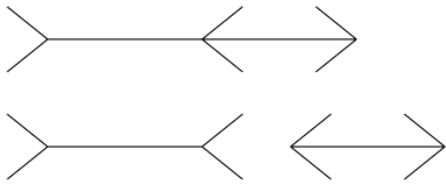


Teacher Explanations

The Müller-Lyer Illusion



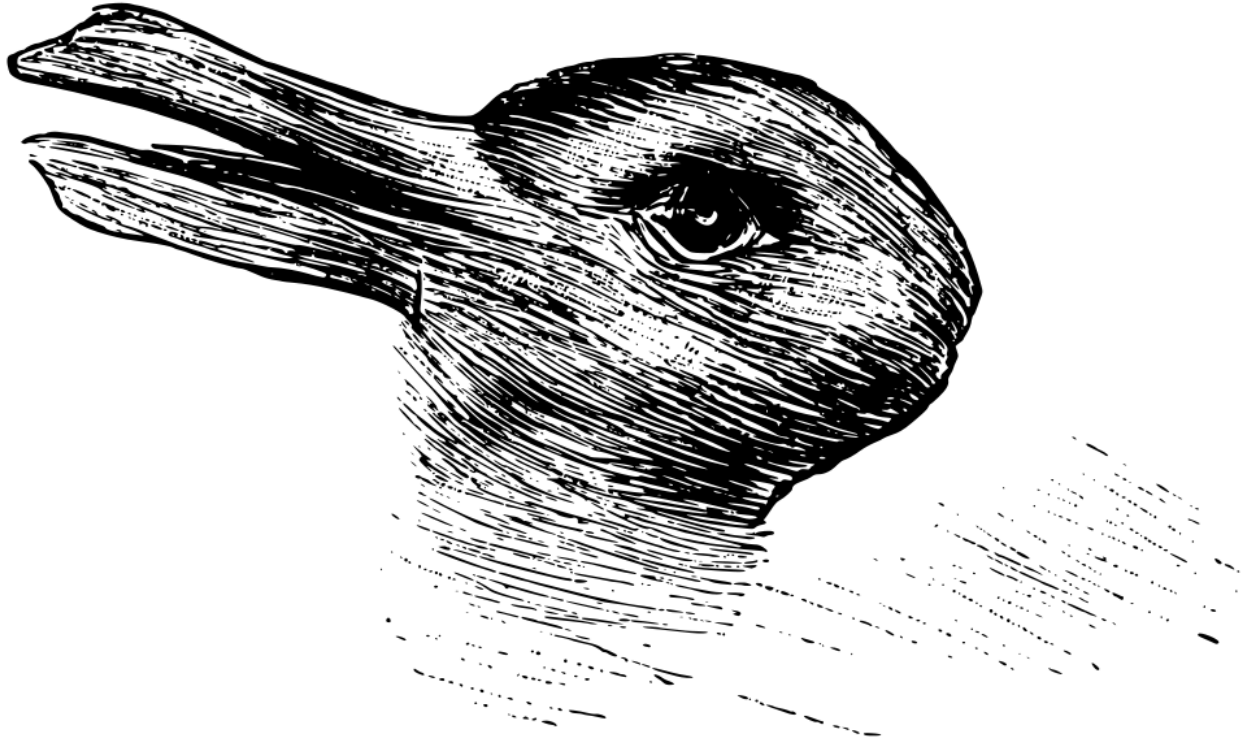
Explanation: Depth plays an important role in our ability to judge distance. One explanation of the Müller-Lyer illusion is that our brains perceive the depths of the two shafts based on depth cues. When the fins are pointing inward toward the shaft of the line, we see it as sloping away like the corner of a building. This depth cue leads us to see the line as being further away and therefore shorter. When the fins are pointing outward away from the line, it looks more like the corner of a room sloping toward us. This depth cue leads us to believe that the line is closer and therefore longer.

Our ability to perceive the length of the lines depends on the actual length of the line *and* the overall length of the figure. Since the total length of one figure is longer than the length of the lines themselves, it causes us to see the line with the outward-facing fins as longer.

This can be used in clothing to make parts of the body look longer or shorter than they are.

How to use it: Ask students to measure the lines themselves to prove that they are the same length. Discuss how our brains misinterpret visual cues, much like we might misinterpret information online based on presentation.

