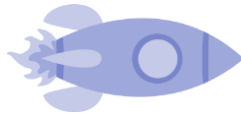




Blessed Are Who?

**This is the Science Guide for Day Five.
The complete Guide is available online at
bannerblue.org.**



Day Five: Powerful as Paper

Key Beatitude: Blessed are **the peacemakers**, for they will be called children of God.

Story Character: Miriam

Experiments Overview: Today the kids will experiment with different structures for paper pillars and different structures for paper and straw airplanes.

Guiding Question: How can something that seems weak be so strong?

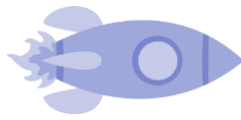
Questions to ask the kids while you're exploring together:

- How many pillars do you think it would take to hold up one book? What's the least amount it would take? *Three*
- If you add up Miriam and her brothers, how many people do you get? *Three*
- Did you trust that the paper would be able to hold up the books?
- Miriam was a poor slave who never had the chance to even go to school. Do you think people thought of her as weak and flimsy like paper?
- What was Miriam able to accomplish?
- Besides making pillars, what are other amazing things that you can do with paper?

First Experiment: Paper Pillars

This experiment shows kids how even something as flimsy as paper can hold a great weight if it is shaped the right way.

Learning Objectives: The paper has to be shaped into pillars before it can even have a chance of holding up the books and even then multiple pillars have to work together. Miriam and her brothers were shaped by many hardships and had the guidance from God to lead them through. Together they accomplished something great. But we need more people to be like them and keep God's plan moving forward!



Supplies Needed:

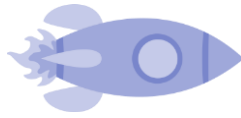
- Computer Paper
- Scissors
- Tape (scotch or masking)
- Books (to be used as weights)

Experiment Instructions:

1. Show the kids how to fold a piece of paper into a pillar that is shaped like a circle, triangle, or square. Make sure that they tape the loose ends together. Also make a tightly wound circle pillar. Make sure that there are four of each kind.



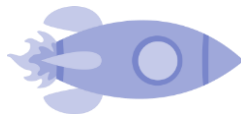
2. Make another set of four of each kind using paper sheets that have been cut in half so that the pillars are half as long.
3. Test out the short pillars against the long pillars by placing the sets of four in a square shape and then stacking books on top of them one at a time. Count the number of books before the pillars collapse. Repeat this for all four pillar shapes—tight circle, wide circle, triangle, square.



Second Experiment: Paper Planes

Through this experiment the kids will see how different shapes generate different possibilities for flight.

Learning Objective: Whether you're Esther, Mary, Deborah, Tabitha, Miriam, Moses, or you, you need someone behind you to back you up. That's God. All of these heroes worked hard to bring God's kingdom to earth but none of that work would have meant a thing without God. God's son Jesus really did change everything. Jesus' beatitudes teach us how to shape the world into God's kingdom. We are peacekeepers like Miriam—shaped by the challenges of life and the gifts that God gives us we work together towards Jesus' vision.

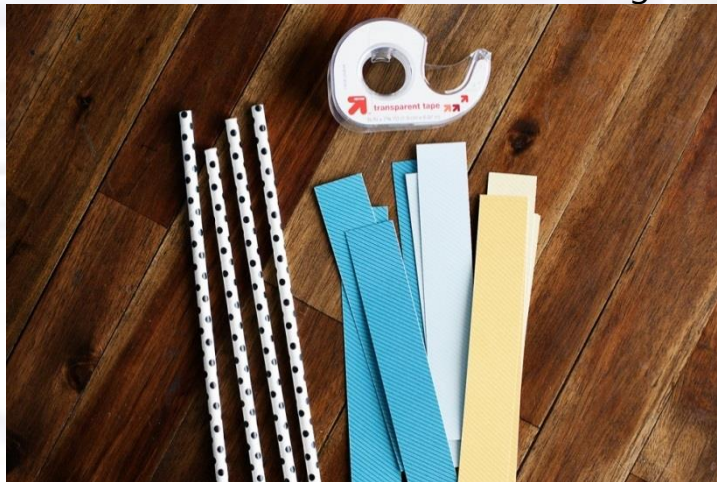


Supplies Needed:

- Cardstock (5-10 per kid)
- Straws (at least 4 per kid)
- Scissors
- Tape (scotch or masking)

Preparing for the Experiment:

1. Cut the cardstock into 1 inch strips. Half of the strips should be twice as long as the other half. In other words, a third of the strips should be 5.5 inches long and two-thirds should be 11 inches long.

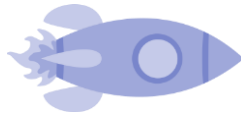


2. Create an airplane flying area where the kids will have an unobstructed flight path for their planes. These planes can fly surprisingly far.

Experiment Instructions:

1. Help the kids create small and large versions of a circle, triangle, and square and tape the ends together.





2. Next help them to tape a large shape to one end of the straw and a small shape to the other end. They can mix and match the different shapes or use two of the same.



3. Let the kids take turns flying their planes by grasping the straw in the middle and throwing it like a normal paper airplane. The large shape in the back creates just enough drag to keep the straw steady and the small shape in the front provides stable steering. Both shapes create lift.