

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.

Water Rocket Lesson Plan

JS Bruner



Water Rocket Lesson Plan:

Learning in the Age of Digital and Green Transition Michael E. Auer, Wolfgang Pachatz, Tiia Rüütman, 2023-02-22 We are currently witnessing a significant transformation in the development of education on all levels and especially in post secondary education To face these challenges higher education must find innovative ways to quickly respond to these new needs These were the aims connected with the 25th International Conference on Interactive Collaborative Learning ICL2022 which was held in Vienna Austria from September 27 to 30 2022 Since its beginning in 1998 this conference is devoted to new approaches in learning with a focus on collaborative learning in higher education This book contains papers in the fields of New Learning Models and Applications Project Based Learning Engineering Pedagogy Education Research in Engineering Pedagogy Teaching Best Practices Real World Experiences Academia Industry Partnerships Trends in Master and Doctoral Research Interested readership includes policymakers academics educators researchers in pedagogy and learning theory school teachers the learning industry further and continuing education lecturers etc **Motion, Forces, and Energy**

Michael J. Padilla, Peter Kahan, 2002 **101 Swimming Lesson Plans For Swimming Teachers** Mark Young, 2024-05-07 Careful and detailed planning is essential for delivering practical results based swimming lessons This book takes the hard work out of lesson planning for swimming teachers by providing 101 swimming lesson plans covering all aspects of swimming Discover swimming lesson plans for beginners that include every lesson from first entering the pool and building confidence to swimming in deep water In addition swimming lesson plans written explicitly for adults cover their every need from gaining confidence to learning basic strokes Ensure progress with sequenced lesson plans for each part of front crawl backstroke breaststroke and butterfly aimed at beginner intermediate and advanced swimmers Each lesson plan also has an assessment grid so that you can monitor and measure the progress of each of your swimmers quickly and easily These pre made 30 minute swimming lesson plans are ready to go leaving you to focus on the individuals in your classes and fine tune your practice as a successful swimming teacher 101 Swimming lesson plans for swimming teachers that make a difference

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