Nature-Watch Activity Kit

Make Your Own Compass

(Nature Watch Kit #142)

Kit Contents

	Kit Size		
	1	***25***	***100***
Item:	Quantities:		
Lodestone Pieces	1	5	10
Cardboard Medallions	1	25	100
Blank Compasses	1	25	100
Box of Paperclips	1 Clip	1	4
Bottle Cap & Needle	1	1	1
Tacky Glue	0	1	2
Necklace Cords	1	25	100
Instructor Manual	1	1	1

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and Science, Technology, Engineering, and Math (STEM) extensions (on back) to use in adapting and extending this activity to other subject areas.

Next Generation Science Standards Alignment

K2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

3-PS2-4. Define a simple problem that can be solved by applying scientific ideas about magnets.

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.

5-PS1-3. Make observations and measurements to identify materials based on their properties.

MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

See Back for STEM Extensions

This Nature Watch Activity Kit contains an Instructor Manual and materials to implement the curriculum. The kit was designed to be used with adult supervision only. Unsupervised use is not recommended.

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STEM Extensions

Science

Choose 15 objects in your classroom or your bedroom and hold your lodestone up to each one to check if it is attracted to the magnet. Record the result for each object. What similarities and differences do you see between the objects that were attracted to the magnet and those that weren't?

Go around your school building and hang up signs with the letter "N" for North and an arrow pointing in the direction of North from various points in the school. Use your compass at each point to confirm which direction is North.

Separate out the iron in your iron-fortified cereal! Place some cereal in a bag and add enough water to wet it all. Seal the bag and let it sit for 20 minutes. Rub your magnet all over the bag, then run the magnet from the bottom to the top of the bag to draw out the iron.

Technology

Use a GPS device and your compass simultaneously to take a walk around the neighborhood. At one-minute intervals, stop to check if the two are matching up in the directions they show.

Try geocaching, which is a real-life scavenger hunt with hidden objects all over the world. All you need is a GPS device and (free) access to the geocaching website or app.

Engineering

A compass must be held level to the ground to work accurately. Design and build an accessory that will help you keep your compass level when you are using it.

Try using other small objects other than a needle to build your compass. Does the compass still work the same, or does it behave differently than it did with the needle? Experiment with a several objects to see what works and what doesn't.

Math

(Younger) Follow the directions for the Compass Quest activity on page 3. Have participants use tiny steps as they follow the instructions, and ask them to count their steps. Then have them repeat the same course with giant steps. How many more steps did it take the first time?

(Older) Follow the directions for the Compass Quest activity on page 3. To go along with the instructions, draw a map of the course to the scale of 5 steps: 1 inch or 10 steps: 1 inch, depending on the size of the space.