

DAY 2 EXPERIMENT

Full of Hot Air

DIY Hot Air Balloon

Materials (per group)

- ☐ Variety of balloon sizes
- ☐ Variety of bottles (thin plastic, hard plastic, thick glass)
- ☐ Bowl of very hot tap water (adults only moving/pouring it)
- ☐ Bowl of ice water
- ☐ World map
- ☐ Babel Legend cards (11-7-070), 1 per child

Pre-prep

Chill the bottles and balloons before class.

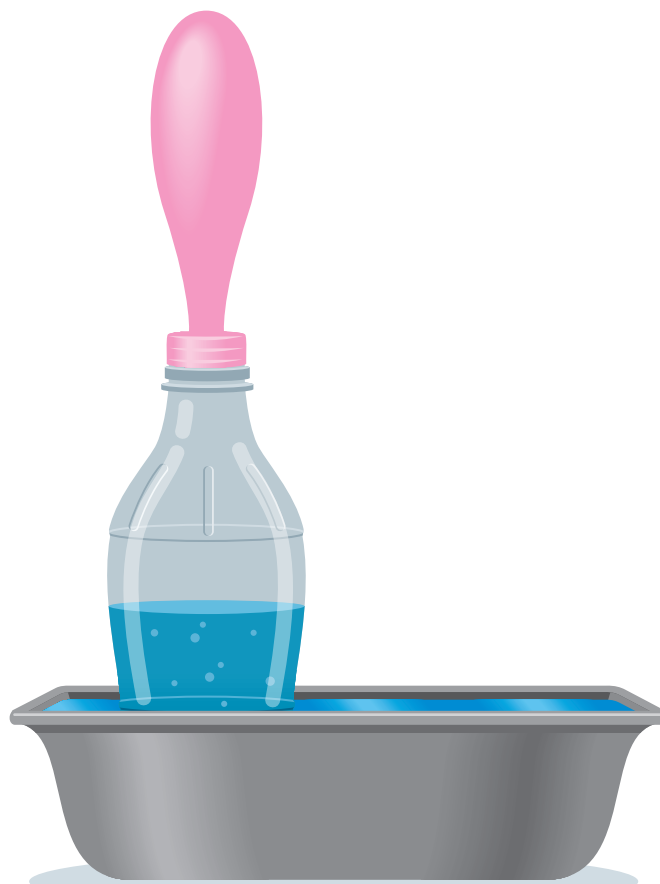
Class Time Directions

Today, at *The Incredible Race*, we're learning about the roadblock that happened at the tower of Babel, when God confused the language of the people, causing them to spread out over the earth. This happened about 4,000 years ago. How do you think the people began to move to different parts of the earth? Wait for answers: boats, walking, riding animals. Do you think any of them used a hot air balloon? Wait for answers. It's not very likely, is it? The hot air balloon was invented rather recently and so wasn't around during the tower of Babel times.

Today, we're racing to the continent of Asia. People who live in Asian countries (point to the area on the map) such as China are descendants of some of the families who moved away from the Tower of Babel. In fact, within the Chinese language itself are hints of the events recorded in the book of Genesis, showing that their ancestors remembered and recorded what had

happened and then passed down that knowledge to their children and grandchildren. The people who live in Asia are part of our family—we all come from Adam and Eve. And the people groups who live in Asia need to hear about Jesus and his love for them. According to the Joshua Project, there are over 5,000 ethnic groups, or over two billion individuals, in Asia who have not heard the good news of the Creator who came to be their Savior. Read and talk about Romans 10:12–15.

The Chinese were among the first people groups to experiment with using hot air to make something rise in the air. They made lanterns with a small fire inside that would rise in the air and used them to pass along information in their militaries.



Over 1,500 years later, a pair of brothers came on the scene who lived in France, Joseph-Michel and Jacques-Étienne Montgolfier. In 1783, they showcased the first unmanned flight of a hot air balloon. A few weeks later, a person went up in a hot air balloon for the first time. How do you think you would have felt if you were that person riding in a hot air balloon that had just been developed and no one had ever ridden in before? Allow discussion.

Today we're going to look at the principles behind how a hot air balloon works. God created the atmosphere on Day 2 of the creation week. He designed it to protect us and help us breathe. Air is what we breathe in and out. Have everyone take a deep breath. We can't see it, but we can see its effects. So, when we blow up a balloon, we are forcing air into the balloon, and it changes shape because it is filled with air. Demonstrate with a balloon.

When we heat air, the tiny parts, called molecules, move faster and expand. Because it has expanded, this heated air is lighter than the air around it, and it rises. Hot air balloons work on this principle. There is

a source of heat that makes the air inside the balloon expand and causes the balloon to rise.

We're going to see if we can make a little balloon rise by heating the air inside a bottle.

Set out the supplies. Have an adult fill one bowl with very hot water from the tap and one with ice water. Supervise the children carefully around the hot water. Place balloons over the tops of the bottles and then place the bottles in the hot water. (You may want to provide more than one bowl per group.) Watch the balloons expand. Try it with different balloon sizes and bottle types. (You may need to hold down plastic bottles in the water.) Then put the bottles in the cold water bowl and watch the balloon deflate as the air cools. If the balloon material is light enough and there is a constant heat source that can be regulated, then the balloon would float in the air.

Maybe someday you could use a hot air balloon to travel to different people groups, who are all related to us, and tell them the good news about Jesus who came to save them from their sin.

Pass out the Babel Legend cards, 1 per child.