

Day 2: Jesus' power gives us hope!

"So be strong and courageous, all you who put your hope in the Lord!"--Psalm 31:24

Have you ever been in a violent storm? The wind, rain, thunder and lightning can really be scary! Imagine how worse it would be if you were on a little boat way out at sea during all that. Well, sailing to Rome, Paul's ship was in just that scary situation. A violent hurricane blew it off course and battered it for many days. Both the sailors and the rest of the prisoners on board feared for their lives, but not Paul. He knew that they would all be safe – God had promised. He encouraged everyone to be calm, maintain their strength, have hope and not be afraid. He assured them that, while indeed the ship would be lost, they would all be okay...and they were. God delivered them safely to the shore. Hope, and Paul's faith in God, saw them through the storm.

Wind can be a powerful force. It blew Paul's ship all over the Adriatic Sea – and it is the force that drives our little cars here.



A Balloon Powered Car:

You need:

- 4 bottle caps
- 1 wooden skewer
- 2 drinking straws
- tape (duct tape is great!)
- plastic water bottle
- 1 balloon



1. Make a small hole in the center of each cap.
2. Break the skewer in half and cut one straw in half as well.
3. Thread each skewer half through a straw half. Put a cap on each end of the skewer halves to make two sets of axles with wheels.
4. Tape axles onto the bottom of the water bottle.
5. Cut a small hole along the top of the bottle and thread the other straw through. With tape, attach a balloon to the top of the straw and tape down the whole thing to the top of the bottle.
6. Using the end of the straw poking out of the bottle opening (the nozzle of our car rocket), blow up the balloon then pinch the straw to keep the air in until you are ready to let go.
7. Let it go and watch it roll!

What's the science behind our balloon powered cars?

Our balloon car is a great demonstration of **Newton's third Law of Motion** which states "for every action there is an equal and opposite reaction". When the pressurized air in the balloon escapes through the small nozzle of the straw, it causes an equal force, called **thrust**, to push the car in the opposite direction. This principle is used in real rockets and jets that shoot a high-speed stream of gases out the back of their engines, propelling them forward.

For further guidance on this project: <https://www.scientificamerican.com/article/build-a-balloon-powered-car/>

