World Space Week 2026

Theme : Rocket Revolution

RUBBER BAND CUP ROCKET LAUNCH

SUPARCO

SEAD
Space Education & Awareness Drive

World Space Week PAKISTAN

RUBBER BAND CUP ROCKET LAUNCH

CHALLENGE

Your mission is to design and decorate a **paper-cup rocket** that can fly as high as possible using stored energy from rubber bands.

The special feature of this rocket is that **the rubber bands are attached inside the same paper cup used to make the rocket**. When the rocket is placed on a second paper cup and pressed down, the rubber bands stretch and store energy. When the rocket is released, the rubber bands quickly return to their original position and push the rocket upward.

YOUR MISSION

Can you build a lightweight rocket that flies high and launches successfully?
Students can experiment with different rocket designs, decorations and rubber-band arrangements while observing how changing the design affects the flight.

MATERIALS NEEDED

For each rocket, you will need:

- **3 paper cups**
  - 1 cup for making the rocket
  - 2 cups for the launch base
- **2 rubber bands**
- **Scissors**
- **Tape**
- **Markers or crayons**
- **Coloured paper** for decoration
- **Glue**
- Stickers or other lightweight decorations

Keep the rocket **lightweight**. Heavy decorations can reduce its flight height.

STEP-BY-STEP GUIDE

Step 1 – Make the Rubber-Band Cross

- Take the **first paper cup**, which will become your rocket.
- Place two rubber bands across the open side of the cup so that they form a **cross (+)**.
- Secure the rubber bands firmly to the sides/rim of the cup so that they remain in position when the rocket is pressed down.

This rubber-band cross is the launching mechanism of your rocket.

Step 2 – Build Your Rocket

- Turn the paper cup over so that its closed bottom becomes the **top of your rocket**.
- Use coloured paper, markers, fins, a nose cone and other lightweight materials to transform the cup into a rocket.
- Make sure the rubber bands remain attached inside the cup and are not covered or blocked.

Step 3 – Decorate Your Rocket

Give your rocket a mission identity!
You can add:

- Nose cone
- Windows
- Stars
- Fins
- SUPARCO-inspired markings
- Team name or mission number

Remember: **keep decorations light so your rocket can fly higher.**

Step 4 – Prepare the Launch Cup

- Take the **second paper cup**.
- Turn it **upside down** and place it on a firm, flat surface such as a table or floor.
- The **hard/closed bottom of this second cup becomes the launching surface.**
- The second cup does **not** contain the rubber bands—it is simply the support against which the rocket's rubber bands are pressed.

Step 5 – Place the Rocket

- Turn your completed rocket so that the **rubber-band side is facing downward**.
- Place this side directly onto the **hard bottom of the second paper cup**.
- Make sure the rocket is centred and stable before pressing.

Step 6 – Press the Rocket Down

- Hold the rocket carefully and press it **straight downward** toward the second cup.
- As you press, the rubber bands stretch against the hard surface of the launch cup.
- The stretched rubber bands now **store elastic energy**.

Step 7 – Release!

- This is the exciting part!
- Release the rocket while keeping your hands clear.
- As the rubber bands return to their original shape, they push the rocket upward and the rocket **flies into the air**.

PRESS → STORE ENERGY → RELEASE → BLAST OFF!

Step 8 – Test, Measure and Improve

- Try your rocket several times.
- Observe:
  - How high did it fly?
  - Did it fly straight?
  - Was the rocket stable?
  - Did the rubber bands remain in place?
  - Did the rocket tilt during launch?
- Make small changes to your design and test again.
- The aim is not only to make the rocket look good, but to understand **how design, weight, balance and stored elastic energy affect its flight.**

HOW DOES IT WORK?

- When you press the rocket downward, the **rubber bands stretch**.
- A stretched rubber band stores **elastic potential energy**. When you release the rocket, the rubber bands quickly try to return to their original shape.
- This releases the stored energy and produces an **upward push**, sending the rocket into the air.
- This simple activity demonstrates an important engineering idea:
- **Energy can be stored and then converted into motion.**

TIPS FOR A BETTER FLIGHT

- Keep the rocket **lightweight**.
- Make sure both rubber bands are properly secured.
- Keep the rubber bands arranged in a **clear cross (+) shape**.
- Place the rocket **centrally on the second cup**.
- Press the rocket **straight down** rather than at an angle.
- Use a firm, flat launching surface.
- Experiment with different lightweight designs.
- Record the height of each flight and compare your results.

