

Quiz.

1. What field(s) is/are PRODUCED by moving electric charges? (Circle all that apply.)
 - a) electric field
 - b) magnetic field
 - c) gravitational field
 - d) soccer field

2. Which of the following is NOT true about magnetic poles?
 - a) magnetic poles always come in pairs
 - b) opposite magnetic poles attract
 - c) magnetic monopoles can exist separately
 - d) like magnetic poles repel

3. The electric force per unit charge is the
 - a) electric force
 - b) magnetic field
 - c) magnetic force
 - d) electric field

4. Magnetic force affects electric charges.
 - a) True
 - b) False

5. Magnetic force can change depending on how electric charges move.
 - a) True
 - b) False

6. What is greatly responsible for magnetism in bar magnets?
 - a) the flow of electrons
 - b) electron spin
 - c) gravity
 - d) electric field

7. The electric field and magnetic field are always _____.
 - a) parallel to each other, same direction
 - b) parallel to each other, opposite directions
 - c) perpendicular to each other

8. We can pick up non-magnetized paper clips with a magnet...
 - a) because of magnetic induction
 - b) trick question, all paper clips are magnetized
 - c) because of magnetic charging due to friction
 - d) just kidding; you actually can't!

9. Electromagnets are made when
- a) current is run through a coil of wire wrapped around an aluminum rod
 - b) current is run through a coil of wire wrapped around a wooden stick
 - c) current is run through a coil of wire wrapped around a piece of iron
 - d) you cannot create an electromagnet

Answer Key.

1. a) & b)

While stationary charges only produce electric fields, moving charges produce both electric and magnetic fields. Incidentally, magnetic fields do not affect stationary charges.

2. c)

Unlike electric charges which may exist separately, magnetic monopoles do not exist. Every magnet has both a north and a south pole, no matter how small the magnet!

3. d)

This is the definition of the electric field.

4. a)

This is true, unless the charges are not moving.

5. a)

This is basically the second part to the previous question.

6. b)

Magnetic domains depend on the ability of the atoms' electrons to align their spins.

7. c)

As James Clerk Maxwell discovered, electricity and magnetism are two sides of the same coin – light!

8. a)

This is similar to electric charging by induction.

9. c)

Electromagnets must be made of material that is magnetizable. It must contain magnetic domains.