

Name:

Study Guide: Physical Science End-of-Unit Assessment (December 3)

1. In class, we used a compass to find the hidden magnets. How is a compass helpful in finding a hidden magnet?

*A compass will detect a magnet because the compass needle is a magnet and it will interact with the magnetic field of the hidden magnet. The compass needle will point towards the hidden magnet.*

2. What magnetic field does a compass detect when you are on a hike?

*A compass detects Earth's magnetic field unless another magnet is nearby.*

3. What are the rules of attraction in magnetism? Be specific.

*Magnets have two poles, a north pole and a south pole. Like poles (south – south or north-north) repel. Unlike poles (south-north) attract.*

4. Define the terms *attract* and *repel*.

*Attract means to pull together. Repel means to push apart.*

5. How can you use a magnet to figure out if something is made of iron?

*You can use a magnet to figure out if something is made of iron. If it sticks/is attracted to the magnet, it is made of iron.*

6. What are the rules of electrically charged objects?

*Electrically charged objects attract or repel each other. Opposite charges attract, and like charges repel.*

7. If two balloons moved away from each other, what charges might they have? If they moved towards each other what charges might they have?

*If the two balloons move away from each other, they must have the same charge (negative-negative or positive-positive). If they moved toward each other, they must have opposite charges (negative-positive).*

8. Draw a picture of a closed circuit using a light bulb, wires, and a battery.

9. How does electricity run through circuits? If a series circuit is using two batteries in series, do the batteries need to be facing a certain direction?

*The electrons flow through circuits from the negative side of the battery, through all of the components, and back to the positive side of the battery. If two batteries are in a series circuit, they need to be facing in the same direction for current to flow.*

10. What is an electromagnet?

*An electromagnet is a magnet that can be turned on and off. It is a piece of iron that becomes a temporary magnet when electricity flows through an insulated wire wrapped around it.*

11. How do you make an electromagnet?

*You make an electromagnet by wrapping a long insulated wire around an iron rivet, leaving some wire free at each end. Connect one free end of wire to the negative side and the other free end of the wire to the positive side of the battery.*

12. Draw a picture of an electromagnet like the one we made in class.

13. How can you increase the strength of an electromagnet? (two ways)

*To increase the strength of an electromagnet, increase the number of coils around the rivet (iron core), add more batteries to the circuit, use thicker wire, or wrap the coils tighter and neater.*

14. Where does the magnetism come from in an electromagnet?

*The magnetism in an electromagnet comes from electricity flowing through the wire.*

15. What should the rivet be made of in an electromagnet? Why?

*The rivet (core) should be made of iron because you can turn iron objects into temporary magnets. You can induce magnetism in iron. You can't do that with a metal like aluminum.*

16. If you want to pick up more washers with your electromagnet, like we did in class, should you use a thin or thick wire? Why?

*If you want to pick up more washers, you should use a thick wire because you produce a larger magnetic field.*