

# THE AMAZING SCIENCE WHIZ SHOW

Magic circus demonstrates seemingly impossible magic and circus tricks that actually have scientific explanations.

We explore laws of physics, earth science and visual arts color perception.

## ***STUDY GUIDE***

**Color** - the white light from the sun is actually a combination of colors called the spectrum. You can see the rainbow spectrum after the sun's light has been reflected from water drops in the air.

**Primary colors** - the primary colors of paints are red, blue, yellow (or magenta, cyan, yellow) - mixed in equal amounts they make black. The primary colors of light are red, blue, green, when they are mixed in equal amounts they make the color white. If there is no light, we see black.

**Complementary colors**-(like the blue and yellow picture in our show) when mixed, they cancel each other out and produce a neutral gray. Spinning the picture produces the image of red.

**Dimensional space** - One dimension - a single line; two dimensions - height and width, we refer to a painting on a flat surface. Three-dimensional space - we add depth to height and width. We live in a three dimensional world. In the Renaissance time people learned to paint pictures that look three dimensional, these paintings have perspective. - With special glasses you can watch a 3-D movie.

**Field of vision** - each eye gives a slightly different view of the world, it sees an object from a slightly different angle. Close one eye and line up a finger with a distant object. Now, without moving the finger, open the other eye and close the first one. Your finger seems to have moved.

**Light** - during the day, all of the light we have outside comes from the sun. Light travels at nearly 186,000 miles per second - nothing we know can travel faster.

**Optical illusions** - transformation of colors, shapes and dimensions. " Floating finger hot dog" - stare past your fingers as you touch the tips of your index fingers. Slowly pull your fingers apart. You will see a floating hot dog. Each eye has a separate view. The part of the finger that was seen by both eyes appeared as a separate piece floating between your fingertips.

**Atom** - the smallest component of an element, the building blocks of matter. Everything on earth is made of **matter**; it can be solid, liquid or gas.

**Air Pressure** - The amount of force that the atmosphere exerts upon all objects. Normal air pressure on earth is 15 pounds per square inch.

**Gravity** - The downward pull on all objects toward the center of earth. The center of gravity is found for instance, when Benny's magic wand stays on his finger in perfect balance. The English scientist Isaac Newton (1642-1727) discovered gravity.

**Orbit** - To revolve around (a center of attraction): *The moon orbits Earth.*

**Centrifugal force** – the outward force on a body moving in a curved path around another body

**Inertia** - The tendency of a body to resist acceleration; the tendency of a body at rest to remain at rest. or of a body in motion to stay in motion in a straight line unless acted on by an outside force. It takes energy to change motion and position of an object

Be a Citizen Scientist: The four R's of waste reduction – **Recycle, Re-use, Reduce, Rot**

**MAGIC CIRCUS** provides assembly programs with science enrichment, performing arts education, rewards programs and multi cultural learning. For special events we also offer magic, circus and theme shows and activities.

**Call (415) 457-4FUN (4386)**

[www.MagicCircus.com](http://www.MagicCircus.com)

## **READING**

The First Book of Color, by Herbert P. Paschel, published by Franklin Watts,  
Smart Science, Sound and Light by R. Snedden, Heinemann Library,  
Optical Illusion Magic by Michael A, DiSpezio, Sterling Publishing Co.,  
101 Amazing Optical Illusions by Terry Jennings, Sterling Publishing Co.,  
Simple Science Fun, Teacher Created Materials, Inc.,  
The Science Book of Water, Neil Ardley, Gulliver Books,  
Fun with Science, Air, Brenda Walpole, Warwick Press