Welche Tiere gleichen ein- ander am meisten?



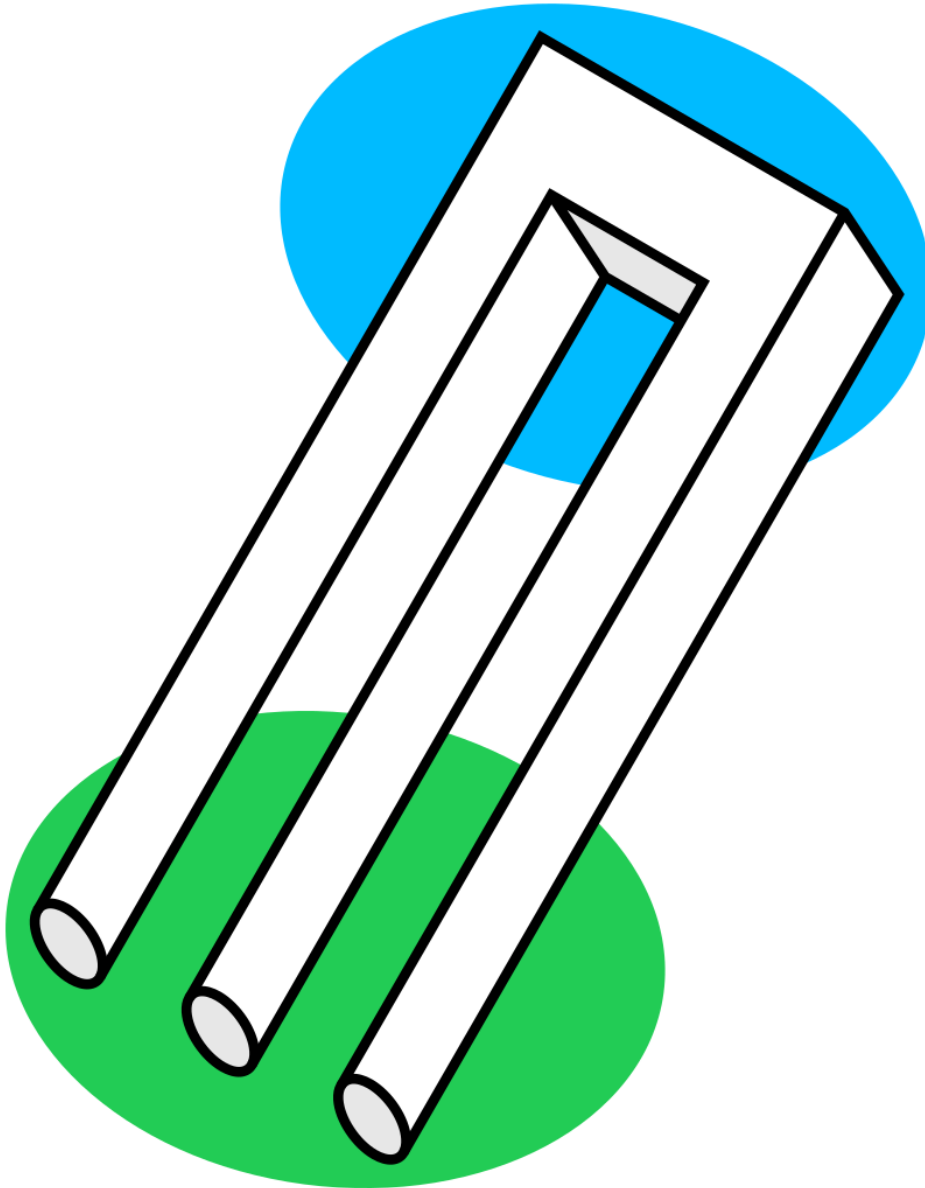
Kaninchen und Ente.

The animal you see could depend on the time of year. Rabbit more often seen around Easter or spring and the duck is often seen in the fall.

How to use it: Show the illusion and ask students which object they see first. Discuss how people can interpret the same information in different ways, leading to varied understandings, just as people might interpret online information differently depending on context or bias.

