

Making an Advanced Air Rocket

Procedure Gluing the Body Tube

1. Begin rolling the body tube as you would when making a basic paper rocket with tape. Overlap two or three sheets of paper as you roll. Small bits of tape can be used to secure the papers to each other while rolling. When the paper is partially wrapped around the PVC tube, squeeze a bead of white glue from one end of the paper tube to the other. Spread the glue and continue rolling the tube. Add more glue as you roll. Be careful not to get any glue on the PVC tube.
2. Allow the glue to dry. If any edges of the paper curl up, add some more glue to them and smooth them down. 3. After the tube is dry, smear glue over the entire tube to strengthen it. Several coatings of glue will yield a very strong body tube. (Optional: Mix food coloring into the glue used for the last layer to add color to the rocket.)
4. If a longer body tube is desired, roll two sheets of paper around the PVC tube at the same time and repeat the gluing process.

Procedure Attaching a Payload Carrier

1. Roll a rocket body as you would for a basic rocket. Use a small disk of paper and several pieces of tape to close off the upper end of the body tube.
2. Roll a second piece of paper around the upper end of the body tube and extend it upward the desired amount to make a hollow tube for holding payload. Tape it in place.
3. Insert the payload and close off the upper end with a standard nose cone.

Procedure Making Extra Strong Fins

1. Extra strong fins can be made by folding and gluing multiple layers of paper together. Use the fold line as the leading or upper edge of the fin.
- 2.
3. Cut out the desired fin shape and cut small flaps for mounting the fins to the body.
- 4.
3. Smear glue inside the fin and press with a weight to keep the fin flat during drying.
4. Glue the fins to the rocket tube.

Procedure Making a Parachute Recovery System

1. Create a parachute out of a plastic grocery bag, string, and tape.
2. Place a weight (attached to a string) inside the payload carrier. Lightly fold and place the parachute on top. Stick the nose cone in place but do not tape it. When the rocket noses over, the weight will push out the parachute. (The weight and parachute must slide easily out of the tube or they will get stuck and not deploy.)

Mission Proposal

Rocket Scientist Name(s): _____

What is the name of your rocket? _____

How long will it be in centimeters? _____

How many fins will it have? _____

What special features (if any) will it have? _____

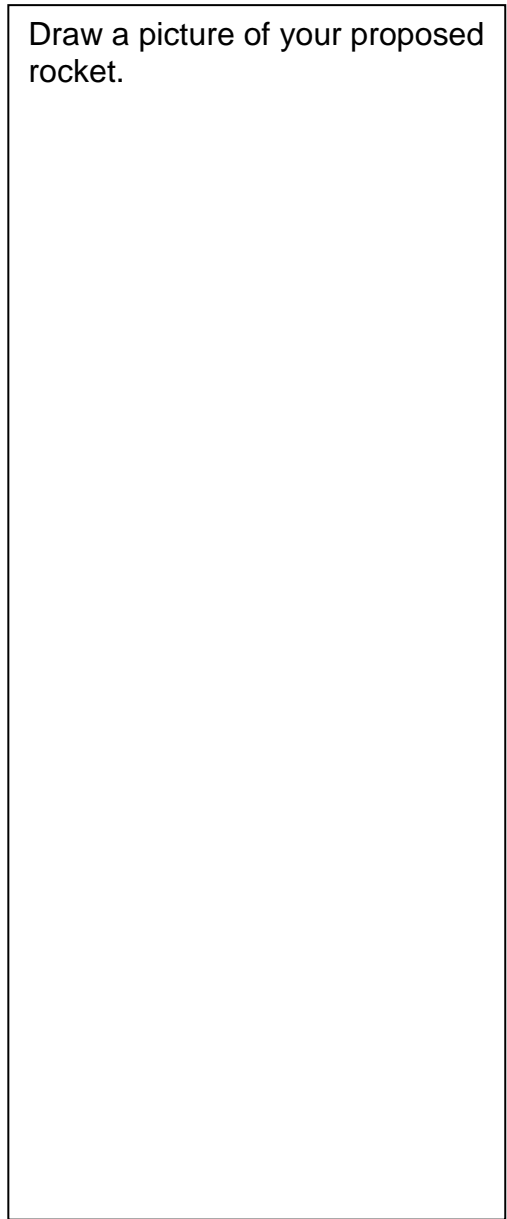
Describe your mission objective:

