

# How to Build a Balloon Car

**You will need: scissors, marker, cup, tape, cardboard from a cardboard box, wooden skewer or chopstick, plastic straw, tape measure or ruler, balloon**

**Build time: 30 minutes**

1. Use the cup to trace four circles onto a piece of cardboard. Cut out the circles, being careful with the scissors. Also be careful not to bend the circles, because they are now your wheels.
2. Measure and mark the center of your wheels. Ours are about 3" in diameter so we put a dot at 1.5". Use the tip of the closed scissors to poke a small hole through the center of each wheel on your mark, again being careful not to bend your wheels.
3. Next, measure your skewer and mark the center. Use the scissors to cut the skewer in half where you marked. Ask an adult for help if it's hard to cut.
4. Take your straw and cut off the bendy part. Measure the long end that's left, mark the center, and cut it in half where you marked.
5. Measure and cut a piece of cardboard for your car's chassis. Ours is 10" x 4.5". Measure and mark 1" in from each end of the chassis. Tape down each half of the cut straw to each end of the chassis where you marked. Try to make sure your straws are parallel, and that you tape firm enough so the straw doesn't move around.
6. Slide each half of the skewer through each straw to make your axles. Then slide one wheel on to each end of the skewer axles, by pushing the skewer through the hole in the center of the wheel. Play around with how close or far, tight or loose, the wheels need to be against the chassis.
7. Put the bendy end of the straw inside the mouth of the balloon and use the tape to seal completely around the edge of the balloon. You might need to use a few pieces of tape to get a good airtight seal.
8. Tape down the straw with the balloon so that the end of the straw hangs off the chassis far enough for you to blow into. Blow up the balloon through the straw, pinch closed the straw, then put your car on the ground and release!

## Extension Activities

### Test out design variables by altering:

- The wheels – use different household objects to trace different sized wheels. Try making small wheels by tracing a nail polish bottle, medium wheels with the cup, and large wheels with a 2cup measuring cup.
- The chassis – flip your 10x4.5” so that its 4.5” long and 10” wide. You will need to use a 12” skewer as the axles.
- Balloon size – after you blow up your balloon, measure the circumference. Try your car with your balloon  $\frac{1}{4}$  full,  $\frac{1}{2}$  full,  $\frac{3}{4}$  full and totally full to compare.

### Test out performance variables by altering:

- Angles – try your balloon car at different angles. Make ramps with scrap cardboard.
- Surface – try your balloon car on carpet, tile and wood floors. Also try it on blacktop and grass.
- Environment – try your balloon car outside. See how it works with wind interference, in hot weather and cold weather.

### Next Generation Science Standards

This activity ties in

PS2 – Motion and Stability: Forces and Interactions

ETS1-3 – Engineering Design

Balloon cars can be tiered for different ages