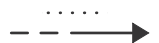


Magnets



1. Define the following terms in the context of magnetism:
 - a. Magnets
 - b. Magnetism
 - c. Magnetic Field
 - d. Attraction
 - e. Ferrite
 - f. Rare Earth Magnets
2. Use a magnet to determine at least two of the following metals/alloys that are ferromagnetic and three that are non-ferromagnetic:
 - a. Aluminum
 - b. Cobalt
 - c. Copper
 - d. Gold
 - e. Iron
 - f. Nickel
 - g. Silver
 - h. Stainless Steel
 - i. Tin
 - j. Zinc
3. List the three main types of magnets and examples of each type.
4. Understand how magnets are dipolar.
 - a. Explain how moving electrons create magnetism on the atomic level.
 - b. Illustrate how north-south poles of different magnets react to north-south poles on other magnets.
 - c. Explain why the Earth's North Pole is really a magnetic south pole.
 - d. Why does dragging a permanent magnet across a piece of iron make it a temporary magnet?
 - e. Why does a temporary magnet eventually or immediately lose its strength?
 - f. Determine the north and south poles of an unmarked magnet.
 - g. Know what happens to north and south poles when magnets are joined or separated.
5. Discover the following about magnetic fields (flux density):
 - a. What is the direction of the flux density?
 - b. Explain where the flux strength is strong and where the flux strength is weak.
 - c. Use filings and paper to illustrate magnetic fields for bar, horseshoe, and ring-shaped magnets and sketch your findings.



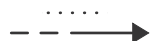
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6. Answer the following questions regarding the earth in relation to magnetism:
- a. Explain how the earth is magnetic.
 - b. How does the earth's magnetic field protect us from the solar flares?
 - c. How do animals use the earth's magnetic fields?
 - d. When does a compass not point to the magnetic north?
 - e. How much does the North Pole move each year?
 - f. Learn about evidence of the earth's pole reversal and current studies of the weakening of the earth's magnetic strength and theories on what this could mean to life on earth. Discuss how a Biblical scientist might explain the historic pole reversal and understand the steady weakening of the earth's magnetic strength.
7. Convert a screwdriver to a temporary magnet and demagnetize it again and understand why this is useful.
8. Make an electromagnet. How do the north and south poles alternate when current is reversed?
9. Using an experiment of your choosing, illustrate magnetic levitation.
10. Disassemble an electric motor and find the magnets. Discuss with your instructor the role of magnets in the motor.
11. At home, salvage magnets from at least five different types of devices that are being thrown away or recycled.
12. Michael Faraday was a devout Christian and made many contributions to science and is especially known for his work with magnets. Watching videos or reading books, learn about Mr. Faraday's life and what many claim his Christian faith influenced his scientific mind. Be able to explain how his work with magnets is instrumental in our understanding of electricity.
13. Memorize James 4:7-8 and discuss how God's love for us is similar to magnetism and how it is different.

Skill Level 1

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