



TRIANGLE ACCORDION FOLD

ABOUT THIS CHALLENGE

In this challenge, students will create an accordion illusion inspired by OK Go's video "The Writing's on the Wall." Students will be able to explore the process of how an illusion is constructed.

CONTENT AREA

Grade Levels: 6-8

Content Area: Visual Art, Math

Context for Learning: Before starting this lesson, students will need to understand proportions and congruent angles in the context of similar triangles.

TOPICS

Illusion

Similar Triangles

ACADEMIC LANGUAGE

Parallel

Illusion

Accordion Fold

Similar Triangles



STANDARDS

Math: Common Core State Standards

8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Art: National Core Arts Standards

6th: VA:Cr2.1.6a Demonstrate openness in trying new ideas, materials, methods, and approaches in making works of art and design.

7th: VA:Re.7.1.7a Explain how the method of display, the location, and the experience of an artwork influence how it is perceived and valued.

8th: VA:Cn10.1.8a Make art collaboratively to reflect on and reinforce positive aspects of group identity.

Note: This lesson plan may align with other sets of standards not included here.

LEARNING OBJECTIVES

Students will be able to:

Construct an accordion illusion with supplied materials

Scale up an illusion using similar triangles

Explain why or how their illusion works



MATERIALS

Printer paper or cardstock

Ruler

Markers, crayons, or colored pencils

Glue

Scissors

OPENING ACTIVITIES/MOTIVATION

Play the [“The Writings on the Wall”](#) music video for the students. Ask students if they can figure out how the band created their illusions. Then, discuss with students what illusions are and how some of them work. Next, play the [“Triangle”](#) illusion video from OK Go Sandbox. Here, Dan and Tim model the activity that students will complete based off the large model staircase. Explain to them that they will make a small-scale accordion fold illusion, while the band uses mainly large-scale illusions throughout the video. An illusion can be scaled up or scaled down to make it bigger or smaller than the original version. Optional: watch the OK Go Sandbox [“Illusions”](#) video that talks about the neuroscience that plays into your brain falling for optical illusions.

Next, it may be helpful to review the **academic language** for this lesson.

Parallel: Two lines that never intersect are called parallel lines.

Illusion: An illusion is an image that surprises us when we look at it from a specific point of view because from all other points of view, it appears distorted or looks like something else.

Accordion Fold: An accordion fold is a way of folding paper forward one way and then back the other so that the edge of the paper looks like a zig-zag.

Similar Triangles: Smaller triangles are triangles in which both the corresponding sides are



INSTRUCTIONAL DELIVERY

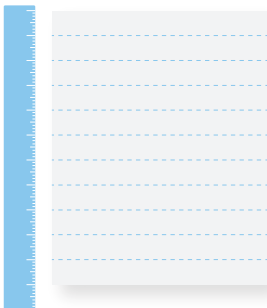
PART ONE: SMALL-SCALE ILLUSIONS

Students will create a personal, small-scale illusion using an accordion fold.

In order to create the accordion fold illusion, students will complete the following steps:

1. On a piece of 8.5" by 11" cardstock, draw 10 lines that are each 1 inch apart.
2. Accordion fold the cardstock along the drawn lines. Accordion folding is simply alternating the way in which you fold the paper so that your end result resembles an accordion or a zig-zag. The motion of accordion folding is fold one way, and fold back the other, etc., etc.
3. On another 8.5" by 11" piece of cardstock, mark six lines each one inch apart.

