

# playbook

nature  
biome

## The art of geometry

### 011 **Reveal the magic behind geometry**

We're accustomed to thinking that the world we see is reality. But this isn't completely true. Sometimes the world is more than the eye can see or the brain can perceive. This kit will change your ideas on how shape and size work — and teach your child to find unexpected beauty in the world around them.

**The concept of shape is important in giving children an understanding of the world. Knowledge of the different forms an object can have is necessary for the development of logic, spatial imagination, and mathematical abilities. So that's what we're going to explore!**



Scan the QR code on the back cover to access the digital version of this playbook.

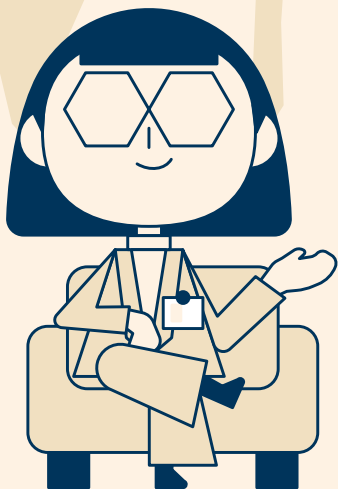
age

4-8



# Warnings

Every playoddity kit is designed as a children's experience that is guided by an adult. All the described activities require adult supervision. Safety instructions for each item in the kit can be found on the item's individual packaging.




**WARNING!**  
**Choking hazard:**  
**Small parts**  
Not for children  
under 3 years

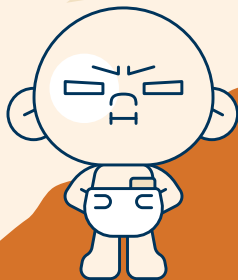


**Adult supervision required**





Hi, this is The Voice speaking. I'd like to remind you that the most important part of the playoddity experience is the child or children. Without them, you'll just be an adult playing games to avoid responsibilities. So put your phone away, and follow the instructions in this playbook for having a great time! The activities also work without the playbook, if you have your own ideas, but we suggest you have a look at ours first.



Without playbook



With playbook

# Unboxing

**Get ready to have your mind blown! Stop believing your eyes, start questioning your perception, and admit that some things are purely magical! Be sure to take lots of pictures of your fascinating journey, and share them on social media with #playoddity — let everyone know that the world is much more complex than we think!**



Each item in the kit has a colored sticker:

- Green sticker — item can be used by children and adults
- Red sticker — item should be used by adults only

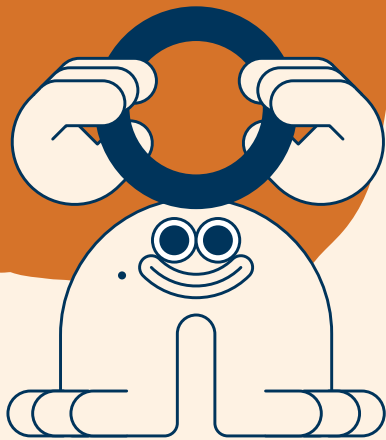
If any items on the list are missing, or you have problems with any of the products, please get in touch.

# Contents of this kit

- **01. Translucent plastic sheet**  
Let's create a Möbius strip.
- **02. Double-sided adhesive tape**  
Holding things together since ... a long time ago.
- **03. Kinetic flip toy**  
Can you believe that it can roll, turn, and fall — all at the same time?
- **04. Volumetric geometric plastic figures**  
They help develop the ability to compare, analyze, generalize, and classify items.
- **05. Fidget cube spinner**  
A puzzle to develop fine motor skills.
- **06. Oloid toy**  
It looks weird, and it acts weird — and that's what makes it so awesome.
- **07. Kinetic spinning toy**  
It will make you believe in illusions.
- **08. Anti-dust protective suit for adult**  
We're doing science over here — protection is a must!
- **09. Anti-dust protective suit for child**  
Children are smaller, but they require the same protection as adults.
- **10. Geometric shape stickers**  
A way to fill your home with geometry.
- **11. Inflatable bubble ball**  
Spheres are awesome — the bigger they are, the more awesome they get!
- **12. Waterproof acrylic textile paint**  
Did you know fractals can be used to make mind-blowing prints?
- **13. Elastic headbands**  
What will we create with them? Read on and see!
- **14. Cotton T-shirt**  
A future canvas.
- **15. Thermal print instant camera**  
To document your findings and discoveries.
- **16. Thermal paper rolls**  
To feed your hungry camera.
- **17. Colored cardboard**  
Cut it, bend it, glue it!

