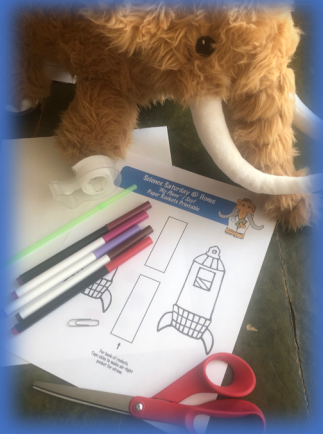
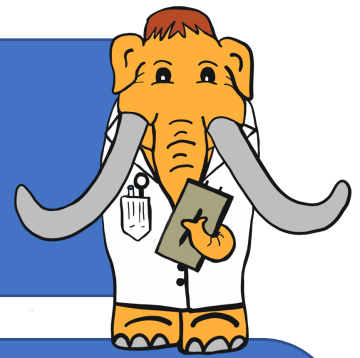


# Science Saturday @ Home

## Big Plans by Bob Shea

### Paper Rockets



## Gathering Supplies:

White paper or Rocket Printable  
Scissors  
Tape  
Straw  
Markers or Color Pencils

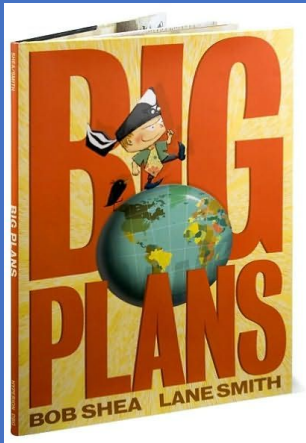
In the book *Big Plans* a young boy makes his big plans, including a rocket trip. Make your own paper rocket and see what big plans you can make!

## How To Steps:

1. Print out the Paper Rocket Printable page or draw your own rocket.
2. Cut out your rocket and color it. Who is traveling in your rocket ship?
3. Cut out a small rectangle piece of paper and tape that to the back of the rocket to form a pocket for your straw launcher.
  - Tape the edges of the rectangle on the top and sides. Leave the bottom open to slide the straw in.
  - The tape makes the pocket air tight to allow a puff of air to be the force that launches your rocket!
4. Put a paperclip on to the top of the rocket to give some weight and help with flight.
5. Slide the rocket on to your straw and give it a strong puff of air to launch!



## Max and His Big Plans



**Big Plans**  
By Bob Shea and illustrated by Lane Smith  
Published by Little, Brown Books, 2008

### Did You Know?

The amount of air you blow into the launch straw creates different levels of force for launching the rocket. This force is called thrust. The thrust must be greater than the force of gravity to get the rocket to fly up into the air. Try blowing one big quick blast of air, then try a smaller blast of air and see how it changes the speed and distance the rocket travels.

The flight of the rocket can be changed by changing the angle of the launch straw. This will change the rocket's trajectory, or flight path. If you point the straw straight up at a 90 degree angle, the rocket will fly high but not travel very far. If you make the straw's angle greater, so that the straw is straighter, the rocket will have a trajectory that will not take it high into the air but it will travel a greater distance.

Rockets burn fuel, called a propellant, to create an expanding gas. The propellant can be a solid or liquid fuel and is mixed with a chemical oxidizer and ignited by a spark. This spark produces the gas that gives the rockets thrust. When the thrust is greater than the force of the Earth's gravity the rocket can travel into space.

Robert H. Goddard was an American physics engineer and inventor who as a young boy was inspired by the science-fiction classic *The War of the Worlds*. That was the beginning of his fascination with the idea of space flight. In 1926 he launched the first liquid-fueled rocket and launched us into the Space Age.