<https://www.ualberta.ca/en/science/news/2018/march/optical-illusion-gives-insight-into-how-we-perceive-the-world.html>

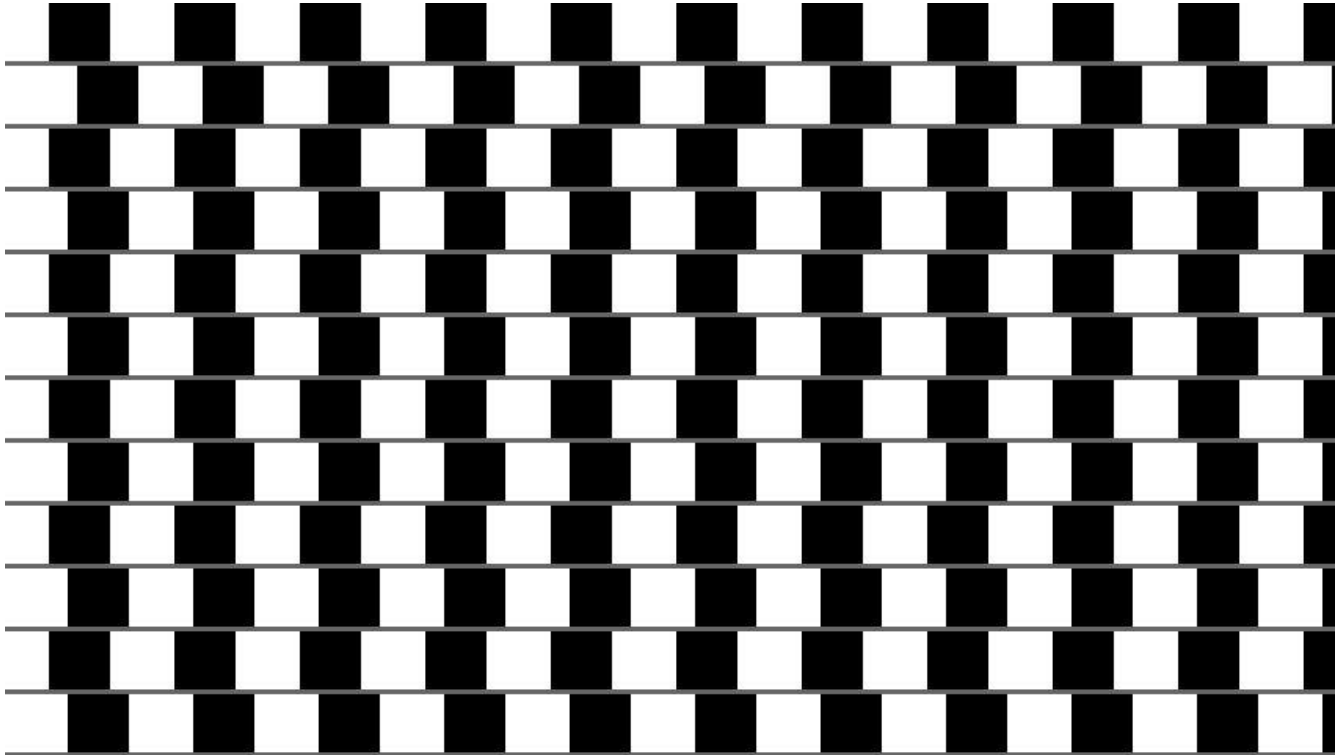
The Impossible Trident



It's impossible for the Impossible Trident to exist because for it to exist, rules of Euclidean geometry would have to be violated. For example, the trident appears at one end to have merely two prongs, but at the other end to have three, simultaneously.

How to use it: Use this illusion to discuss how something might seem real but is impossible or fake. Relate it to "fake" images or videos online that seem real but are fabricated or manipulated.

