Can use this website for a video or just read the passage below:

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_**

<https://www.ck12.org/workbook/ck-12-physical-science-for-middle-school-workbook/section/25.2/>

**Electromagnets**

**Part A:**

**Determine if the following statements are true or false.**

\_\_\_\_\_ 1. The magnetic field of a solenoid has north and south poles.

\_\_\_\_\_ 2. An electric motor contains two electromagnets.

\_\_\_\_\_ 3. An electromagnet contains a solenoid.

\_\_\_\_\_ 4. A solenoid has a magnetic field only when current flows through it.

\_\_\_\_\_ 5. Very few devices contain electromagnetics.

\_\_\_\_\_ 6. The clapper of an electric doorbell is an electromagnet.

\_\_\_\_\_ 7. When the clapper of a doorbell strikes the bell, it opens an electric circuit.

\_\_\_\_\_ 8. The electromagnet of an electric motor is connected to a permanent magnet.

\_\_\_\_\_ 9. Only the shaft of an electric motor turns when current flows through the motor.

\_\_\_\_\_ 10. The poles of the electromagnet in an electric motor keep reversing.

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**Part B:**

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

*Electromagnets*

An electromagnet consists of a solenoid (soil of wire) wrapped around a bar of iron or other ferromagnetic material. When current flows through the solenoid, it gives it a magnetic field like a bar magnet. The magnetic field of the solenoid magnetizes the ferromagnetic bar by aligning its magnetic domains. The combined magnetic force of the magnetized iron bar and the wire coil makes an electromagnet very strong. In fact, electromagnets are the strongest magnets made. Some of them are strong enough to lift a train. A maglev train contains permanent magnets that are repelled by strong electromagnets in the track. The force of repulsion causes the train to levitate above the track.

An electromagnet is stronger if there are more turns in the coil of wire or more current is flowing through it. A bigger bar or one made of a material that is easier to magnetize also increases an electromagnet’s strength.

**Questions**

What is an electromagnet?

Why does an electromagnet have a stronger magnetic field than the solenoid it contains?

Identify two factors that affect the strength of an electromagnet.

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_

**Part C:**

**Fill in the blank with the appropriate term from the reading above.**

The magnetic field of a coiled wire is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the magnetic field around a straight wire.

The magnetic field of an electromagnetic magnetizes the iron bar inside it by aligning its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The strongest magnets that are made are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A solenoid with more turns of wire has a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ magnetic field.

Most electric devices that have moving parts contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.