The Mechanical Universe
MAGNETISM
COLLEGE EDITION: 30min

Access: http://www.learner.org/resources/series42.html > 34. Magnetism: VoD

Read the following questions before the video begins. Answer the questions while the video is in progress. This is an INDIVIDUAL effort, so complete it by yourself. DON'T ASK OTHERS FOR ANSWERS since doing so would be cheating. Your neighbor might even have a different set of questions. So copying will likely lead to confusion and error.

Most of the important information (and answers to the questions on this sheet) is in the text spoken during the presentation. So don't become entranced by the visual imagery; concentrate and stay focused on the words!

1. William Gilbert
A. wrote *De Magnete.*
B. was Elizabeth I's personal physician.
C. discovered that the Earth acts like a giant magnet.
D. discovered that heating a magnet destroys its magnetism.
E. All of these.

2. Under what circumstances is gadolinium magnetic?

3. A dipole field can be found
A. around a bar magnet.
B. around two opposite charges in close proximity.
C. around a loop of current.
D. around the Earth.
E. All of these.

4. The Earth's tail is actually made up of

5. Gauss' Law: $\oiint \mathbf{E} \cdot d\mathbf{A} =$

6. Where does the Earth's magnetic field come from?

7. How frequently does the Sun's magnetic field reverse itself?

8. The Lorentz force is
A. perpendicular to the velocity of the moving charged particle.
B. perpendicular to the magnetic field.
C. Both of these.
D. None of these.

9. The Lorentz (magnetic) force on a moving charged particle
A. speeds the particle up. **B. slows the particle down.**
C. may speed or slow the particle. **D. neither speeds nor slows the particle.**

10. What is the role of the magnetic field in making life possible on a planet?

The Mechanical Universe
MAGNETISM
COLLEGE EDITION: 30min

Access: http://www.learner.org/resources/series42.html > 34. Magnetism: VoD

Read the following questions before the video begins. Answer the questions while the video is in progress. This is an INDIVIDUAL effort, so complete it by yourself. DON'T ASK OTHERS FOR ANSWERS since doing so would be cheating. Your neighbor might even have a different set of questions. So copying will likely lead to confusion and error.

Most of the important information (and answers to the questions on this sheet) is in the text spoken during the presentation. So don't become entranced by the visual imagery; concentrate and stay focused on the words!

1. You can use a magnet to pick up
A. a box of paperclips. **B. a piece of aluminum.** **C. a piece of copper.**
D. red-hot iron. **E. all of these.**

2. Single magnetic poles (monopoles)
A. are theoretically possible. **B. have never been found.**
C. Both of these. **D. none of these.**

3. A dipole field can be found
A. around a bar magnet.
B. around two opposite charges in close proximity.
C. around a loop of current.
D. around the Earth.
E. All of these.

4. How far does the Earth's magnetic field extend?
A. indefinitely
B. farther in the direction toward the sun than away from it
C. farther in the direction away from the sun than toward it
D. to the sun, where it is absorbed
E. to the boundary of the solar system

5. Electric flux is defined as the flow of the field through

6. Gauss' law for magnetism: $\oiint$ **= 0**

7. The Earth's magnetic field
A. is fixed to the rotational axis. **B. wanders and reverses over time.**
C. changes polarity every 11 years. **D. creates sunspots via the solar wind.**

8. The Lorentz force is
A. perpendicular to the velocity of the moving charged particle.
B. perpendicular to the magnetic field.
C. Both of these.
D. None of these.

9. The Lorentz (magnetic) force on a moving charged particle
A. speeds the particle up.
B. slows the particle down.
C. may speed or slow the particle.
D. neither speeds nor slows the particle.

10. Peter Peregrinus' letter on magnetism
A. was never copied or circulated among scholars.
B. included extensive biographical data on Peregrinus, himself.
C. correctly foretold the connection between electricity and magnetism.
D. described camp life during The Crusades.
E. was a resource for William Gilbert's investigations.