Lesson 10:1(a) The Mythical Magnetic Monopole

A “magnetic monopole” is an imaginary particle which behaves like one end of a bar magnet. Magnetic field lines would begin or end on a monopole just as electric field lines begin or end on a charged particle.

Lesson 10:1(b)
Properties of the Mythical Magnetic Monopole

In a magnetic field a monopole would experience a force parallel to the field, just as an electron experiences force in an electric field.

Moving a monopole along a magnetic field line would require work. If the field line is a closed curve then work is needed to move the monopole all the way around the curve. That work depends on the current surrounded by the loop. That relation turns out to be true even if we don't follow a field line.

Lesson 10:2 The Current Sheet

A “current sheet” is a plane in which there is a uniform current. We could approximate a current sheet by laying many identical straight and parallel current-carrying wires on a floor.

The Biot-Savart law (Lesson 9:7) could be used to find the field produced by each wire, and those vectors could be added to find the field produced by the current sheet.

Ampere’s Law (Lesson 10:1) gives us a much simpler way to find the field produced by a current sheet.