The Café Wall Illusion

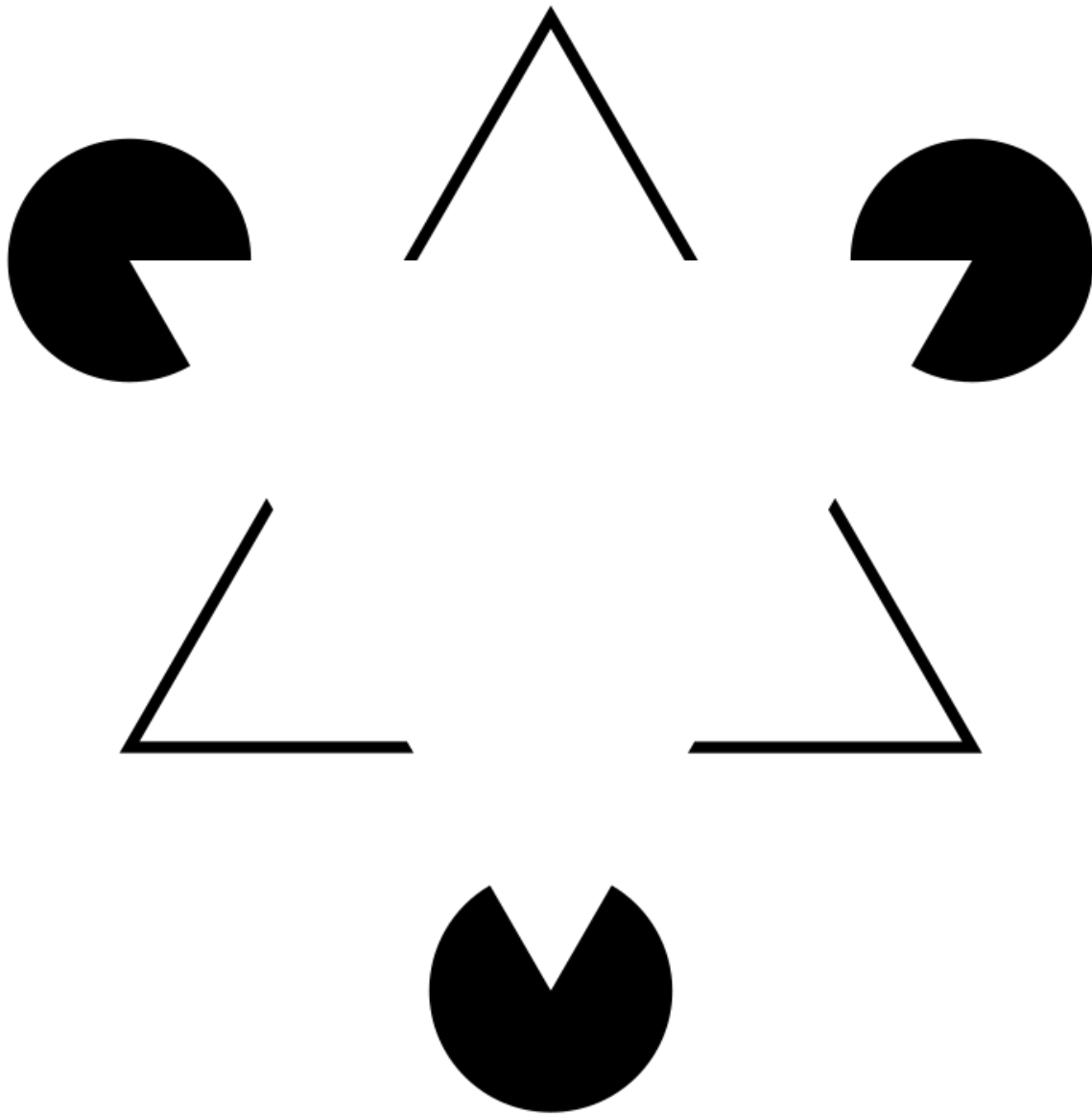


Diagonal lines interact in the brain, where different types of neurons react to the perception of dark and light colors. Because of the placement of the dark and light tiles, different parts of the lines are dimmed or brightened in the retina. Where there is a brightness contrast across the grout line, a small-scale asymmetry occurs whereby half the dark and light tiles move toward each other forming small wedges. These little wedges are then integrated into long wedges with the brain interpreting the grout line as a sloping line.

How to use it: Ask students to analyze the image and discuss how our eyes can be tricked into seeing motion or distortion where there is none. Relate this to how images online can be edited to appear altered in deceptive ways.

