

How to Make a Molecule Ferris Wheel

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Co-authored by California Science Center 🌱, [Megaera Lorenz, PhD](#) , and [6 contributors](#)

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What do molecules and Ferris wheels have in common? Molecules—which are groups of atoms bonded together—rotate, meaning that they spin around a central *axis*.^[1] And, so do Ferris wheels! Have fun exploring how molecules, Ferris wheels, and other objects in the universe rotate by building this awesome Molecule Ferris Wheel. All you need are Styrofoam balls, popsicle sticks, and a few other basic crafting supplies.

Things You'll Need

- ☐ 8 Styrofoam balls in assorted sizes
- ☐ 1 large Styrofoam ball, about 3–4 inches (7.6–10.2 cm) across
- ☐ 8 popsicle sticks
- ☐ 5 bamboo skewers, 12 inches (30 cm) long
- ☐ 1 boba straw
- ☐ 1 polystyrene sheet, 10 in (25 cm) by 10 in (25 cm) by 1 in (2.5 cm)
- ☐ Markers
- ☐ Scissors
- ☐ Liquid school glue

Part 1

Part 1 of 3: Building the Wheel



1 Stick a skewer through the large Styrofoam ball to make a hole. Take one of your bamboo skewers and poke it into the center of your biggest Styrofoam ball. Slide it all the way through so that it comes out on the other side.

- You'll need this hole for the central support pole of your Ferris wheel, which will also be the *axis* for your wheel. All wheels spin around an axis, including Ferris wheels and the wheels on a bike or car.

Did you know? The planets in our solar system also spin on an axis. A planetary axis is an invisible line that passes through the north and south poles of the planet. The Earth's axis isn't straight up and down, but tilted, so it spins like a wobbly top.^[2]



2 Spin the skewer around to make the hole bigger. Twist and wiggle the skewer around inside the hole until it gets wider. It will need to be wide enough for your boba straw to fit inside.



3 Slide the boba straw through the hole with the skewer inside. Once the hole is wide enough, push the boba straw through so that an equal length sticks out on each side. Then, slide the skewer in through the middle of the boba straw.

- The skewer will help strengthen the straw so that it supports the Ferris wheel better.



4 Poke 8 popsicle sticks into the ball to make the spokes. Take one of your popsicle sticks and poke it into the middle of the ball at a 90° angle from the boba straw. Then, take the rest of the sticks and put them around the ball in a circle. Try to space them out evenly.

- Don't push the sticks in so far that they stick all the way through! They just need to be deep enough that they won't slip out easily.



5 Add a smaller ball to the end of each popsicle stick for the gondolas. Next, add the gondolas, or the seats for the riders on your Ferris wheel. Stick one of the smaller balls onto each of the sticks you added to the central ball.

- Be careful not to poke the sticks all the way through the balls. Each ball should be on the end of the spoke.
- Your Ferris wheel will now look a bit like a molecule with a bunch of smaller atoms bonded to a big central atom!

Part 2 of 3: Constructing the Base and Supports



1 Insert 2 bamboo skewers into the top corners of the base. Take 2 skewers and push one each into the upper right and left-hand corners of your foam base. You'll use these skewers to make half of the support for the axis of your Ferris wheel.

- Push the skewers in about 1 inch (2.5 cm) in from each corner. If you want, you can use a ruler to measure the exact distance.
- Stick the skewers into the base firmly, but don't push them through so far that they poke out on the other side.



2 Bend the skewers together to make an X shape. Push the skewers together so that they cross each other. You want to make an X that's really wide at the bottom and narrow at the top.

- The top of the X will support one end of your Ferris wheel's central support pole.



3 Glue the skewers together where they cross. Next, grab some liquid glue and put a few drops on the skewers at the point where they cross each other. Hold them together tightly for a few minutes to give the glue time to dry out a little.

- If the glue is taking too long to dry, then you can wrap a little tape around the sticks to help hold them together.

Tip: If you want the glue to dry really fast, ask an adult if you can use a hot glue gun. These can get very hot, so be careful or ask for help!



4 Make another X at the bottom of the support base. Now, repeat the same steps, only this time put your skewers in the bottom right and left corners. Bend them together to make a second X and glue it in place.

- Check that your 2 supports are level, otherwise your Ferris wheel will be tilted on its axis!



5 Rest the center pole of the Ferris wheel on the supports. Take the Ferris wheel and place it on the support base so that the support pole's ends are resting on the bamboo supports. The wheel should be in the middle with the spokes perpendicular to the base.

- Try turning your wheel to make sure it works.



6 Decorate your Ferris wheel with markers. If you want, give your Ferris wheel a little color. Draw some fun designs on the base or color in the popsicle stick spokes.

- You could draw some molecules on the base to give it a chemistry theme.

Part 3 of 3: Testing Your Wheel



- 1 Try different ways to make your Ferris wheel spin.** Now you can put your wheel to the test! Experiment with some different ways you can get it moving.
- For example, you could try blowing on it or flicking one of the gondolas with your finger.
 - Try tying or clipping something to one of the spokes, like a bag clip or a small toy, then letting it go. What happens?

Did you know? Any force that makes an object spin around its axis is called *torque*. Torque can be a push or a pull, and it can have different amounts of force. You use torque to start your wheel, but also to stop it!^[3]



- 2 Observe how your Ferris wheel moves and stops.** Watch your wheel closely as it spins. Ask yourself questions like:
- Does it keep going the same speed, or does it slow down or speed up?
 - Can you make it go faster or slower once it starts? Can you make it change direction? What kind of *force* do you have to use to make those things happen?
 - Does it keep going forever, or does it eventually stop on its own? Why?



- 3 Compare your model to the way a real Ferris wheel works.** As you're experimenting with your model Ferris wheel, think about real Ferris wheels. What makes them spin? How do they stop? How are they similar to, or different from, your Ferris wheel?
- You can also think about how other kinds of wheels work, like the wheels on a bike or car. What do all these wheels have in common? What are the differences between them?



- 4 Project Completed!** Experiment with your Molecule Ferris Wheel in new ways.

Video [Read Video Transcript](#)

<https://www.wikihow.com/video/a/a4/Make+a+Molecule+Ferris+Wheel+Step+0.1080p.mp4>

References

- ↑ <https://phys.org/news/2018-12-description-rotating-molecules-easy.html>
- ↑ <https://www.nationalgeographic.org/encyclopedia/axis/>
- ↑ <https://www.grc.nasa.gov/WWW/K-12/airplane/torque.html>

About This Article



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California Science Center
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