

Challenge Card Rockets

Suited to Section



Joey Scouts



Cub Scouts



Scouts



Venturer Scouts



Rover Scouts

Challenge Area



COMMUNITY



PERSONAL GROWTH



OUTDOORS



CREATIVE

Key SPICES growth



SOCIAL



PHYSICAL



INTELLECTUAL



CHARACTER



EMOTIONAL



SPIRITUAL

Likely Scout Method elements



COMMUNITY INVOLVEMENT



LEARNING BY DOING



NATURE AND THE OUTDOORS



PATROL SYSTEM



PERSONAL PROGRESSION



PROMISE AND LAW



SYMBOLIC FRAMEWORK



YOUTH LEADING, ADULTS SUPPORTING

Summary statement

With your Patrol or Unit try designing and launching your own bottle rockets to investigate some of the laws of physics.

Challenge Card Rockets

Plan

1. Decide what sort of rockets you want to make. You could try air pressure rockets or bicarb and vinegar chemical reaction rockets.
 - [Air pressure rocket video](#)
 - [Bicarb and vinegar chemical reaction rocket video](#)
2. Collect the materials you will need for rocket construction and launching. Communicate with your Unit or Patrol if they need them to bring recycled materials to construct their own rockets.
3. Investigate the science behind gravity and rocket flights. Here is a [video](#) that might help you get started. Can you explain how rockets work to someone else?
4. You might want to make a prototype and then think about whether you need to make any design changes before doing the activity with the rest of your unit or patrol. Can you improve the aerodynamics? Is there a better launch system?
5. Hypothesise what will happen when you launch the rocket. Why do you think this will happen?
6. Read the safety requirements and discuss with your Leaders what supervision and safety equipment will be required.

Safety

- Make sure you complete a risk assessment for this activity.
- Think about clear and safe areas for launching the rockets. Make sure you are far away from over head power lines and low trees. Remember that if there is any wind your rockets might drift far away from the launch zone.
- Keep Scouts and spectators well back from the launch and landing areas.
- Make sure the people who are launching the rocket are wearing eye protection.

Do

1. Construct the rockets and prepare them for launch.
2. Make sure everyone knows the safety rules.
3. Launch your rockets and enjoy watching them fly!

Review

1. Evaluate your hypothesis. Did your rocket behave the way you expected? Why or why not?
2. What were the best design features of your rocket? What could you improve about your rocket?
3. If you were to do this activity again what would you do the same? What would you do differently?

Variations

- Make this into a Patrol competition. Get each patrol to design a rocket that they think will have the best aerodynamics and then measure the flight distances and times to see who is the winner.
- Design and add a parachute so that on return to Earth your rocket has a safe landing. You could even add something fragile like an egg and see if you can land your rocket without damaging the egg.
- Consider pre-making some of the more complex construction elements for use with younger Sections.