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Multimedia Lesson #2 – Plan

"Symmetry and Reflections"

Introduction

Middle school students are frequently asked to use spatial visualization skills to estimate and compare various quantities. Exploring the geometric concepts of symmetry and reflection develop this spatial sense. Aside from being beneficial to future mathematics courses, these concepts extend into areas of fine art, industrial art, home economics, and science.

Explanation of the Math

When two halves of a figure are mirror images of one another, the figure is said to have line symmetry. The line that separates the figure into these matching halves is the line of symmetry. A reflection is a transformation that flips a figure over a line called the line of reflection. On the coordinate plane, there are general rules that explain the reflection of paints over the x- and y-axes: (x,y) reflected over the x-axis is (x, -y), and (x,y) reflected over the y-axis is (-x, y).

Instructional Methods

Begin with the Teacher-centered instruction presented in the Power Point lesson. Pause at appropriate points for paper practice and discovery learning. Allow pairs of students to discuss lines of symmetry on worksheet 13-5 and reflections over the x- and y-axes in the dynamic worksheets. Allow volunteers to move in front of the full-length mirror and explain findings to class. Have students further self-assess their understanding with immediate feedback by completing the matching exercises to reflect points and the dynamic worksheet to reflect a triangle. Finally, assess students' application of these skills using the enrichment worksheet 10-7.

Step-by-Step
- Introduce topic and initiate classroom discussion to build interest
  - A butterfly, dragonfly, and snowflake have a common characteristic that relates to math: symmetry! Use a mirror along the line of symmetry to prove it.