





How a Kaleidoscope works

Kaleidoscopes consist of two or more **mirrors** facing each other at an angle to create a repeating pattern. A standard kaleidoscope has three mirrors cased in a tube and has an object chamber attached to one end. often filled with small pieces of coloured plastic or glass. When the object chamber is **rotated** it creates a moving image.



Telescope + Kaleidoscope

A **Teleidoscope** does not have an object chamber, but is **open** at one end to allow the user to view objects in the outside world. Your BYO Kaleidoscope can act as both - when you take it off the **stand** it is more like a Teleidoscope, but once in the stand the **rotating tray** acts as the object chamber in a standard Kaleidoscope.

What does kaleidoscope mean?

Named by Scottish inventor David Brewster in 1817, 'kaleidoscope' is derived from three Ancient Greek words:





How the image is formed

When you point the Kaleidoscope at an object, you see a triangular image (as there are three mirrors inside). This image is then reflected back and forth between the mirrors, creating a repeating pattern.



Infinity Mirrors

If two mirrors are placed parallel and facing each other, you can create a series of reflections which get smaller and smaller seemingly forever:



Reflectional symmetry:



You can draw a line through the object and it is the same both sides. You can see reflectional symmetry with your Kaleidoscope.



The object can be moved (translated) without changing the overall shape e.g. honeycomb or a repeating tile pattern.

Rotational symmetry:



Rotating the object will not change the overall shape.

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BUILD YOUR OWN KALEIDOSCOPE

INSTRUCTION BOOKLET (2)





WARNING!

Recommended age 8+

WARNING! Not suitable for children under 3 years. Small parts. Choking Hazard.

WARNING! Do not stare directly at the sun or any light source. WARNING! Use only when stationary to prevent trips or falls. DO NOT leave the Kaleidoscope unattended, especially with younger children who may not be familiar with the risks nentioned above

Retain this packaging for future reference.



FRAME finished. Put to one side for Step 49.

> Keep going! You're nearly there!

