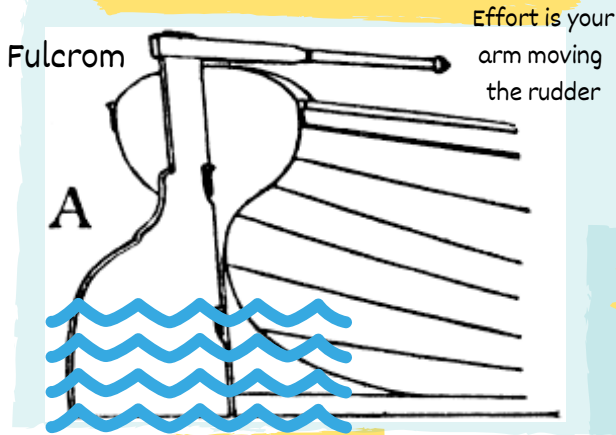


# My Boat has a Rudder!

A rudder is an example of a lever that was used constantly on the canal. A lever can be described as a long rigid body with a fulcrum along its length. Load : The object you're lifting. Fulcrum : Point at which the lever pivots. Effort: The force applied to make the object move.

## PARTS OF THE LEVER



water is the object you are moving against

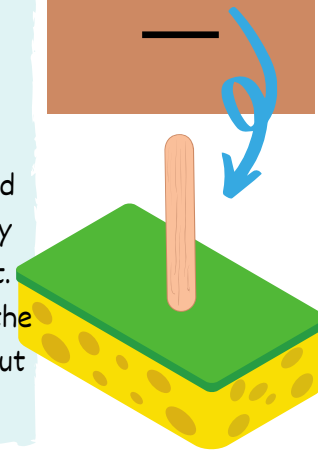
## MATERIALS

Sponge, hot glue gun, 4 popsicle sticks, construction paper, scissors, markers for decorating

## STEP 1

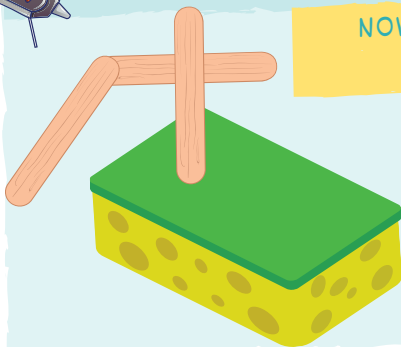
The sponge will be your boat bottom. Cut a triangle or a square for your sail out of construction paper. Take 1 popsicle stick and push it into the center of your boat, you may need to use the scissors to slice a hole for it. Fold your sail in half and cut 2 small slits in the fold in line with each other so that you can put the sail on the popsicle stick.

slip popsicle stick through these little slits



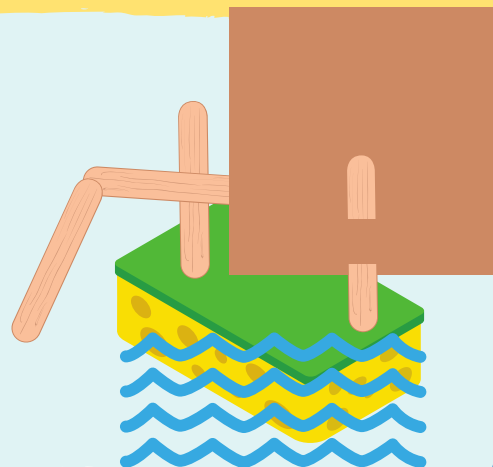
## TIME TO MAKE THE RUDDER

Glue the 3 other popsicle sticks like this



## NOW ADD THE SPONGE BOTTOM

You want to push the rudder "stand" into the sponge and make it so that it can swivel back and forth within the sponge



## PUT IT IN WATER AND SEE HOW IT DOES, CAN YOU TURN THE BOAT?



Why do you think this kind of lever was so important to canal boat captains?