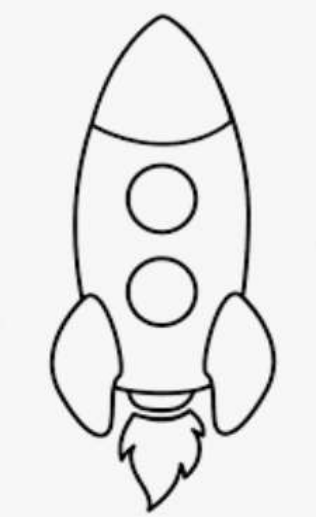
SAFETY REMINDERS

- Conduct the activity in an **open, clear area**.
- Never aim the rocket at another person.
- Keep faces and eyes away from the launch path.
- Use only lightweight craft materials.
- Children should use scissors with appropriate adult/teacher supervision.
- The teacher/facilitator should supervise the launch area.
- Allow only **one rocket to be launched at a time**.

SPACE ENGINEERING CONNECTION

- Real spacecraft and launch vehicles involve careful consideration of **energy, force, mass, stability, structure and motion**.
- In this activity, you are becoming a young space engineer: you **design, build, test, observe and improve** your rocket.

EXPLORE • EXPERIMENT • IMPROVE • LAUNCH!



SUPARCO

RUBBER BAND CUP ROCKET

LAUNCH CHALLENGE

MAKE • PRESS • RELEASE • FLY!

Build your rocket on a paper cup, fix rubber bands in a cross, place it on another cup, press down and watch your rocket fly high!

MATERIALS NEEDED


Paper Cups (2)


Rubber Bands (2)


Scissors


Markers / Decorations


Tape


Coloured Paper (Optional)

HOW TO MAKE YOUR ROCKET

1

Take a paper cup. Place two rubber bands inside the cup in a cross (+) shape as shown.

2

Turn the cup over. This is your rocket body.

3

Decorate your rocket using markers, paper or stickers.

HOW TO LAUNCH YOUR ROCKET

1

Take another paper cup and keep it upside down (bottom side up) on a hard surface.

2

Place your rocket (rubber band side down) on the bottom of the second cup.

3

Press the rocket down firmly. The rubber bands will stretch.

4

Let go! The rubber bands will snap back and your rocket will fly high!

5

Wow! Your rocket is flying!

TIPS FOR BETTER FLIGHTS

- Use light weight decorations.
- Keep the rocket body light.
- Make sure rubber bands are crossed properly and not twisted.
- Press straight down for best launch.
- Try different rubber bands (thick / thin) to see what works best!

SAFETY REMINDERS

- Launch on a clear area.
- Do not aim at people or face.
- Use only paper cups and rubber bands.
- Press and release gently.
- Keep the area clean.

CHALLENGE YOUR FRIENDS!

Whose rocket flies the highest?

★ EXPLORE SPACE. INSPIRE FUTURES! ★

GUIDELINES

RUBBER BAND CUP ROCKET LAUNCH CHALLENGE

1. CHALLENGE

Design and build a rocket on a paper cup. Fix two rubber bands inside the cup in a cross shape. For launch, place the rubber band side of your rocket on the bottom (hard side) of another paper cup. Press down and release. The rubber bands will snap back and launch your rocket high into the air!

Goal:
Build a rocket that flies the highest!

2. MATERIAL NEEDED

- Paper Cups (2)
- Rubber Bands (2)
- Scissors
- Markers / Decorations
- Tape
- Coloured Paper (Optional)

3. STEP-BY-STEP GUIDE

1. MAKE RUBBER BAND CROSS
Place two rubber bands inside a paper cup in a cross (+) shape.

2. BUILD YOUR ROCKET
Turn the cup over and decorate it to make your rocket.

3. PREPARE LAUNCH PAD
Take another paper cup and keep it upside down (bottom side up) on a hard surface.

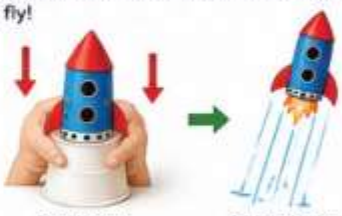
4. PLACE YOUR ROCKET
Place your rocket (rubber band side down) on the bottom of the second cup.

5. PRESS DOWN
Press the rocket down firmly. The rubber bands will stretch.

6. RELEASE AND WATCH IT FLY
Let go! The rubber bands will snap back and your rocket will shoot up high!

HOW IT WORKS

When you press the rocket down, the rubber bands stretch and store energy. When you release, they snap back to their original shape and push the rocket upward, making it fly!



Press Down Release & Fly!

BE A YOUNG SPACE ENGINEER!

Experiment, improve and try again. Innovation takes you higher!