



Access: <http://www.learner.org/resources/series42.html> > 35. Magnetic Fields: 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.

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. André Marie Ampère's early education

- A. was highly regimented B. rarely extended beyond literature
C. was 18th-century Common Core D. was open-ended with very little structure

2. Magnetic forces arising from electric currents make magnets point _____ to the direction of current.

3. The lines of force are circles _____ with the wire.

4. If the wire is bent around into a loop, the current flowing through it produces a _____ field.

5. The magnetic field of a toroid

- A. radiates perpendicular to the toroid.
B. encircles the toroid to form an even larger toroid.
C. is contained completely inside the toroid.
D. cancels to zero.

6. Currents flowing in ___?___ repel each other.

- A. the same direction B. opposite directions

7. To explain the field of a bar magnet, Ampère theorized that there must be

_____ in the magnet, itself.

8. Ampère was

- A. intuitively brilliant. B. brilliant when it came to numbers and symbols.

9. Ampère's law is that $\oint \mathbf{B} \cdot d\mathbf{r} =$

10. Heroes in the history of science come and go, but one thing is certain: Ampère's name will always be



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1. Ampère ? that important scientific discoveries could be made outside France.

- A. believed B. did not believe

2. Electric current flowing through a long straight wire produces a magnetic field that

3. The strength of the magnetic field around a long straight wire decreases as

- A. $1/\sqrt{R}$ B. $1/R$ C. $1/R^2$

4. A helical winding, or solenoid, is like a stack of

5. If a solenoid is bent into a circle, the doughnut it forms is called a _____.

6. Currents flowing in ? attract each other.

- A. the same direction B. opposite directions

7. Ampère created electro _____: the theory that magnetism is

_____ in motion

8. Faraday and Ampère did their initial work in chemistry and were influenced by Sir

_____.

9. James Clerk Maxwell began with

- A. Faraday's intuitive concept of lines of force
B. Gauss' laws of electric and magnetic flux
C. Ampère's idea that all magnetism was electrical in origin
D. All of these

10. It is possible to have an idea in science that is utterly brilliant and

_____.