



## Canoe Experts

Cub Scouts will design and make a canoe out of everyday materials.



### PLAN

- Prepare the materials. Decide if you want to add any other materials to the list. Cubs should be able to achieve the goals of the activity with the materials provided.
- This activity can be done inside, outside or at camp – as long as there is water nearby.
- Build an example to show Cubs.
- Cubs might want to build a new canoe for the second test, depending on the outcome of the first test. Consider doing a different boat for each challenge.

### DO

#### Activity #1: Build a Canoe

- Scouters give each group one set of all the materials.
- Cubs have 30 minutes to build, test and revise their canoes. Remind Cubs that the boats should be able to withstand both tests.
- Remind Cubs that the final test will be done with the flags on the canoes so they should consider this in their designs.

#### Activity #2 and #3: The Tests

- When each group is ready, it will put its canoe in the tub or bucket of water. One Howler will begin to put marbles on the boat until the boat capsizes. Cubs can decide where on the boat they want the marbles to be placed.

- After the marbles activity, the same boats will be put into a test of speed. Some boats may need repairs.
- In a long bucket or tub, Cubs gently push the boat and measure how far it goes and how much time it takes to stop. Boats that go farther in less time are faster.
- After this initial test, Cubs will go back to their groups to make changes to their designs to try to make their boats go faster

### THE SCIENCE BEHIND CANOE BUILDING

- The boats that have the largest surface with a stable structure should bear the most marbles because the large surface distributes the pressure (like a raft).
- While a raft can bear heavier loads than a canoe, it cannot go as fast because it does not have the same aerodynamic structure. So depending on the purpose of the boat, the optimal structure would be different.

### SUGGESTED TIMING:

- Introducing the problem and presenting the materials – 5 minutes
- Marbles game – 40 minutes
- Speed game – 40 minutes
- Review – 15 minutes

