

# Bottle Rockets

Subjects: • Science • Engineering • Math

Time: 60-120 minutes

• Skills: • Teamwork • Problem-solving • Basic Physics Principles • Construction

Approx. Cost: Low

Lesson # 10

## Learning Objective/Goal:

- Students will learn how rockets work using simple principles.
- Students will see how forces like push, pull, and gravity make the rocket move.
- Students will create their own bottle rockets using simple materials.

## Materials Needed:

- Empty 2L plastic bottles (one per group)
- Water
- Air pump with a nozzle that fits the bottle opening
- Fin and nose cone materials (cardboard, plastic, duct tape)

## NGSS Standards:

- 5-5-ETS1-1
- 5-5-ETS1-2
- 5-5-ETS1-3 (Engineering Design)

## ISTE Standards for Students:

- 4a - Innovative Designer
- 5b - Computational Thinker

## Background:

Launching rockets using 2L bottles is a fun and educational activity that demonstrates the principles of physics, particularly Newton's Laws of Motion. By building and launching rockets, students can explore concepts such as force, mass, gravity, and aerodynamics in a hands-on and engaging way.

## Activity:

### Introduction:

#### 1. Welcome and Explanation:

- Introduce the activity and explain the basic principles of rocketry, including Newton's Third Law: "For every action, there is an equal and opposite reaction."
- Discuss how the design of the rocket (fins, nose cone) affects its flight.

# Liter Bottle Rocket Lesson Plan

**JG Myers**



## **Liter Bottle Rocket Lesson Plan:**

*ENC Focus* ,2000      *Inquiry and Problem Solving* ,1999      **Rocket-powered Science** Ed Sobey,2005-11 Rocket science is as cool as science gets and your students get to design build and test rockets themselves Their designs Their innovations Not students anymore they are rocket scientists      *Teaching Fundamental Motor Skills 3rd Edition* Colvin, A. Vonnie,Markos, Nancy,Walker, Pamela,2016-02-15 Teaching Fundamental Motor Skills Third Edition shows you how to teach essential motor skills The skills are aligned with the SHAPE America National Standards and Grade Level Outcomes Each skill is animated to aid learning and a web resource offers multiple materials to assist in your teaching      *Lesson Imaging in Math and Science* Michelle Stephan,David Pugalee,Julie Cline,Chris Cline,2016-10-26 From respected voices in STEM education comes an innovative lesson planning approach to help turn students into problem solvers lesson imaging In this approach teachers anticipate how chosen activities will unfold in real time what solutions questions and misconceptions students might have and how teachers can promote deeper reasoning When lesson imaging occurs before instruction students achieve lesson objectives more naturally and powerfully A successful STEM unit attends to activities questions technology and passions It also entails a careful detailed image of how each activity will play out in the classroom Lesson Imaging in Math and Science presents teachers with A process of thinking through the structure and implementation of a lesson A pathway to discovering ways to elicit student thinking and foster collaboration An opportunity to become adept at techniques to avoid shutting down the discussion either by prematurely giving or acknowledging the right answer or by casting aside a wrong answer Packed with classroom examples lesson imaging templates and tips on how to start the process this book is sure to help teachers anticipate students ideas and questions and stimulate deeper learning in science math engineering and technology      **Teaching Fundamental Motor Skills** A. Vonnie Colvin,Nancy J. Egner Markos,Pamela J. Walker,2022-02 Learn how to expertly teach 25 fundamental motor skills to young students Watch video clips to see correct execution as well as errors to detect and correct Use cue words to help students learn Discover how to promote emotional health in lessons adapt lessons for different abilities and make lessons work for home learners      **The Technology Teacher** ,1995      **Science Education International** ,1991      **Inquiry** ,2001      **Journal of Engineering Education** ,1993      **92-3040 - 92-3069** ,1992      **Educational Materials** NASA Lewis Teacher Resource Center,1992 Variety of NASA related educational materials in several formats videotapes slide filmstrip programs audiotapes publications lesson plans and activities and software for the Apple IIe Subjects covered include aeronautics astronautics energy life sciences manned spaceflight space station space art mathematical and computer sciences physics technology utilization and robotics      *Improving Schools Through Action Research* Cher Hendricks,2006 This compact clear and user friendly text provides everything a pre service or in service teacher needs to know to follow the research cycle and conduct an action research project This text emphasizes reflective processes used in planning and conducting action research studies data analysis

techniques quantitative and qualitative and displaying and explaining results It provides specific information needed to complete each step of the action research cycle with chapter activities that help the student reader conduct projects focused on school improvement Each activity includes a research paper component that helps students create a research paper as they complete the activities in each chapter This text has more emphasis on reflective and reflexive activities than other text and is geared toward adults professionals who will use these activities to conduct action research for educational change and school improvement

Let's Build Airplanes & Rockets! Ben P. Millspaugh, Beverley A. P. Taylor, 1996 An illustrated introduction to flight and aviation which includes cross curricular ideas and activities for use in the classroom

Help! I'm Teaching Middle School Science C. Jill Swango, Sally Boles Steward, 2003 Like your own personal survival guide Help IOCOM Teaching Middle School Science is a nontechnical how to manual OCO especially for first year teachers But even veteran teachers can benefit from the plentiful ideas examples and tips on teaching science the way middle schoolers learn best The book covers all the basics what to do on the first day of school including icebreaker activities preparing safe and effective lab lessons managing the classroom working with in school teams as well as parents But its practical OCO and encouraging OCO approach doesn't mean it shortchanges the basics of effective pedagogy You OCO learn how to handle cooperative learning and assessment how to help students write effectively and the importance of modeling for early adolescents

**Science Scope** ,2003      **The Reality of Change** ,2000      **Current Index to Journals in Education** ,1997

The Science Teacher ,1996 Some issues are accompanied by a CD ROM on a selected topic      *Sacramento River Water Reliability Study* ,2005

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