ORANGE PUBLIC SCHOOLS OFFICE OF CURRICULUM AND INSTRUCTION OFFICE OF SCIENCE

GRADE 4 SCIENCE Pre- Assessment Unit 2: Magnetism and Electricity



School Year 2014-2015

Directions for Grade 4 Pre- Assessment

The Grade 4 Pre- Assessment is made up of multiple choice questions, constructed response questions and performance questions.

Read each question carefully, including diagrams and/or graphs.

Work as rapidly as you can without sacrificing accuracy. Do not spend too much time puzzling over a question that seems too difficult for you. Answer the easier questions first; then return to the harder ones. <u>Try to answer every question,</u> even if you have to guess.

Where necessary, you may use scratch paper for your work. Do not use the margins of the test booklet to do scratch work.

FOR ALL QUESTIONS, YOU MUST RECORD ALL OF YOUR ANSWERS ON THE TEST BOOKLET.

| Name |
|------|
| Date |

1. Wait for your teacher before you begin. Your teacher will tell you how to complete this item.

| Object | a. Sticks to magnets? | b. Conducts electricity? |
|--------------------|--------------------------|--------------------------|
| Iron nail | | |
| Plastic straw | | |
| Steel wire screen | | |
| Wooden craft stick | | |
| Brass ring | | |

2. Draw wires to show how you would light the bulb.



Pre-Assessment test



3. Three bar magnets are held together as you see above. What are the magnets going to look like when they are released?



4. Wendy is making an electromagnet. She wrapped a long, insulated wire around an iron nail. What should Wendy do next to complete the electromagnet?

Pre-Assessment test

5. Arthur was playing with magnets. He had one magnet on the table, and one in his hand. As he moved the magnet in his hand closer to the one on the table, the magnets suddenly snapped together.

Explain to Arthur why the magnets snapped together.

6. Draw arrows on the picture to show which direction electricity flows through the circuit to run the motor.



Pre-Assessment test

- 7. Look at the schematic diagram.
 - What will happen to the other two bulbs if the middle bulb burns out?

• Why does that happen?



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8. Annie was making an electromagnet. She had three rivets that she could use to wrap wire around. One was copper, one was iron, and one was steel. Which rivet or rivets should she use and why?

MAGNETISM AND ELECTRICITY Name Pre-Assessment test

- 9. Imagine you have a box of the following materials: a large iron nail, several permanent magnets, lots of insulated wire, a D-cell, and a switch.
 - a. Describe one way to make the nail a temporary magnet.

b. Describe another way to make the nail a temporary magnet.

10. Samuel Morse, the inventor of the telegraph, had a problem. His telegraph's signal was too weak. He needed a stronger electromagnet. What is one way that he might have increased the strength of the electromagnet for his telegraph?

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Pre-Assessment test

- 11. Electricity can be changed into other forms of energy.
 - The bulb in a lamp changes electric energy into
 - A motor changes electric energy into
- 12. Julie placed a paper clip, piece of cardboard, and magnet together like you see in the pictures.

Why did the paper clip stay against the cardboard rather than fall to the floor?



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Pre-Assessment test

13. A student set up the circuit you see in the picture. There was a compass sitting on the table next to the circuit. When the student connected the plastic-coated copper wire to the battery, the compass needle moved.Why did the compass needle move?

(Circle the one best answer.)

- A. Electricity was flowing through the wire to the compass.
- B. Magnetic force was flowing from the battery to the compass.
- C. The energy flowing through the wire caused the compass to vibrate.
- D. Magnetism was created when electricity flowed through the wire.
- 14. A student placed two horseshoe magnets near each other on a table. What will happen when she lets go of the two magnets?



(Circle the one best answer.)

- A. One side of the magnet will repel and the other side will attract.
- B. The two magnets will repel and push apart.
- C. The two magnets will attract and stick together.
- D. The force will be cancelled between the magnets.



15. When black sand and iron filings are mixed together, they look like a black powder.

Which of the following would be the easiest way to separate the sand and the filings?

(Circle the one best answer.)

- A. Use a magnifying glass.
- B. Add water to the mixture.
- C. Use a magnet.
- D. Use a hot plate to heat the mixture.