# Notes and ideas

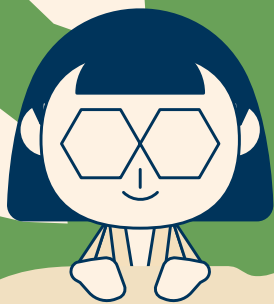
We're stepping into the mysterious world of **odd geometry**, which we call "oddometry" here in our secret lab. To be safe, you'll need a special **lab outfit**. Let's start creating it!



## The oddometrist outfit

The outfit consists of two **very important parts**: the oddometrist's headgear and the oddometrist's T-shirt. For the headgear, you'll need to take a **headband** from the kit and glue **geometric shapes** to it. Remember that the properties of the headgear depend on the shapes you add to it. Choose wisely!

The oddometrist's **T-shirt** will require some additional equipment. Take a look in your **fridge** and bring out some fruit and vegetables like lemons, cabbage, and broccoli. Cut them, put some **acrylic paint** on the cut surface, and **stamp** them onto the T-shirt to create patterns!



Let's start with **two-dimensional** objects. Do you know what they are? The simplest example is a sheet of paper. It only has two dimensions that can be **measured** with a ruler: its **length** and its **width** (the thickness can be disregarded in this case). That's why flat figures are called two-dimensional.

## 2D objects

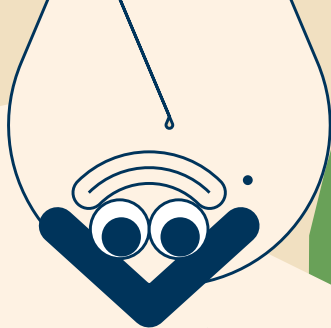
Take out a couple of 2D **geometric stickers** from the kit. Do you know the **names** of the shapes? And what about the shape that appears in the middle when **two circles** intersect? Here's the answer: a vesica piscis or — more simply — a **lens**.

## The flip toy

This is not a circle, even though it resembles one at first sight. **Balance** the toy on its **side edge** on a table or other flat surface. Hold the toy with your finger, perpendicular to the surface, and **push it lightly**. Don't worry if you can't do it on the first try. You'll need a bit of **practice**. You can find videos online of the toy in action.

## A 2D symbol of infinity

Infinity is quite a **concept** — it's hard to wrap your head around. But we can illustrate it with a very simple object called **a Möbius strip**. Take the translucent plastic sheet from the kit and **cut a strip** from it. Study it carefully to make sure it's flat. Then make **a loop**, bending the strip to make the two ends meet. But here's the important part — **turn** one end of the strip before you glue it to the other end. The strip is now an **infinite** single surface. Time for an experiment: take a marker and ask the child to draw a line **all the way along** one "side" of the strip. You'll discover that the line ends right where it started, and that actually it's on **both** "sides" of the strip!



The Möbius strip looks like a loop with **a twist** in it. Once, I wanted to take away the twist so I tried to fix it, but I got so confused that I had to talk to YOUNG to make sure I wasn't going **crazy**.

We're accustomed to the fact that the surfaces of objects that we encounter in the real world — for example, pieces of paper — have **two sides**. But the surface of the Möbius strip is **one-sided**.



It's time to move into a new **dimension**. Do you know where that is? Just like love, it's **all around you**. The **third** dimension, in addition to length and width, has **depth**.



## Exploring the new dimension

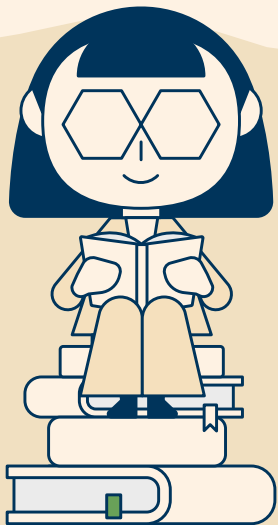
Take out the volumetric shapes. Look at each other through them, and then notice that the **3D objects** consist of **2D shapes**. For example, a **pyramid** consists of triangles and may have a square or a rectangle as a **base**. Try putting **paint** on different 3D objects and use them as stamps for **printing**. What happens if you do that with a sphere?

