. Blow and watch your paper spinner spin!

Close with a class discussion.

Guided Questions:

- If you know the dimensions of a square, can you find the area of a triangle that is half the size of the square? How?
- How does the area of each triangle relate to the area of the original square?