



Rescue Diver

Explore the power of magnets as you use a magnetic wand to simulate saving divers at sea! Watch out though, the magnetic force that can help save our divers can also attract things like sharks and other dangerous sea creatures.

TEKS:

SCI 3.5A: The student is expected to measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float.

SCI 3.6C: The student is expected to observe forces such as magnetism and gravity acting on objects.

SCI 5.6D: The student is expected to design a simple experimental investigation that tests the effect of force on an object.

SCI 7.3B: The student is expected to use models to represent aspects of the natural world such as human body systems and plant and animal cells.

Materials:

- Duct tape
- 6-10 key rings
- Magnetic wand – can be purchased [here](#)
- 6-10 paperclips
- Paper towels
- Plastic shoebox or bin
- 2-4 portion cups
- 2-4 round magnets
- 2-4 straws
- Timer
- Washers
- Water

How To:

Setting up the challenge

1. Fill your plastic shoebox or bin with about 2 inches of water.
2. The paperclips represent the divers you are going to rescue with the magnetic wand. Carefully drop the paperclips into the water making sure they are spread throughout the bottom of the plastic box/bin.

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3. The key rings are treacherous sharks! You will need to avoid these sharks when rescuing your divers. Place the key rings in the water and, for added challenge, place them near the divers.
4. Next, cut 2-4 straws in half and attach round magnets to one end of each straw half using duct tape. These represent barracudas – add them to the bin as well.
5. Finally, place two portion cups filled with washers into your plastic box. You will want to avoid these on your rescue dive, as they represent one of the most dangerous creatures in the ocean – box jellyfish!

Aquatic Animal Representation Key	
Barracuda	½ straw with magnet at one end
Box Jellyfish	Washers in a portion cup
Divers	Paperclips
Sharks	Key rings

Completing the challenge

1. Your goal is to rescue all of the divers using the magnetic wand without touching the water! Make sure to avoid dangers of the ocean: sharks, barracuda, and box jellyfish.
2. Time yourself to see how fast you can collect all of the divers, then try again to see if you can do it faster!

STEM Explanation:

Rather than diving into the ocean to save our divers, we are relying on the magnetism from the magnetic wands to save them. A magnetic field is the space where the forces of a magnet are felt. Since the divers in this activity are metal paperclips, the magnetic field from the wand attracts the metal paperclip to the wand. Be careful because this same principle applies to the other metal objects that we are trying to avoid in this activity: key rings, metal washers, and even other magnets. It is important to try to get the magnetic field from the wand close to our divers while keeping it away from the dangers in the ocean.

Career Connection:

Magnetics engineers are specialized physicists that study and apply their knowledge of magnetism to new products. They work in partnership with a variety of companies to integrate their magnetic technologies and new magnetic solutions for an array of customer products. Magnetics engineers assist in the design of many products like seals on laptops, maglev trains, polymagnetic locks, handheld technology devices, and much more!

Resources:

<https://www.explainthatstuff.com/magnetism.html>

[https://www.amazon.com/Learning-Resources-Magnetic-Wands-](https://www.amazon.com/Learning-Resources-Magnetic-Wands-Set/dp/B000URSHEE/ref=br_lf_m_s4dx9evd84mq9wv_ttl?encoding=UTF8&s=toys-and-games)

[Set/dp/B000URSHEE/ref=br_lf_m_s4dx9evd84mq9wv_ttl?encoding=UTF8&s=toys-and-games](https://www.amazon.com/Learning-Resources-Magnetic-Wands-Set/dp/B000URSHEE/ref=br_lf_m_s4dx9evd84mq9wv_ttl?encoding=UTF8&s=toys-and-games)

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