# Simple STEM Activity
# Paper Rocket Shootout

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| **Purpose:** | The purpose of this activity is to construct a small model rocket that can use a force provided by a breath to be propelled into space. |
| **Standard:** | **S2P2. Obtain, evaluate, and communicate information to explain the effect of a force (a push or a pull) in the movement of an object.**<br>a. Plan and carry out an investigation to demonstrate how pushing and pulling on an object affects the motion of the object.<br>c. Record and analyze data to decide if a design solution works as intended to change the speed or direction of an object with a force.<br>**S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.**<br>a. Plan and carry out an investigation on the effects of balanced and unbalanced forces on an object and communicate the results.<br>**S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.**<br>b. Construct an explanation using Newton's Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object. |
| **Materials:** | Straw, 2 pieces of paper, scotch or masking tape, scissors. |
| **Procedures:** | 1. Fold a piece of paper into quarters (1/4ths) and cut the paper along the folds into quarters.<br>2. Roll one of these pieces snugly around the straw. Tape the paper.<br>3. Fold over one end of the paper and tape it into the rocket nosecone.<br>4. Fold another color of paper in half. Cut fins out the paper.<br>5. Tape the fins to the bottom end of rocket.<br>6. Launch the rocket by blowing into the straw launcher.<br>7. Try seeing how far and high you launch the rocket. |
| **Science Behind It:** | A **force** is simply a push or pull (usually on an object). Forces are needed to change the motion of objects. In this activity, the force to **push** the paper rocket that you construct is provided when you blow air into the straw. The air from your lungs travels through the straw and pushes on the rocket propelling it into space. The harder you push on an object, the more its motion will change. In this case, the harder you blow on the rocket, the further and/or faster it will travel.<br><br>Newton's 1st Law states that an object in motion stays in motion and an object at rest stays at rest unless an unbalanced force acts on it. In this case, the push provided by blowing propels the resting rocket into space. |
| **Questions to Ask:** | 1. Explain why a force is needed to change the motion of an object?<br>2. What factor could you change to improve the flight of your rocket? |