Name _____

Magnetism (p. 224 – 230)

Jupiter/Saturn
- largest magnetic fields in the solar system
(14X greater than Earth)

I. Magnets

1. **Define the term magnetism.**

   Magnetism – the properties + interactions of magnets

2. **Magnet strength increases as magnets move closer together.**

   Circle One : (True) False

3. **Define the term magnetic field.**

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   Magnetic Field – surrounds a magnet and exerts a force on other magnets and objects made of magnetic materials

4. **Define the term magnetic poles.**

   Magnetic Poles – region on a magnet where the magnetic force exerted by a magnet is strongest

5. **Where are magnetic field lines the closest and what do they connect?**

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   1. Closest at the ends of bar magnets
   2. Connect north pole + south pole of magnets

6. **Magnets can either** attract **or** repel **each other.**

7. **North poles and south poles always** repel **each other, while unlike poles** attract **each other.**

8. **Circle the letter of each sentence that is true about magnetic fields.**

   a. Magnetic fields are stronger closer to the magnet.
   b. Field lines begin near the ~~south~~ north pole of a magnet and extend toward the ~~north~~ south pole.
   c. Iron filings are most attracted to areas where the field is strongest.
   d. A magnetic field is strongest near the north and south poles of a magnet.

9. **Since a north pole-charged compass points to the north pole, then what type of magnetic pole is the north pole?**

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   Circle One : North-Seeking Pole (South-Seeking Pole)

10. **Magnetic north pole and geographic north pole are ~~the same~~ at different location.**

    Circle One : True (False)

    Geographic N. Pole = 90° N
    Magnetic N. Pole = 81° N

Name _____

11. How many times has the Earth's magnetic poles switched over the past 70 million years?

150 times — Evidence = Seafloor Spreading

12. Where do scientists believe the magnetic field of the Earth is generated?

Outer Core

II. Magnetic Materials

1. Define the term ferromagnetic material. (Not in the book.)

Ferromagnetic Material – material that can be magnetized because it has many domains

2. List three examples of ferromagnetic materials.

1. Iron 2. Nickel 3. Cobalt

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3. Define the term magnetic domains.

Magnetic Domains – group of atoms in a magnetic material with the magnetic poles of the atoms pointing in the same direction

Toy cars analogy

4. Each atom in a magnetic domain is capable of aligning their magnetic poles.

Circle One : (True) False

5. A non-magnetized iron nail can become magnetized.

Circle One : (True) False

6. What are three ways that magnetic realignment can occur? (Not in the book.)

1. Heat 2. Jarring Impact 3. Moving a material (relative to a magnet)

7. How are permanent magnets created?

1. Place a ferromagnetic material in a strong magnetic field
2. Strong magnetic field locks in domain alignment

8. What can un-magnetize a "permanent magnet"?

Heating (moves the molecules out of place)

9. A magnet cut in half will create two new magnets (each with a north and south pole).

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Circle One : (True) False