

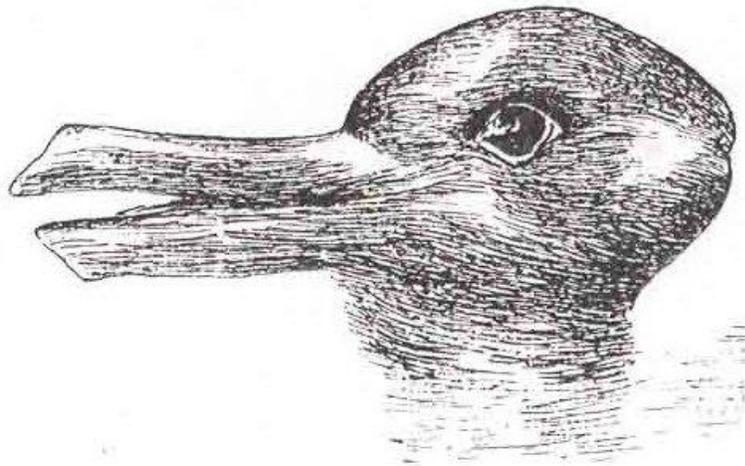
OPTICAL ILLUSIONS

If you think that your eyes would never play tricks on you and that you can always trust everything that you see, then you are in for a surprise! And if you've never seen an optical illusion (or have seen one but just didn't know it), then you're in for a treat.

Let's start with some basic facts. We know that our eyes are very important tools for seeing but without our brains, vision would not be possible. It's the brain that directs our visual system and tries to understand what we see and make sense of the world around us.

Optical means relating to sight or vision. An **illusion** is something that is not what it seems to be. Illusions happen when a person's eyes, ears, or sense of touch are tricked in some way. **Optical illusions** use color, light and patterns to create images that trick our brain into seeing things which may or may not be real.

Here is a famous optical illusion from 1899. Take a look at the drawing below. What do you see?



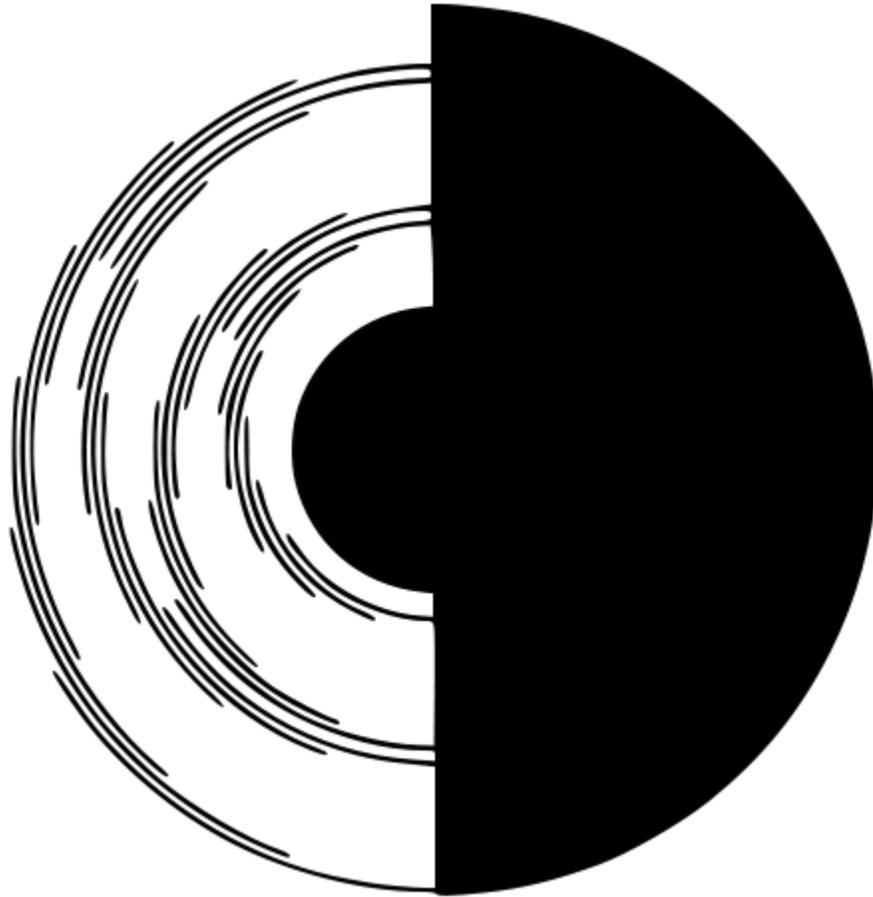
Does the drawing look like a duck? Or does it look like a rabbit? If you tilt the paper in different directions and look closely, you may be able to see both animals. If you'd like to see more fun and confusing animal images with a cute story, read **Duck! Rabbit!** by Amy Krouse Rosenthal and Tom Lichtenheld.

In art, shape is a very important element. Repeated shapes create patterns. The use of shapes, especially in repeating patterns, can help an artist create the illusion of movement in their art work.

Famous Dutch artist M. C. Escher was a book illustrator and printmaker. He was inspired by nature and used images of insects, landscapes, and plants in his artwork. Some of his art creates intricate, fascinating optical illusions for the viewer. You can take a look at some of them and learn more about Escher's life on this website: <https://mcescher.com/gallery/most-popular/>

In 1894, a toymaker named C.E. Benham discovered that a spinning disk with a special pattern of black and white marks could make people to see it in colors. He called the disk an "Artificial Spectrum Top" and sold it as a toy called Benham's Top (or Benham's Disk). This very special disk has puzzled scientists for over 100 years.

To make your own Benham's Disk, carefully cut out the image below.



Attach it to something round like a plastic lid or cut out a cardboard circle at least 4" in **diameter** ( the length of a line from one side of a circle through the center to the other side of the circle) to use as a stable platform for spinning. Carefully poke a small hole in the middle of your platform using a toothpick or metal nail, then stick the toothpick through the hole so the point sticks out about ½". Twist the toothpick to make the disk spin.

What do you see? Share the magic of this optical illusion with your friends!

ADDITIONAL RESOURCES:

<https://www.pbslearningmedia.org/resource/nei-video-optical-illusion/ask-a-scientist-what-is-an-optical-illusion/#.Xi9qBc5KiUk>

<http://www.kyeyemds.org/Resources/Documents/Eye%20Openers%20-%20optical%20illusions.pdf>

<https://www.scientificamerican.com/article/the-first-cartoon-make-your-own-thaumatrope/>

<https://www.instructables.com/id/Hollow-Face-Illusion-Dragon-Without-Leaving-your-d/>