X-520
To Infinity and Beyond...

What to do:

- Stand in the middle of the room and look around.
- How many reflections of yourself can you see?
- Can you see the back of your head?

What happens?

Light bounces back and forth between the mirrors making many reflections, all of you.

Light gets into the corners and is sent back the way it came, so your eye is always reflected wherever you are.

Some reflections will be mirror reflections. In other mirrors you will see the reflection of your reflection and so you will appear as others see you.

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1. This is a seven-sided (heptagonal) room, with one of the sides as an entrance. The other six sides are each made of flat (plane) mirrors, each measuring approximately 2 metres tall and 1 metre wide.

2. As this is a regular heptagon, all of the sides are angled at 51.42^{o} to each other. This is calculated by dividing the total number of degrees in a circle (360^{o}) by the number of sides (7).

3. Because the mirrors are all set at an angle facing each other, they act like a giant kaleidoscope. When you look into the mirrors, you see many reflections of the floor and the edges of the other mirrors, yourself and anyone else in the room.

4. It is the angle of the mirrors that determines the number of reflections viewed. The smaller the angle, the more reflections will be seen. Look into a corner of the room. How many different reflections can you see?

5. The reflections are created because light inside the room is reflected endlessly between the mirrors. Every reflection produces an image and each image can then be reflected by another mirror. These multiple reflections produce multiple images…of you.

6. When light reflects from one of the mirrors and into your eyes, it seems to come from somewhere behind the mirror. If the light is then reflected from another mirror, it seems to come from even further away. This is because the light has travelled even further. After several reflections, the light seems to come from a long distance away; the mirrors seem to stretch away into the distance.

7. When light falls on a rough surface, it bounces off each part of the surface in different directions. It is scattered because the surface is not flat. When light falls on a mirror it is not scattered, but reflected. We are used to thinking that light travels in straight lines, so the brain and eye together 'think' that the light is coming from behind the mirror.

8. You can look directly at all the mirrors and see all of the reflections. Some are reversed left-to-right. This is your 'mirror image'. It is almost identical to your front view. It is your size; it stands the same distance behind the mirror as you stand in front. It is just reversed. Some of the reflections are the right way around. This is the view of you other people see. This is what you really look like!

Did you know?

The kaleidoscope was invented in 1816 by Scottish scientist, Sir David Brewster. He created a tube-like instrument that contained loose pieces of glass and other objects that were reflected by mirrors set at different angles. This created various symmetrical patterns when viewed through one end of the tube. Brewster's term for this new instrument, 'kaleidoscope', came from the Greek meaning 'beautiful-form-to see.'

Mirror rooms are often used as pieces of art. For example, American artist Lucas Samaras created Mirrored Room in 1966 and Japanese artist Yayoi Kusama frequently uses mirror rooms in her installations.

Want to Know More?

See if you can make it look like you're flying using 'Flying Mirror' or create symmetrical patterns along three planes, using 'Corner Mirror'.