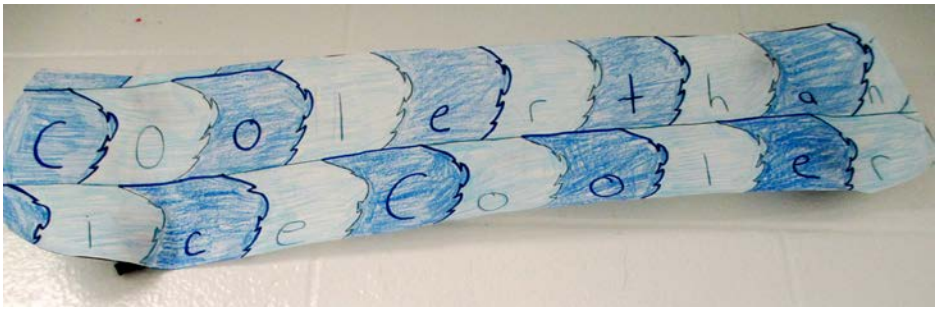
M.C. Escher Skateboard

Art + Math Drawing Project



Grade level: 2nd +
Time Required: 60-90 minute lesson, depending on age/ability
Teaching Strategy: Whole group, collaborative groups, individual work

I. Subject/Content Area
Math, Reading, Visual Arts

II. National Arts Standards

Visual Arts	
	K-4
1	Understanding and applying media, techniques, and processes
6	Making connections between visual arts and other disciplines
	5-8
1b	Students intentionally take advantage of the qualities and characteristics of art media, techniques, and processes to enhance communication of their experiences and ideas
2c	Students select and use the qualities of structures and functions of art to improve communication of their ideas
6	Making connections between visual arts and other disciplines
	9-12
1	Understanding and applying media, techniques, and processes
2	Using knowledge of structures and functions
6	Making connections between visual arts and other disciplines

III. Concepts
Repetition, Pattern, Math in Art, Shape

IV. Behavioral Objectives: TSW

Objective		Bloom's Taxonomy
1	Recognize terms: shape, repetition, M.C. Escher, symmetry, detail	Remembering
2	Create a pattern to be used repetitively, according to specifications	Comprehension
3	Complete a repeating pattern with attention to detail	Application

V. Evaluation

1	Teacher observation of student vocabulary use
2	Teacher observation
3	Teacher observation, final product

VI. Materials/Media

Teacher Background Reading: "The Mathematical Side of M.C. Escher" by Doris Schattschneider
Computer with Internet capabilities *or* images of M.C. Escher work
Paper cut to size (approx. 35.5" x 7.5" skateboard shaped, one per child)
Black paper (if desired)
Grid paper *or* Paper pre-cut to approx. 5-6 cm square
Scissors
Tape

VII. Teaching/Learning Procedures

A. Motivation

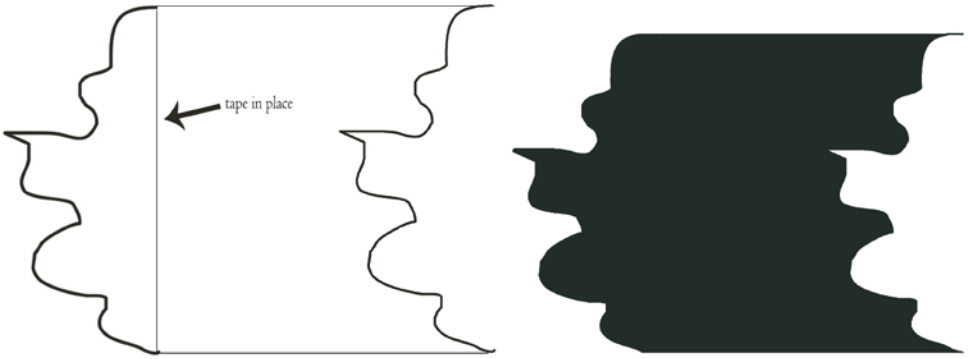
Ask the question, "Is math ever art?" Allow for discussion and examples. *Additional opportunity to include literature:* Math-terpieces *by Greg Tang* Show images and work from M.C. Escher and discuss the mathematical significance (see teacher background reading for help).

B. Instructional Procedures

1. Provide, or have students cut, a perfect square from grid paper. For the skateboard, a 5-6 centimeter square is a good size. (The grid just helps students make a perfect square. It can be any paper desired.)

2. Students draw a freeform line from the top left corner to the bottom left corner of the square.

3. Cut out the shape in one piece and then reattach it to any other straight side of the remaining square with tape. This creates the template for repetition.



4. Students should place the template in the center of the skateboard and trace. Then, moving the skateboard so that each repetition lines up with the previous. Continue until all of the white space is filled.

5. If desired, students can add small details to each repetition, but if they had it to one, the must add it to others. Color should be added last.

6. If “wheels” are desired, ball four small pieces of black construction paper and attach to the bottom of the skateboard.

C. Closure

The teacher will ask students to tell three things they learned today, which will encourage recall of facts or main points. Then students can present their projects and the teacher can highlight some of the similarities and differences, providing positive critiques to encourage more creativity in future projects.

VIII. Supplemental Activities (Early Finishers, Remediation, Enrichment)

Early Finishers: Early finishers can help clean up project materials and then find a library book that highlights the artist or skateboard. They can create more detail on their project or help others.

Remediation: Students can work in pairs to complete. More simple shapes are easier to repeat. The teacher can assist with assembly.

Enrichment: Encourage students to learn more about Escher or skateboard art. Explore the Skateboard Engineering Project: http://www.kidsciencechallenge.com/year-four/teachers_plans_archives.php

IX. Professional Reflection