



# MOTOR AWAY



## RATIONALE FOR ADVENTURE

We live in an electronic world. This adventure gives Wolf Scouts the chance to rely on the power in their own bodies by blowing air, throwing planes, or using rubber bands. They will have the chance to explore propulsion in its most basic form. Motor Away, Wolves!

## TAKEAWAYS FOR CUB SCOUTS

- Learning to follow instructions
- Exploring how the tension in a rubber band affects propulsion
- Seeing if shape matters in a sail
- The value of cooperation
- Deductive reasoning
- A Scout is courteous. 

*Wolf Handbook, page 266*

## ADVENTURE REQUIREMENTS

1. Do the following:
  - a. Create and fly three different types of paper airplanes. Before launching them, record which one you believe will travel the farthest and what property of the plane leads you to make that prediction.
  - b. Make a paper airplane catapult. Before launching a plane, record how far you believe it will travel and explain what information you used to make this prediction. After you make your prediction, launch the plane and measure how far it flies.
2. Make two different boats and sail them.
3. Create a car that moves under its own power.

### NOTES TO DEN LEADER

In Den Meeting 2, Scouts will create boats made from recycled materials. Collect a variety of recycled materials in advance of Meeting 2, and request that Scouts also plan to collect and bring materials for the boats to ensure a good variety.

This adventure does not include plans for a den outing. If desired, an outing could be planned to an appropriate location where Scouts could explore movement in planes, boats, or cars. In advance of the outing, the leader will need to make arrangements with the outing location and confirm the outing plan with families, including transportation and any additional items they need to bring. Make sure a tour and activity plan has been submitted and activity consent forms are distributed and signed.

See the Appendix for optional den meeting activities, including openings, gatherings, and closings.

# MEETING 1 PLAN

## PREPARATION AND MATERIALS NEEDED

- U.S. and den flags
- Items for paper airplane investigations (Gathering, Activities 1 and 2)
  - Paper (enough for building at least five planes per Scout)
  - Directions printed from the *Wolf Handbook* for making a rubber band catapult and three types of paper planes: arrow, delta, and classic dart
  - Roll of masking tape
  - 6-foot table or 6' x 2.5' area marked off on the floor with the tape
  - Tape measure
  - Pencil
  - Scissors
- Items for the “On Base” game (Activity 3)
  - 2 placemats or squares of cardboard for each Scout
  - Chalk

## GATHERING: THE RESCUE GAME

- As Scouts arrive for the meeting, have them use the table or marked-off area as an “aircraft carrier” for landing paper airplanes. Put pieces of tape through the middle of the simulated carrier to form a straight dashed line.
- Have the den chief teach the Scouts how to fold a paper airplane. Then each boy, in turn, creates and throws a plane across the room and in for a landing, without it falling into the “ocean.”

## OPENING

- Conduct a flag ceremony of your choosing that includes the Pledge of Allegiance and, as appropriate, the Scout Oath and Scout Law.
- Optional: Read the following quote from Orville Wright: *“We were lucky enough to grow up in an environment where there was always much encouragement to children to pursue intellectual interests; to investigate what ever aroused curiosity.” Orville Wright was one of the inventors of the airplane. In this adventure, we will follow his example and explore how things work. Who knows what you will discover next? Please join in the Pledge of Allegiance to our flag.*

## TALK TIME (REQUIREMENT 1)

- Introduce the Motor Away adventure to the den. Build interest by describing the goals of the adventure and some of the activities that are planned. Ask Scouts to share different ways that people have the power to make things move.
- Carry out business items for the den.
- Allow time for sharing among Cub Scouts.

## ACTIVITIES

### ◆ Activity 1: Up and Away (Requirement 1a)

- First, have each Scout build all three of the paper airplane models described in the *Wolf Handbook*: arrow, delta, and classic dart.
- Before the flight tests begin, have each Scout estimate and record his prediction on which model he thinks will fly the farthest. Have the boys base their decisions on various factors including the length, weight, and wing design of each plane.
- When all the planes have been tested, give the Scouts time to compare their results.

### ◆ Activity 2: Catapults (Requirement 1b)

- Now, instead of using their arms to thrust the planes forward, it's time for each Scout to build a rubber band catapult, following the directions in the *Wolf Handbook*.
- Again, after everyone has launched, have the Wolves compare their results.

### ◆ Activity 3: “On Base” Game

- Give each boy a pair of bases (placemats or cardboard squares), and draw start and finish lines using the chalk. Have the Scouts line up side by side behind the start line.
- Each player begins by standing on base #1 and holding base #2 in his hands. He throws or places base #2 on the ground ahead of him, and moves forward by stepping or jumping onto it. Then he picks up base #1, throws or places it ahead of him, and continues the pattern until he reaches the finish line. The first player to get there wins.
- Most will be tempted to play the game quickly—but remind them that, sometimes, slow and steady wins the race.

## CLOSING

- Have the Wolves form a friendship circle: All arms are crossed with each person extending their right arm over their left and grasping the left hand of the person beside them.
- Each Scout, starting with the denner and moving right, says one thing he learned from this meeting about how to fly a paper airplane.
- Remind Scouts to collect and bring recycled materials for making boats during Meeting 2.

## AFTER THE MEETING

- Serve refreshments, if desired.
- Record completion of requirements 1a and 1b.
- Work together to clean up the meeting place.

