

## **DIY Compass**

### **Supply list:**

Sewing Needle (large is best)

Magnets (the stronger the better)

Cork (*alternatives: foam, small piece of pool noodle, or even 1 inch diameter circle of wax paper*)

A medium to large sized bowl

Water

(Pliers – optional)



### **Steps:**

Magnetize the needle

Hold the needle, and take your magnet and stroke it down the length of your needle 50 times. If you are using a weaker magnet you may need to do this more than 50 times. But for most good quality magnets 50 should be about right.

Magnetize the other end with the reverse

Now this is very important, take note of which side of the magnet you were using. Flip the needle around so you are holding the other end, and flip over the magnet so you are using the other side of the magnet. Now repeat on the non-magnetized end of the needle. When you are done with that make sure to leave the magnet off to the side, if it comes close to the needle again it could demagnetize. We also want to make sure to move strong magnets away from electronics like computers and phones!

Prepare the cork

Cut a cork so it is about 1 to 2 cm thick.

Insert the needle

Carefully push the needle through the cork. This is best done by an adult with a pair of pliers. I found it easiest if I used a thumb tack to start the hole, then pushed the needle through. You want the cork to be centered on the needle.

Fill a bowl with water

Set out your bowl and fill it with a few inches of water.

Test the compass!

Place your cork and needle in the water and see how it moves. It should align itself so it points North.

Create a second compass and add it to the same bowl of water. What happens? What happens if you bring your magnet near the water? What happens if you spin the compass?



If you are having trouble getting yours to work, try a stronger magnet or rubbing the magnet more on the needle

### ***So How Does It Work?***

Magnetism can be seen in action whenever you have two magnets close together. Magnets have a positive and a negative side. This causes them to either push against one another or be pulled together. Two positive sides will repel each other causing the magnets to push apart. But Flip one magnet over so you have a positive and a negative near each other and they will attract each other.

For almost 1000 years people have been using magnetism to help them navigate the globe. Magnetism can help people navigate because the Earth has its own magnetic field. Compasses use a small magnetized bar or needle that points a certain direction (north or south) based it's reaction to Earth's magnetic field.

When we rubbed the magnet against the sewing needle, it magnetized the needle. This means it becomes a weak, temporary magnet. Because magnets interact with one another, either attracting or repelling, the magnetized needle can interact with the Earth's magnetic field. We use the bowl of water because Earth's magnetic field is relatively weak. Allowing it to float freely on the water, allows the magnetized needle to freely react to Earth's magnetic field, causing it to align North to South. If you watched closely, the same end of the needle should always point to the North.

## **Popsicle Stick Pirate Ship**

### **Supply list:**

Popsicle sticks  
Markers [red, black, brown] (alternatives: crayons, paint)  
Craft glue  
Cardstock or printer paper  
Pencil/pen  
*Clothes pin (optional)*  
*Glitter, stickers (optional)*



### **Steps:**

1. First assemble the base of your ship by gluing together a basic popsicle stick frame/fence {7 popsicle sticks laid next to each other and two regular size popsicle sticks, one on each side, to anchor everything together)

Lay those popsicle sticks down in a row with the other 2 sticks on each end and glue those end sticks so they keep everything together.



2. Next glue down your clothespin if you have one, to the center of the boat like this... it will hold the flagpole, which is another popsicle stick ... If you don't have a clothespin, instead use 2 popsicle sticks and glue them to the center of the boat to create the flag pole.

If you have a clothes pin, take the popsicle stick out and lay it flat, you might want to use two for the pole to keep it stable. Next we are going glue six popsicle sticks in a line, to create a flag from the flag pole. Set it all aside to let it dry completely.

3. Now grab your markers and add your personal touches. We did the boat in brown and did the flag in a black/red alternating pattern.

4. Next, grab your white cardstock and draw out a pirate skull design if you want that on your flag, or whatever else you might want to put on instead!

5. To finish off the Popsicle Stick Pirate Ship craft, glue the cardstock piece in the center of the flag. Then display your pirate ship proudly!!

## **Popsicle Stick Pirate Ship and Pirate Face!**

### **Supply list:**

Popsicle sticks  
Construction paper  
Yarn  
Markers [red, black, brown] (alternatives: crayons, paint)  
Craft glue  
Pencil  
*Glitter, rhinestones (optional)*



### **Steps:**

1. First assemble the base of your pirate's face by gluing your popsicle sticks together to look like a fence just like before {7 next to each and two across}

Set aside to let it dry completely.

2. If you want to, you can color the front of their popsicle stick fence however they like. We kept ours blank, but make your popsicle face any shade or color you like!

3. Once done, grab your pencil and draw some facial features onto our construction paper. I think I'm going to make a pirate version of me, so I'm going to need a smile (or any facial expression you



want – angry, surprised, scared, etc) and I need a nose, eyebrows, and eyes (you can make 2 eyes or 1 eye and an eye patch like me!)

4. Once you have drawn your mouth, eyes, and nose, cut out some facial features from your construction paper.

5. Next we are going to add some hair, so get your yarn and cut some long pieces of string for the pirate's hair, and glue those onto our pirate's head...

4. To finish off your pirate, we are going to make a pirate hat! Draw a hat shape on your construction paper and cut it out. Feel free to add other decorations, you can make another skull cut out and add it to the hat, or any other decoration.