Optical Art Task

This is a task that combines art, mathematics and design. Students are asked to see and design optical illusions, think about the mathematics inside them and pose mathematical questions for their friends.

Task Instructions:
- Optical art consists of geometric shapes and patterns, and is often coloured in black and white. Look at the three examples, do you see anything about the patterns that cause them to create an optical illusion?
- Using the 100-square grid, create your own interesting pattern. Share your designs with a classmate and find out if they see an illusion when looking at your pattern.
- Did you get any more ideas about the ways to create an optical illusion? Describe your mathematical thinking about ways to do that.
- Can you see any patterns, fractions, or decimals in your artwork? Where are they?
- Think of a mathematical question that you could ask about your artwork.
- If someone else wanted to recreate your artwork, what directions would you give them?

Materials:
- One handout per student
- Copies of the 100-square grid handout
- Ruler
- Colored pencils or markers

Extensions:
It is interesting to think about what creates an illusion in optical art. Do optical illusions have certain mathematical properties? One idea would be for the whole class to display their designs and look together to see if certain designs create particular visual properties. If you want to extend this task into a bigger project Wikipedia has some interesting information about optical art.

https://en.wikipedia.org/wiki/Mathematics_and_art

Reference:
Jo Boaler, Michael Jarry-Shore & Cathy Williams

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Did you get any more ideas about the ways to create an optical illusion?

Describe your mathematical thinking about ways to do that.

Can you see any patterns, fractions, or decimals in your art work? Where are they?

Think of a mathematical question that you could ask about your art work, that you can give to a friend. Ask your friend your question, and ask them to justify their answer – giving clear reasons for the methods and solutions they come up with.

If someone else wanted to recreate your art work, what directions would you give them? Give precise mathematical statements so that someone could recreate your art without looking at it.
Activity
Optical Art task from packet (attached)

Week
April 27- May 1

Grade
Resource 7th & 8th
Class
Math
Teacher
Carr, Reed, Lindsey

Key Content/Modeling
1. Begin with 15 minutes of Success Maker
2. Optical Art Task
   - Read the directions on how to complete the grid. You will be looking for patterns, fractions, or decimals in your artwork
   - Look at the 3 examples given.

You Try
1. Create a fraction to represent each example.
2. Create a decimal to represent each example.
3. Answer the questions about the optical art and math.

Show me what you know (Proof of learning)
Take a picture of your grid and email it to your teacher.
Answer the questions and email them to your teacher.

Self-Assessment
If someone else wanted to recreate your art work, what directions would you give them? Give precise mathematical statements so that someone could recreate your art without looking at it.

Priority Standard(s):
Model with mathematics
- I recognize math in everyday life and use math I know to solve real world problems.
- I use words, numbers, pictures and/or objects to represent a mathematical situation.
- I identify the important quantities —and their relationship to each other— in the situation. • I draw conclusions based on analysis of my model.

What am I learning?
Do optical illusions have certain mathematical properties?

How do I know I learned?
Learning Evidence in 1-3 Descriptors
1. I can create a fraction from the grid I designed.
2. I can create a fraction from the grid I designed.
3. I can answer mathematical questions using the grids given as examples.

Extra Learning Opportunities
Wikipedia has some interesting information about optical art and math.