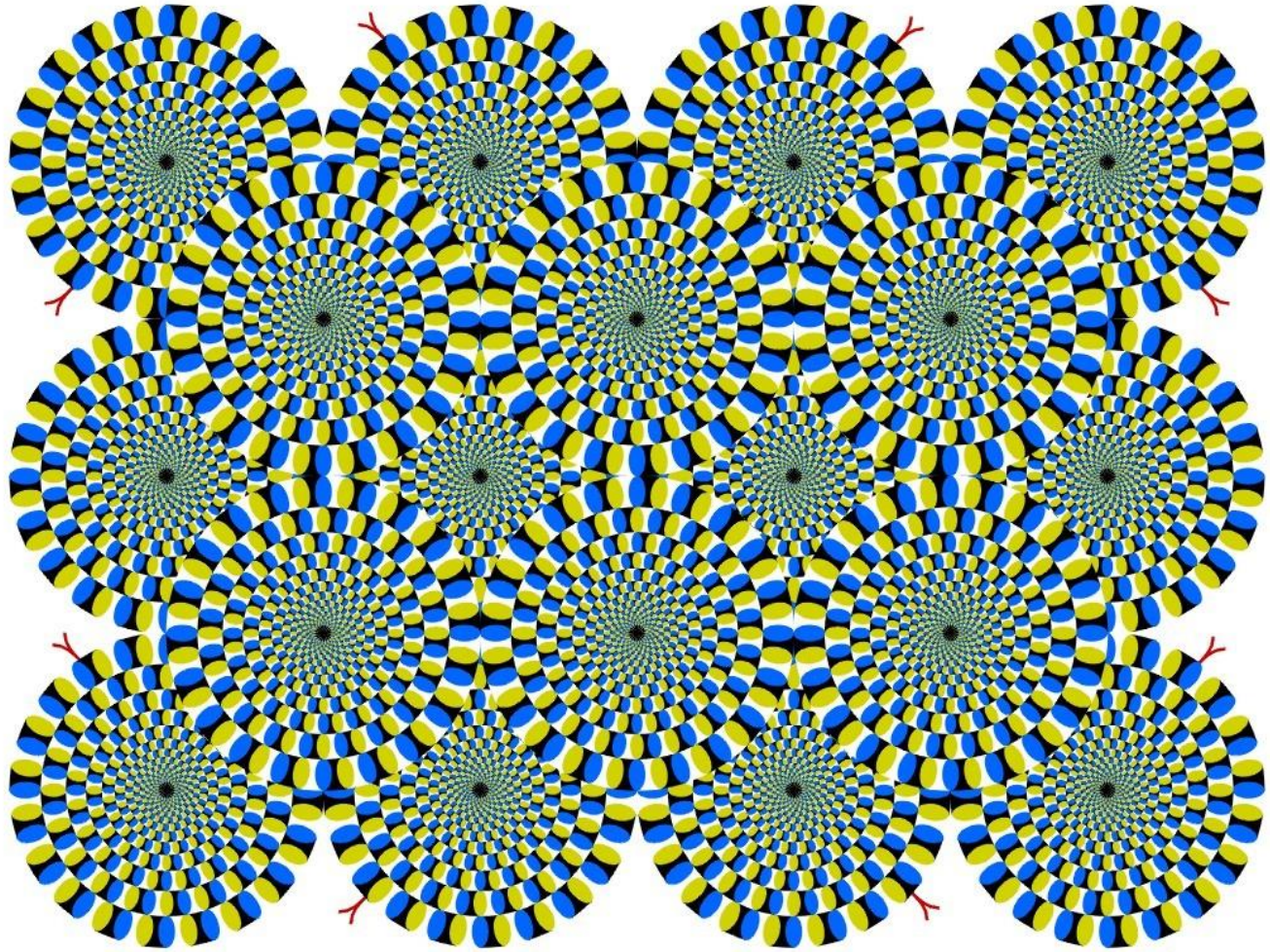
<https://frederic-38110.medium.com/caf%C3%A9-wall-illusion-62255b8ded7a>

The Kanizsa Triangle



This illusion creates the perception of a triangle, even though no triangle is explicitly drawn. Instead, the brain "fills in" the missing lines.

How to use it: Discuss how our brain "fills in" missing information, just like how we sometimes make assumptions online when we don't have all the facts. Encourage students to think critically before accepting incomplete information.



Created by Akiyoshi Kitaoka in 2003

Motion stops when you look at a particular set of circles. Each disk rotates in a set direction. It is always as the colours progress from black, blue, white to yellow.

<https://www.npr.org/sections/13.7/2014/03/24/293740555/the-rotating-snakes-are-all-in-your-mind>

Another illusion is the waterfall illusion or the moving car illusion. If you drive for a long time with objects passing by you, when you stop, you will have the sensation of moving backwards. This can also happen by watching/playing a game like Guitar Hero.