### 3D tower

Try building a tower from all the **geometrical figures** that you have. Use as many as you can. What will you **name the shape** of the final tower?

## The spinning toy

This toy is smooth and very pleasant to the touch. When it's **rotated** on a hard, flat surface, the toy creates an **optical illusion** — the mesmerizing effect of a continuously flowing **spiral** that seems to **merge** with the surface. It may take a few attempts to start spinning the bearing and achieve a smooth motion.



## Fidget cube spinner

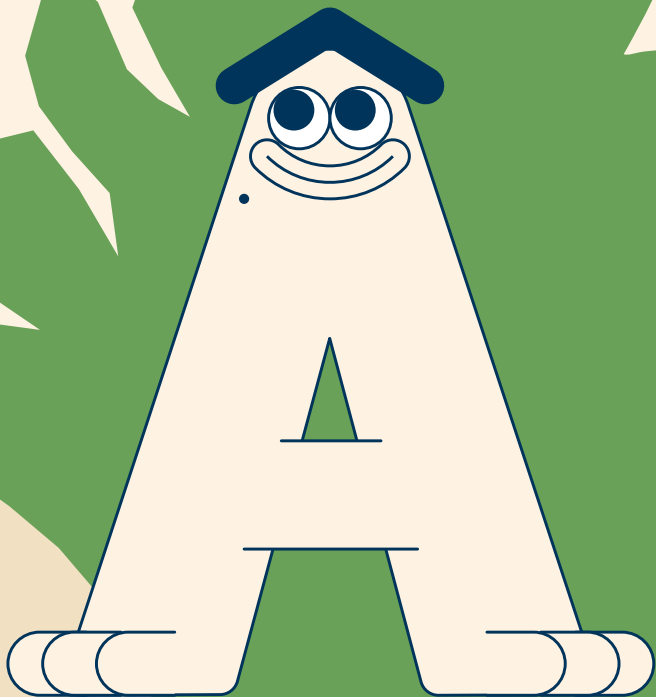
This consists of two rotating **cubes**, and it can move in two different ways. It's a bit **counterintuitive**, but just give it a try and enjoy its smooth, silent rotation. **Mind-blowing**, isn't it?

## The oloid

Without further ado, **roll** the oloid on a flat surface and notice how **weird** it is. Its shape is curved, but it still moves in **a perfectly straight line**. Its shape is not round, but it rolls. It has **sharp edges**, but its movement is **smooth**. As it rolls, every point on its surface touches the surface below it.

The **surface area** of an oloid is equal to the surface area of a **sphere** of the same radius.

Put on your oddometrist **headgear and T-shirt**. Yes, that's right — over your clothes. We're going outside, because you can find strange geometry everywhere. Let's make our way to the nearest **park or playground**.



## Playground geometry

Let's start with things in the playground. What **shape** is the swing support? Are there any **circles** around? Can you find a point from which **both** of these things can be seen together? **Take a picture** of them so that the objects seem to touch each other.


## Hiding in plain sight

There are many interesting shapes **hidden** around us. Walk into an alley or street **between** two buildings and **look up**. What shape does the sky have from here? Do the windows in the houses around your area only have **rectangular shapes**, or are there also some round or **square** windows? What about the shapes of the roofs?

## Mystery Item

Geometry is a **fascinating** science, and science was born to **solve** mysteries. And it looks like you'll need to use a **scientific approach** to discover the purpose of this mysterious Item.

# Search terms

 the oldest optical illusion	x
how far is the horizon	↗
what shape is the Earth	↗
the stunning geometry of the Great Pyramid	↗
geometry in nature	↗
geometry in the animal kingdom	↗

## Question time

- ? Can you find any food in the fridge with geometric shapes? What shapes are they?
- ? How many different shapes can you find inside your home? How about your school?
- ? What's your favorite shape? Why?
- ? What's the most important shape? Why is it important?

# Creativity time

So you think you know the names of all the shapes now, do you? Here are some tricky ones. Can you draw them? But don't look them up online, OK?

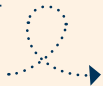
parallelogram

heptagon

trapezium

kite

There's more  
out back —  
follow the  
arrow!



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can always find the digital version  
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