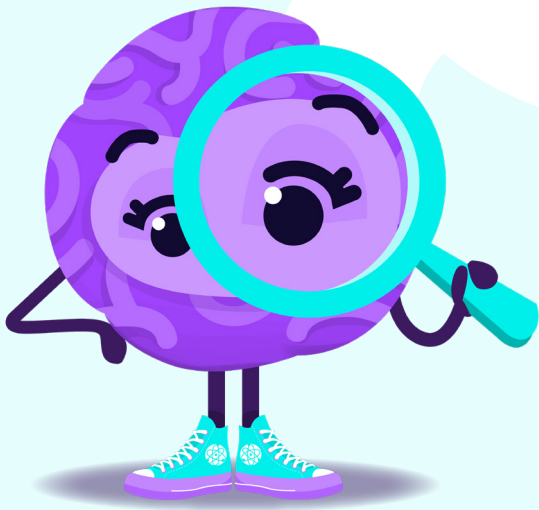




Activity Pack

VISUAL ILLUSIONS

In this activity pack, you will find worksheets to help your students make two different fun visual illusions- a thaumatrope and a floating present.



WHAT YOU NEED

- > A printer
- > Printer paper
- > Coloured pens or pencils
- > Scissors
- > Glue Stick
- > Straws

BEFORE THE CLASS

Print out worksheets for each child. You might want to print a few spares too, in case of mistakes!

During the class

Give the students time to colour in, cut out and make their illusions. They might need some help ensuring they make the cube concave, not convex!

After the class

Ask them to try out their illusions on their families. Did they work just as well on everyone?
Ask them to think about why some illusions work on some people and not on others.



Activity Pack

VISUAL ILLUSIONS

THE SCIENCE

Thaumotropes

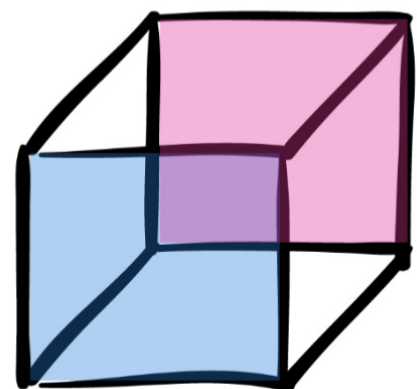
These were a children's toy in Victorian times, and work on the same principles as modern TV. When spun quickly, the pictures on each side of the toy seem to blend into one. This is because our sense of vision isn't instant- a 'memory' of each picture you see stays in the retina of your eye for a fraction of a second before it is sent to the brain.

When we spin the disk, it moves so quickly that the brain can't keep up! Rather than seeing two separate images, you see them both at the same time. This is similar to the way cartoons, made up of lots of still images presented very quickly, trick your brain into thinking they are moving.

Floating present

Our brains are always making assumptions, or guesses about the world around us. Sometimes, there are two possible ways we can see something. For example, in this cube, you can see either the blue side as the front, or the pink side.

When this happens, your brain decides for you. In this case, no one option is more likely than the other, so most people see the cube switching back and forth. The floating present is a bit different. Most presents are convex, and their corners stick out, so your brain knows that this is the most likely option. So as soon as it is possible that you could be holding a present that sticks out, that's what you see. If you change the angle of the cube, it is clear that it sticks inwards, and your brain can no longer make that assumption, so it goes back to seeing the real cube.





Activity Pack

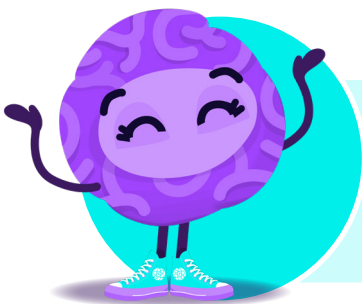
VISUAL ILLUSIONS

This is a variant of the hollow mask illusion- the effect is even stronger for faces, as we have so much experience with faces that are convex, and so little with faces that are concave. You can find a good demonstration of the hollow mask illusion on YouTube, here: <https://tinyurl.com/y4cjfel>



You should find that when the back of the mask (the concave part) comes around to the front, it suddenly starts appearing convex, and the rotation changes direction. Because the lighting cues were ambiguous, and could be coming from a hollow mask rotating one way or a convex one rotating the other way, your brain has to make a choice, and it picks the most likely option, based on its past experience.

N.B. Not every illusion works on every person, so you may find some students don't experience these, especially the floating cube. They might find it works better if they relax their eyes, and look past the present, at something in the distance. You can try holding it at different distances too. If they still can't see it, reassure them this doesn't mean there is something wrong with them. It is a good opportunity to discuss with the class the fact that we all have different brains, because we were born different, and have had different experiences throughout our lives. And this means we might see the world slightly differently- but it isn't a case of wrong or right, and our differences can make us stronger!

If you enjoyed this, you might like our Sens-ational Science Club, or our live show, That's Non-Sense. Both are packed with loads more tricks you can play on the brain and senses. Just head to Braintasticscience.com to find out more.



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