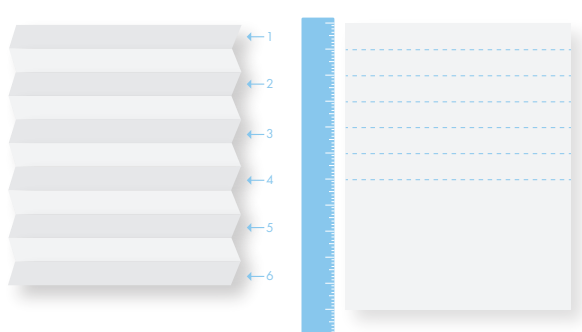
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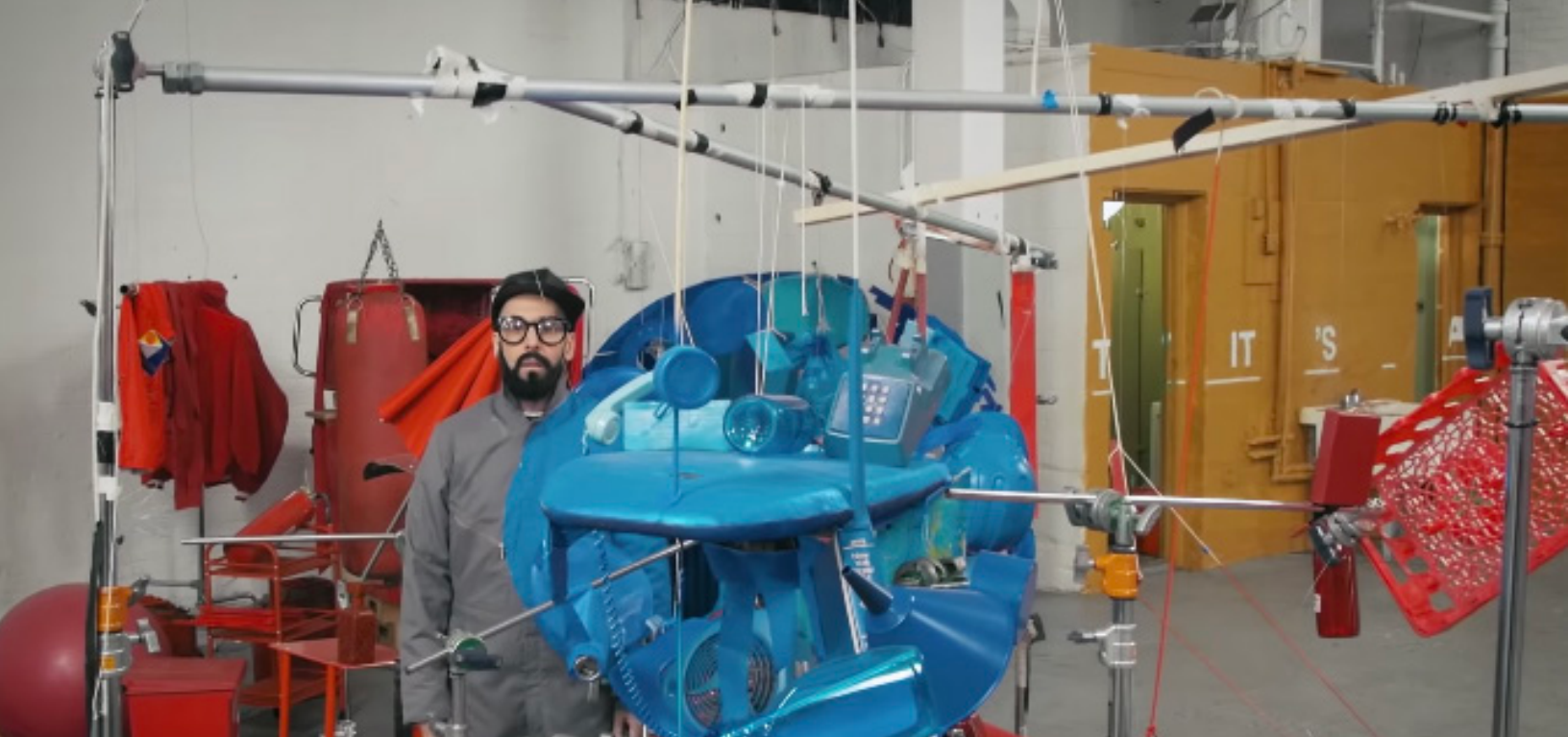


2.



3.





4. On this cardstock draw concentric triangles over the lines, with the largest triangle being no taller than 5 inches.

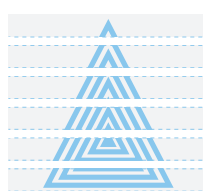
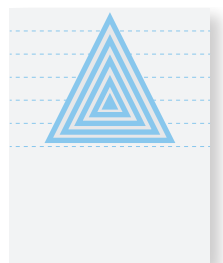
5. Cut the triangles into strips along these lines and place the strips onto your accordion fold.

6. Look at your accordion fold before gluing or taping your triangle strips. If you look at it, can you see the triangles? The strips should line up so that entire triangles are formed. Glue the strips to every other fold on the accordion folded cardstock.

4.



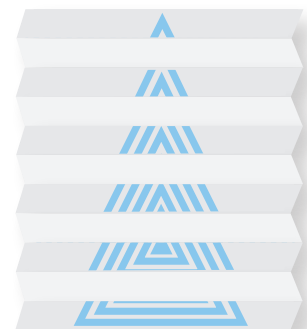
5.



6.



You finished your illusion! Nice work! Note that you can only see the complete image from one perspective. Bonus note: your triangles may not look perfect! This is because of our perspective. Things that are closer to us appear bigger, while things farther away look smaller. You can adjust your accordion fold to accommodate for perspective by stretching or compressing your folds!



A photograph of four men standing in a hallway with yellow walls. Each man is holding a red box or container. The boxes are arranged to spell out the phrase "THE WRITING'S ON THE WALL" in white capital letters. The man on the far left holds a box with "THE", the second man holds a box with "WRITING'S", the third man holds a box with "ON", and the man on the far right holds a large box with "THE WALL". The text "THE WRITING'S ON THE WALL" is superimposed over the image in a large, white, sans-serif font.

THE WRITING'S ON THE WALL

PART TWO: COLLABORATE

Students will complete a collaborative, large-scale illusion as a class.

In this challenge, students are encouraged to work as a class to create a large-scale illusion. This can be easily done on a school staircase! The stairs act just like the folds on our accordion illusions. The teacher should ask the students what they learned from their personal illusions and how that will help them in constructing their large-scale illusion. What ideas do students have to work together to create this illusion? How will they assign themselves roles for this project? Will they make the illusion so you can see it from the top or the bottom of the staircase?

No stairs? No problem! This lesson can be modified by using a large poster board to collaboratively create a larger scale accordion illusion. Split the class into two groups: group 1 will work on one side of the illusion, while group 2 will work on the other side of the illusion.

ASSESSMENT

Evaluation of Learning Objectives: Have a discussion with your students. After presenting their illusions to the class, what did they see that worked best? How would they modify their design if they completed the activity again? What did they learn? If they completed the large-scale challenge, what were the difficulties they encountered trying to make this illusion work?

Closure: Where else have students seen illusions in real life? Have a discussion about them!

Share: Reach out to OK Go Sandbox through email or social media at @okgosandbox and share your videos of this challenge with us! Have any feedback? We want to hear it!