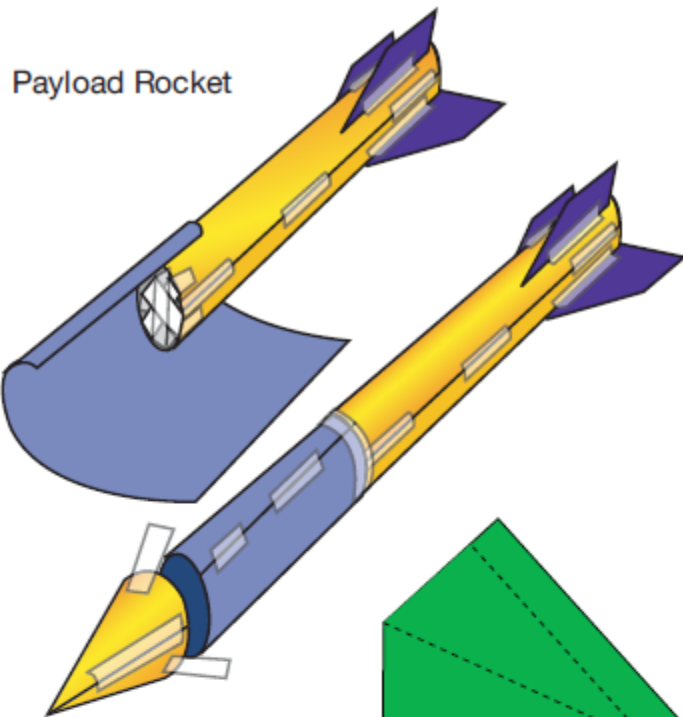
How will your rocket achieve its objective?

Provide a detailed list of materials and tools needed to build your rocket (include everything):

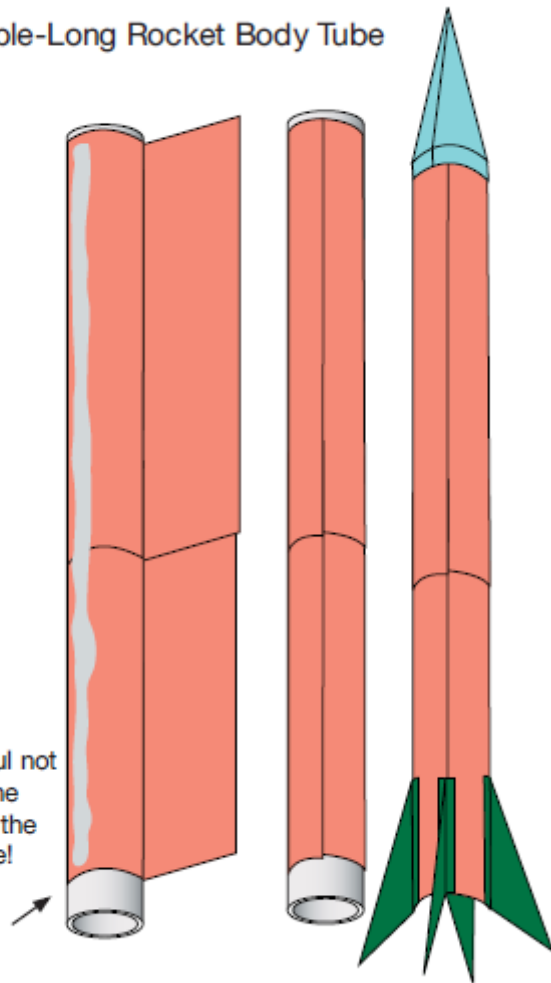
- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Draw a picture of your proposed rocket.