# MEETING 2 PLAN

## PREPARATION AND MATERIALS NEEDED

- U.S. and den flags
- Items for Sponge Boats (Activity 1)
  - Craft foam (enough for everyone to make a sail)
  - Cardboard stencil (right-angle triangle, 3 inches high with a 2-inch base; two copies for the den to share)
  - Kitchen sponges (one per Scout)
  - Pencils (one per Scout)
  - Straws cut into 4-inch pieces (one piece per Scout)
  - Children’s scissors (one pair per Scout)
  - Hole punch
  - Hot glue gun with glue stick (for adult use only)
- Items for Recyclable Boats (Activity 2):
  - 1 straw and 1 large paper clip for each Scout
  - Recyclable materials (e.g., cardboard, milk or juice cartons, poster board, foam scraps, spools, corks, Styrofoam pieces, craft sticks, small plastic containers)
- 1 large container for floating boats—such as a tub or child’s pool (Activity 3)

## GATHERING: RUNAWAY TRAIN CARS

- Once three or four Scouts have arrived for the meeting, designate one of them to be “It,” or the train’s locomotive; the rest will be runaway cars. The locomotive must catch the runaway cars by tagging them. Whenever a car is tagged, that player hooks up behind the locomotive and the game continues.
- As each new Scout arrives, he joins the game as another runaway car. Keep the game going until the train is completed or it is time to start the meeting.

## OPENING

- Conduct a flag ceremony of your choosing that includes the Pledge of Allegiance and, as appropriate, the Scout Oath and Scout Law.

## TALK TIME

- Carry out business items for the den.
- Allow time for sharing among Cub Scouts.

## ACTIVITIES (REQUIREMENT 2)

### ◆ Activity 1: Sponge Boats

- Each Scout traces a sail on his craft foam—using one of the stencils—and cuts it out with the scissors. He then punches two holes in his sail, one in the corner of the right angle and one at the top, and pokes the straw through the two holes to make a mast.
- Stick the bottom of the straw into the sponge. (A dab of hot glue will help to keep it in place. Make sure only adults use the glue gun.) This completes the boat.

### ◆ Activity 2: Recyclable Boats

- Place the recyclables on a table and have the Scouts choose any pieces they want to build their second sailboat. Remind them that the resources are limited: “A Scout is courteous,” and they can practice this point of the Scout Law by sharing with others in the den.
- To make a mast for each boat, twist a large paper clip into a right angle with the two ends folded into loops. The small section of the paper clip can fit into the center of a straw, and the large side can be hot-glued to a hard surface to finish the mast.

### ◆ Activity 3: Sailing

- Have each Scout float the two boats he made in the pool or tub of water.
- Then ask: *How did the boats move in the water? Which type of boat worked best? Was one design better than the other to propel the boat forward?*

## CLOSING

- Again, end the meeting by bringing the den together in a friendship circle. Starting with the denner and moving right, have each Scout say one thing he learned about how sailboats operate.

## AFTER THE MEETING

- Serve refreshments, if desired.
- Record completion of requirement 2.
- Work together to clean up the meeting place.

# MEETING 3 PLAN

## PREPARATION AND MATERIALS NEEDED

- Items for the “Stacking Logs” game (Gathering)
  - Toothpicks (10 per Scout)
  - 2 small-mouthed bottles
- Items for making “self-powered” cars (Activity 1):
  - Balloon option: 1 balloon, 2 straws, 4 spools, 4 straight pins, and 1 clean, dry half-gallon milk carton with the top cut off and cut in half lengthwise
  - Spool car option: 2 spools, 1 pencil, 2 rubber bands, 2 washers, 4 paper clips, tape
- 3-foot sections of rope (Closing, one per Scout)

## GATHERING: “STACKING LOGS” GAME

- Give each Wolf Scout 10 toothpicks, or “logs,” when he arrives for the meeting. Once you have a group of three or four Scouts, hand them one of the bottles. (When the other half of the den arrives, give them the other bottle.)
- The first player balances a log across the open neck of the bottle. The next boy puts another log alongside or on top of it. The third player adds one of his, and so on until someone causes his own log or any of the others to fall; that boy must pick up and keep the logs that dropped to the floor. The game continues until one of the players is left without any logs and wins.

## OPENING

- Conduct a flag ceremony of your choosing that includes the Pledge of Allegiance.
- As the den chief calls roll, each Scout responds by naming a point of the Scout Law. Then the entire den recites the remainder of the 12 points in unison.

## TALK TIME

- Carry out business items for the den.
- Allow time for sharing among Cub Scouts.

## ACTIVITIES

### ◆ Activity 1: Self-Powered Cars (Requirement 3)

- Using the directions in the *Wolf Handbook*, have each Scout create a spool car or a balloon car. (Note: Check to be aware of any latex allergies in the den.)
- When all the Scouts have built their cars, use masking tape to mark start and finish lines on the floor, and hold several races.

### ◆ Activity 2: Tunnel Relay

- Divide the den into two parallel teams, standing single file with their legs spread apart. The back player on both teams crawls between the legs all the way to the front, then stands with his feet apart and yells, “All clear!” The other players follow in succession; the first team to finish the cycle wins.
- If you don’t have an even number of Wolves, put the den chief on one of the teams. If the den is small, play with just one team and go through several rounds. Clock the Scouts on the first round and see if they can beat their time when they go again.

## CLOSING

- Give each Scout a 3-foot section of rope. Each boy ties his rope to the rope on his right, using a square knot, until all the ropes are tied in a big circle. Then everyone carefully leans back to make a taut circle. Say: *You are part of a group of close friends, held together by the square knot—a symbol of friendship.*
- Starting with the denner and moving right, have each Scout say something he learned about propulsion and momentum from making and racing his car.

## AFTER THE MEETING

- Serve refreshments, if desired.
- Record completion of requirement 3.
- Work together to clean up the meeting place.

Upon completion of the Motor Away adventure, your Wolves will have earned the adventure loop shown here. Make sure they are recognized for their completion by presenting the adventure loops, to be worn on their belts, as soon as possible according to your pack's tradition.

