



BOY SCOUTS OF AMERICA®
CRADLE OF LIBERTY COUNCIL



ROCKET INTO SCOUTING

Cub Scout Meeting Plans

Tigers

Den Meeting #1) (Meets Science Everywhere Nova Award Requirement 3B and 3C)

Overview: Use the scientific method and experimentation to learn about gravity and lift.

Activity: Measure how high Scouts can jump (horizontally) in the air and how far they can jump from a starting line (vertically). Time how long Scouts can stay in the air when they jump. Ask why they cannot jump higher, longer, or stay in the air longer. (Gravity!) Conduct an experiment with a piece of paper where they hold one edge up to the bottom of their lip and blow air out (overtop the paper). Watch paper rise! Why does this happen? (Fast moving air produces a higher pressure and the paper rises. It's similar to pushing hard on something so it moves. Only with air, we can't see the pressure.)

Equipment Needed: paper, stopwatch, measuring stick or paper taped to wall to measure height, tape for floor

Den Meeting #2) (Meets Science Everywhere Nova Award Requirement 3A)

Overview: Why are there different sizes and types of rockets?

Activity: Start by cutting out templates of different types of rockets. Discuss the different sizes and types. In order, line up the rockets from smallest to largest. Create a mobile of all the different sizes of rockets. Show mobiles off to each other.

Equipment Needed: Paper templates, glue, crayons, scissors, string, straws

Den Meeting #3) (Meets Science Everywhere Nova Award Requirement 1B)

Overview: By reading a book we will take a closer look the different parts of rockets.

Activity: Review mobiles from last week, mentioning the different sizes and types. Read a book about rockets and the different parts of rockets. Ask each boy at the end to share two facts or ideas they learned from the book.

Equipment Needed: Rocket Book (examples: Countdown with Milo and Mouse by Mike Austin; Curious George and the Rocket By H.A. Ray)



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Wolves

Den Meeting #1) (Meets Science Everywhere Nova Award Requirement 3B and 3C)

Overview: Use the scientific method to explore air pressure by altering the amount of force applied to a pom pom.

Activity: Prepare in advance: Place two sponges in the bottom of a Ziploc bag with a straw between them and sticking out the opening of the bag. Seal bag as much as possible and use tape. For experiment with Scouts: place bag/floor on table with a pom pom in front of straw. See how far the pom pom can be propelled forward by Scout pushing on the sponges, forcing air through the straw [to move the pom pom]. Optional: blow additional air into the bag to get maximum force. Ask how air pressure effects the movement of objects- like rockets!

Equipment Needed: pre-made sponge, straw, tape, ziplock bag conglomeration and pom poms. (other light objects to propel?)

Den Meeting #2) (Meets Science Everywhere Nova Award Requirement 1B)

Overview: What are things that rockets are designed for?

Activity: Read a book and discuss the purpose of the rocket in this book. What are other tasks that rockets perform?

Equipment Needed: Book: (Example: Mousetronaut goes to Mars By: Mark Kelly; I Want to be and Astronaut By Byron Barton; A Curious Robot on Mars! By: James Duffett-Smith; Max Goes to the Space Station By Jeffery Bennett)

Den Meeting #3) (Meets Science Everywhere Nova Award Requirement 3A)

Overview: How do rockets take flight and where do they go?

Activity: Cut out rockets and plan out the sequence of events. In progression, where do rockets go into space? Where are places they have gone in history? Why were rockets sent to these different locations? Have Scouts glue locations, labels, and rockets in approximant location and spacing as is appropriate. Have each Scout share one spot their rocket visited and what it did while it was there.

Equipment Needed: scissors, crayons, poster board, cut out words of locations



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Bears

Den Meeting #1) (Meets Science Everywhere Nova Award Requirement 3B and 3C)

Overview: Use the scientific method to determine how air pressure is a force that we can explore?

Activity: Use a bendy straw to blow through and suspend a ping pong ball in midair! How high can Scouts get theirs? Or how long can they keep it in the air? Discuss why this works and how air pressure is something that rockets need to overcome.

Equipment Needed: ping pong balls, bendy straws

Den Meeting #2) (Meets Science Everywhere Nova Award Requirement 1A)

Overview: Rockets are traveling so incredibly fast that they need to slow down prior to landing.

Activity: Watch video of Apollo landing and discuss what is happening. Point out that there are different ways for rockets to slow down, and different places to land. When returning to Earth often rockets land in the ocean. But often on other planets the landing surface is solid ground. Experiment with dropping paperclips (or other material) into pool of water and solid ground and imagine what it would be like to be inside of the paperclip at this time. What material would you prefer to land on?

Equipment Needed: Apollo landing video, way to show it, paperclips, pool/pot(s) of water, solid landing area taped off

Den Meeting #3) (Meets Science Everywhere Nova Award Requirement 3A)

Overview: Build a safe landing device for an egg.

Activity: Have Scouts build a safe landing for an egg. Can be a parachute, padded shell or other device designed to protect the egg as it attempts to land on two different surfaces (pool of water, solid ground). Drop egg first into the water and second onto the solid surface. What is the difference? Which surface was the landing device designed for? Why does this make a difference?

Equipment Needed: eggs, assorted materials to build egg safety device (plastic bag, tissues, straw, toothpicks, rubber bands, tape), pool or large pot of water



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Cub Scout Meeting Plans

Webelos & Arrow of Lights

Den Meeting #1) (any video or hand-out to read to get credit for Science Everywhere Nova Award Requirement 1A?)

Overview: Air pressure is a powerful force even if we cannot see it.

Activity: Using a glass juice jar with a mouth smaller than a hardboiled egg, light a match and drop it in the bottle. Place the hardboiled egg on top of the mouth. Watch! (As the match goes out and consumes the oxygen in the bottle, the air pressure lowers. Because the air pressure is now higher outside the bottle, that air pushes the egg into the bottle to equalize the pressures in and outside of the bottle. Please note that the egg is *pushed* into the bottle, it is not *sucked* in.) Note: to get the egg back out, you need to raise the air pressure in the bottle. This can be done by positioning the egg with the smaller end in the opening of the bottle, held upside down, and blowing into the bottle. With more air in the bottle, the egg is pushed out. Then you can repeat! How does air pressure have an effect on rockets and how they are designed?

Equipment Needed: Juice jar, matches, hardboiled egg

Den Meeting #2) (Meets Science Everywhere Nova Award Requirement 3A)

Overview: Flight of rockets requires some physical characteristics.

Activity: Have Scouts create two different paper airplanes: one without wings and one with wings. Compete for distance and have each Scout record their results. *These results are needed at the next den meeting! Hold onto them for the Scouts.

Equipment Needed: paper, pencils, measured flight course marked out with tape

Den Meeting #3) (Meets Science Everywhere Nova Award Requirement 3B and 3C)

Overview: Use the scientific method to investigate how rocket landings depend largely on the amount it weighs.

Activity: Review results of last den meeting first. Then, using different weights of paper, paperclips and other small items (to act as weights), have Scouts create and name two different paper airplanes. Compete with these airplanes then graph results for all *four* airplanes over the past two den meetings. Did the difference in weight produce different results in flight? How does this apply to actual rockets?

Equipment Needed: cardstock, paper, newspaper, paperclips, other small weights, tape, measured flight course marked out with tape, and results from last den meeting