



## CUB SCOUTS

## STEM

# Paper Tube Engineer

### PLAN

- With the Howlers, decide how you want to make the river for the Cub Scouts to cross. The more realistic it is, the more fun it will be. The river should be about 50 cm across. If you have access to an actual water stream that is not deeper than toilet tubes, plan to have your meeting there.
- Plan for the cleanup of sands and pebbles if the activity is done indoors.
- Ask Cubs to bring in toilet paper tubes ahead of time to be sure you have plenty for each group.



### DO

- Cubs should consider covering each toilet paper tube with plastic wrap so it won't get wet.
- The tubes are strong enough for a Cub to stand on, but need to

be strengthened in order to support their shifting weight as they walk across the tubes. Cubs can attach two or three tubes together to make the stepping stone stronger. Filling the tubes with something like sand or gravel will add support as well.

### REVIEW

- Bring in a wooden board to demonstrate how strong the tubes can be.
- By adding a board across the tubes, the tubes will be able to support more weight. The board spreads the weight out evenly

across the points of contact. This is how a polar bear is able to walk across ice without falling through – its large paws disperse its mass evenly.

### SOME BACKGROUND INFORMATION

- When the Cubs walk on the tubes, they apply more force than when they simply stand on them. When we stand on a frozen puddle, it might not break. If we walk across it or stomp on it,

the action of stepping down or pushing off can cause the ice to break.

### SUGGESTED TIMING:

- Plan: 10 minutes
- Do: 20-25 minutes
- Review: 10 minutes

