

Magnetism Worksheet

True or False

Determine if the following statements are true or false.

- _____ 1. Some magnets have just one magnetic pole.
- _____ 2. Bringing together the north poles of two magnets demagnetizes them.
- _____ 3. A magnet will attract any material that contains iron.
- _____ 4. Only ferromagnetic materials are affected by magnetic force.
- _____ 5. For a ferromagnetic material to become magnetic its magnetic domains must be aligned.
- _____ 6. Iron is the only ferromagnetic material.
- _____ 7. While paper clips are clinging to a bar magnet, they are temporary magnets.
- _____ 8. Permanent magnets can never be demagnetized.
- _____ 9. Magnetite is a naturally occurring permanent magnet.
- _____ 10. The magnetic properties of lodestone were discovered only recently.

Critical Reading

Read this passage from the text and answer the questions that follow.

What Makes a Material Magnetic?

Magnetism is due to the movement of electrons within atoms of matter. When electrons spin around the nucleus of an atom, they cause the atom to become a tiny magnet, with north and south poles and a magnetic field. In most materials, the north and south poles of atoms point in all different directions, so the matter is not magnetic. Examples of nonmagnetic materials include wood, glass, plastic, paper, copper, and aluminium. These materials are not attracted to magnets and cannot become magnets.

In other materials, there are large areas where the north and south poles of atoms are all lined up in the same direction. These areas are called magnetic domains. Generally, the magnetic

domains point in different directions, so the material is still not magnetic. However, the material can be magnetized by placing it in a magnetic field. When this happens, all the magnetic domains become aligned, and the material becomes a magnet. Materials that can be magnetized in this way are called ferromagnetic materials. They include iron, cobalt, and nickel.

Questions

1. What are some examples of nonmagnetic materials? Why are these materials nonmagnetic?
2. What are ferromagnetic materials? Which elements are ferromagnetic?
3. Explain why ferromagnetic materials can become magnets.

Multiple Choice

Circle the letter of the correct choice.

1. Why are the poles of a magnet called north and south poles?
 1. One pole is positive and one pole is negative.
 2. The poles are at opposite ends of the magnet.
 3. The poles are the coldest parts of the magnet.
 4. The poles line up with Earth's north-south axis.
2. What happens if you cut a bar magnet in half between the north and south poles?
 1. One half has a north pole and one half has a south pole.
 2. Each half is a stronger magnet than the original magnet.
 3. Each half has both a north pole and a south pole.
 4. The two halves are no longer magnetic.
3. Which statement about magnetic force is false?
 1. It is exerted over a distance.
 2. It affects only certain types of matter.
 3. It includes forces of attraction and repulsion.
 4. It acts only on materials that are touching a magnet.
4. Which of the following materials is attracted to a magnet?
 1. aluminum
 2. copper
 3. glass
 4. steel
5. A material that can be magnetized
 1. has magnetic domains.
 2. is called ferromagnetic.
 3. must contain iron.
 4. two of the above
6. If you place a paper clip very close to a magnet, the paper clip
 1. is attracted to the magnet.
 2. moves toward the magnet.
 3. becomes a temporary magnet.
 4. all of the above

7. Magnetism is caused by the
1. attraction between protons and neutrons of atoms.
 2. attraction between positive and negative ions.
 3. movement of electrons within atoms.
 4. none of the above

Matching

Match each definition with the correct term.

Definitions

- _____ 1. force of attraction or repulsion exerted by a magnet
- _____ 2. object that attracts ferromagnetic materials
- _____ 3. iron, nickel, or cobalt
- _____ 4. north or south end of a magnet
- _____ 5. area around a magnet where it exerts force
- _____ 6. ability of a material to respond to and exert magnetic force
- _____ 7. area of a ferromagnetic material where the poles of atoms are aligned in the same direction

Terms

- a. ferromagnetic material
- b. magnet
- c. magnetic domain
- d. magnetic field
- e. magnetic force
- f. magnetic pole
- g. magnetism

Fill in the Blank

Fill in the blank with the appropriate term.

1. A magnet is strongest at its _____.
2. The north and south poles of two magnets _____ each other.
3. When electrons spin around the nucleus of an atom, it causes the atom to become a tiny _____.
4. A ferromagnetic material can be magnetized by placing it in a(n) _____.
5. The most magnetic material in nature is the mineral _____.
6. When two magnets are brought close together, their magnetic fields _____.
7. If you stroke an iron nail with a bar magnet, the nail becomes a(n) _____ magnet.

Critical Writing

Thoroughly answer the question below. Use appropriate academic vocabulary and clear and complete sentences.

Explain how and why a so-called permanent magnet can be demagnetized.