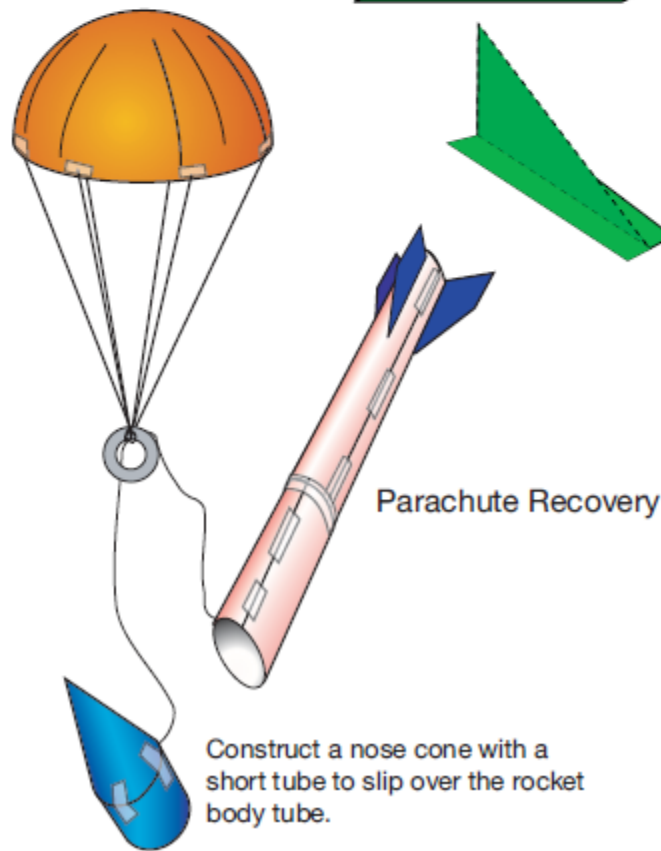
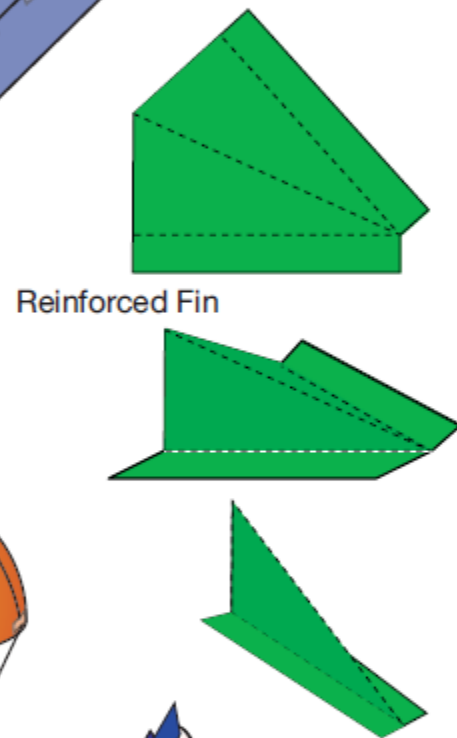




Double-Long Rocket Body Tube



Be careful not to glue the paper to the PVC tube!



Construct a nose cone with a short tube to slip over the rocket body tube.

Post-Flight Report

Rocket Scientist Names: _____

What was your Mission Objective?

Provide the specifications of your rocket:

- Rocket total length in cm: _____
- Fin span (distance from fin tip to fin tip on other side) in cm: _____
- Mass of the rocket in g: _____
- (If your rocket carried a payload) Mass of payload in g: _____

Describe its flight:

Was your rocket successful in meeting its objectives?

If not, explain why:

What can you do to improve your rocket's performance?