



# Paper Rockets

Three... Two... One... BLAST OFF! Explore the aerodynamics behind rockets and see how far you can get yours to soar. Grab a bendy straw, paper, and tape and you are ready for take-off.

## TEKS:

SCI 3.6 B: The student is expected to demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.

SCI 3.6 C: The student is expected to observe forces such as magnetism and gravity acting on objects.

SCI 4.6 D: The student is expected to design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.

## Materials:

- Clear tape
- Bendable straw (biodegradable)
- Pencil
- Rocket Template (attached)
- Scissors
- Stickers or washi tape for decoration

## How To:

1. Cut along the dashed lines of the Rocket Template. Discard the triangle “pie piece” shape that is left after cutting out the circle.
2. Wrap the square cut-out tightly around a pencil.
3. Tape the edge of the paper tube so it holds its cylindrical shape. Remove the pencil. This will be the body of the rocket.
4. Bring the ends of the circle where the “pie piece” was removed together to form a tight cone. Tape the edges to hold the cone shape. This will be the nose of the rocket.
5. Tape the nose to one end of the body of the rocket. Blow into the open end of the rocket. If air is able to escape through any openings between the body and nose, the rocket will not fly as far. Use tape to close any openings in the rocket’s body or nose.

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6. Insert the long end of the straw into the open end of the rocket's body.
7. Adjust the angle of the bend in the straw to launch your rocket in the desired direction.
8. Blow into the short end of the straw to send your rocket flying!
9. Once your rocket has flown off your straw with ease, it is time to decorate! Use your favorite stickers or washi tape to decorate the rocket.
10. Change the angle of the straw and the amount of air pressure used to see how those alterations impact your rocket's flight path.



### STEM Explanation:

Things that are still cannot just move on their own. Everything on Earth that moves needs a force to act on it, including paper rockets! A force is simply a push or pull on an object which causes it to change its motion. In the paper rocket that you just built, the force from the air in the straw pushed your rocket into the air! Once your rocket made it up into the air, another force began to immediately act on it... gravity. Gravity is a force that pulls things with mass towards each other. In the case of your paper rocket, Earth's gravity pulled the rocket towards the ground. When aerospace engineers help design rockets that go into space, they have to think about many different forces, including gravity trying to pull their rocket back to the ground before it can escape Earth's atmosphere!

### Career Connection:

*Aerospace engineers* work with all kinds of flying machines from airplanes to spaceships. They can design, test, and help construct airplanes, spacecraft, rockets, satellites, and more. Aerospace engineers help create new technologies for us in flying airplanes and even in space exploring.

### Resource:

<https://www.youtube.com/watch?v=kPncAiZIFcY>

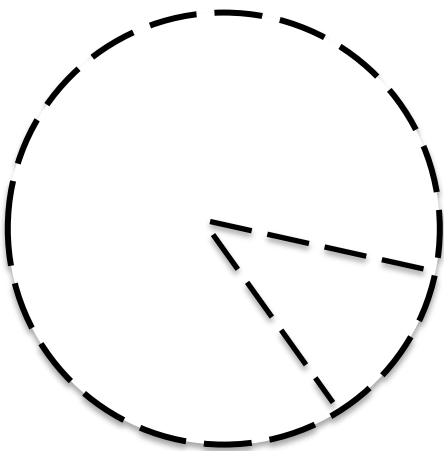
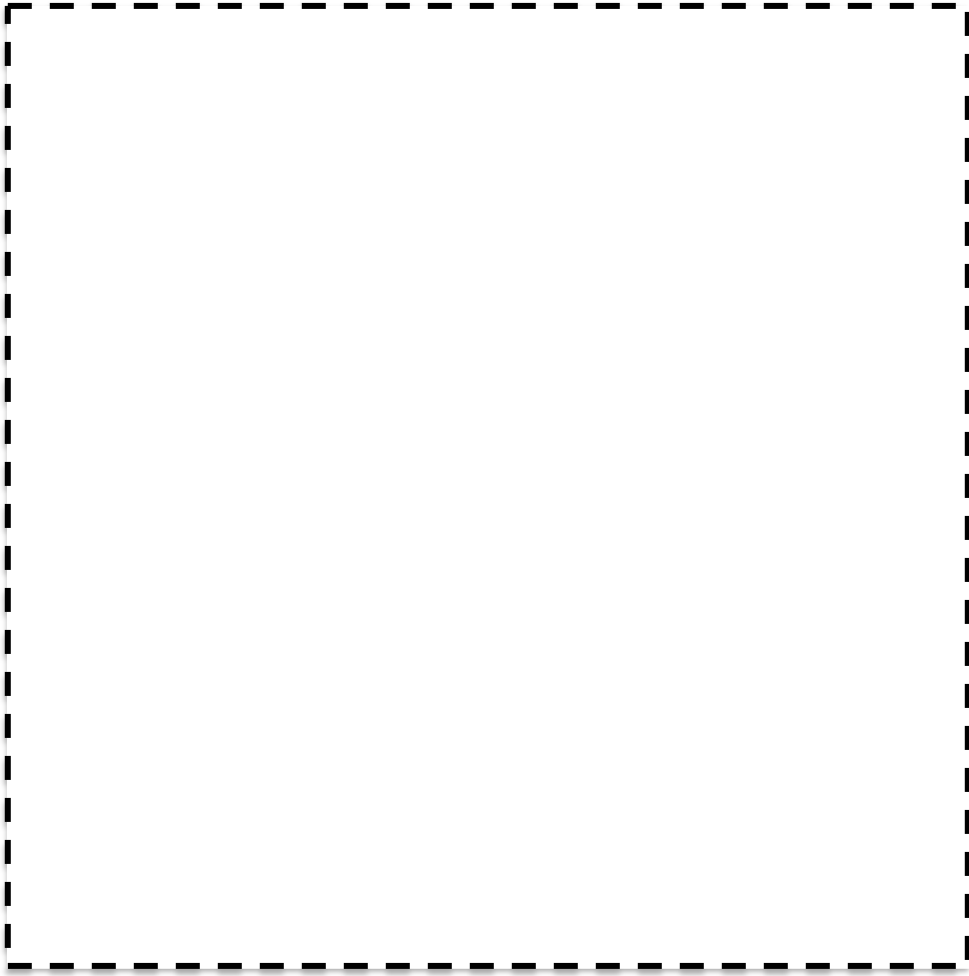
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## Rocket Template:

Use scissors to cut out the shapes along the dashed lines.



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