



# At-Home Science Saturday: Sea Turtles

An at-home activity for grades 6-8: Make a Sea Turtle Magnetic Map

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## Science Saturday at Home: Create your own magnetic field map

May is Sea Turtle Month at the Coastal Center! For this at-home activity, we are going to create a sea turtle magnetic field map with supplies you probably already have around the house. Before you create your sea turtle magnetic field map, it's important to learn more about how animals use Earth's magnetic field to navigate.

### Lesson:

Sea turtles are magnificent animals! They have been on Earth for a very long time, and have successfully figured out how to navigate our oceans without the help of a map or compass. When a female sea turtle is ready to make a nest, she will travel hundreds—if not thousands—of miles back to the same beach that she was born on. Are there signs in the ocean telling her which way to go? Of course not! Well then, how does she navigate so far without getting lost? Sea turtles use Earth's magnetic field to find their way back home. Earth works like a giant magnet (our planet has a north pole and south pole, just like magnets do). Earth's "magnetic field" is the area where our planet's magnetism can be felt (Earth's magnetic field is what makes a compass point towards the north). Invisible magnetic field lines connect both of Earth's poles. These invisible lines wrap all around the planet, but their strength and direction differ depending on where you are located. Sea turtles, and many other migratory animals, are able to detect Earth's magnetic field. They use the strength and direction of magnetic field lines to tell where they are on the globe. It's almost like having a built-in compass or GPS! A sea turtle that hatched in Florida can remember the strength and direction of magnetic field lines in that area. In her brain, she stores a version of a magnetic field map, allowing her to find her way back "home" when she is ready to nest as an adult. In this activity, you will create your own magnetic field map. Then you will see how far your model sea turtle can "migrate" away from a magnet while still being able to detect its magnetic field.

### Needs:

- Cereal box
- Scissors
- Tape
- 5-10 refrigerator magnets of varying strengths
- String, cut into 12" lengths
- Bolt, screw, or nail that is ferromagnetic (sticks to magnets)
- Modeling clay or play dough
- Pencil

## Activity:

1. First, you need to make your sea turtle models. Start by tying a 12" piece of string to the center of the screw, bolt, or nail. Then, use clay to form a miniature sea turtle surrounding the bolt. The bolt should be hidden inside of the clay turtle, with the string coming out of the turtle's back.
2. After you have done this, it is time to make your magnetic map.
3. Cut a cereal box in half longways, forming a "tray." Tape the corners of the cut box for extra support. When you set the cut box on a table (brown side down, printed side up), the flat surface of the box should be about one inch above the table top.
4. Now take the magnets and place them on the table, close enough so that they all fit underneath the cereal box. Place the cereal box on top of them.
5. Use pens or markers to decorate the top of a piece of paper with a fun title like "Magnetic Map" or "Sea Turtle Migration Map."
6. Place the paper on top of the cereal box
7. Now hold the string with the turtle over the paper and move it slowly back and forth until you feel it move in response to one of the magnets.
8. Wherever you think that magnet is, draw a dot or a circle.
9. Next, move the turtle around the magnet you found slowly.
10. See how far away from the dot you can move the turtle while still feeling the effects of the magnetic field. Be sure to check around all sides of the magnet.
11. Draw a circle around the entire area the turtle can detect the magnet.
12. Continue doing this until you have recorded all of the magnets! You created a magnetic map!
13. Just like in nature, your model sea turtle can navigate around the magnetic map by "remembering" the strength and location of each magnetic field that you've created. This is similar to the way that living sea turtles use Earth's magnetic field to navigate.
14. If you made more than one turtle, you can use a different color pencil to draw a new map for each turtle model. Does the size of the screw, bolt, or nail affect how your map looks?

