1. Two parallel straight wires are 1.50 m apart. Each wire carries 2.00 A of current in the same direction. What is the resultant magnetic induction produced by both wires at a point midway between them? What is the magnetic induction at a point 0.250 m from one of the wires?

2. Two parallel straight wires are 1.70 m apart. The wires each carry 2.00 A of current but in opposite directions. What is the resultant magnetic induction produced by both wires at a point midway between them? What is the magnetic induction at a point 0.450 m from one of the wires?

3. Two parallel straight wires are 2.00 m apart. One carries a current of 1.50 A and the other a current of 3.50 A. If the two currents are in the same direction, how far from the first wire (1.50 A) is the point where the magnetic induction is zero?

4. What current flowing in a circular loop of radius 1.25 m will produce a magnetic induction of 6.25 $Wb/m^2$ at the loop's center?

5. What is the magnetic induction at the center of a circular loop of wire carrying a current of 2.45 A and having a radius of 0.160 m? What induction would result if the radius of the loop were doubled and the current was maintained at 2.45 A?

6. At what distance from a wire carrying 15.0 A of current is the magnetic induction equal to $5.00 \times 10^{-5}$ $Wb/m^2$?

7. What current is required to produce a flux density of $2.50 \times 10^{-5}$ $Wb/m^2$ at a distance of 0.125 m from the wire?

8. What is the magnetic induction at a point 3.00 m from a wire carrying a current of 1.25 A?

9. A wire 1.00 m long carrying a current of 12.0 A is at right angles to a magnetic field of 0.250 $Wb/m^2$. What is the magnitude of the force exerted on the wire by the magnetic field?

10. A current-bearing wire 25.0 cm long is at right angles to a magnetic field of 0.100 $Wb/m^2$ and experiences a force of 0.455 N. What is the current in the wire?

11. A horizontal length of wire 1.25 m long weighs 0.455 N. When placed at right angles to a magnetic field and a current of 15.0 A is passed through it, the magnetic field exerts and upward force on the wire that just supports its weight. What must be the strength of the magnetic field?

12. A current of 15.0 A is passed through a horizontal wire 40.0 m long at a place where the downward component of the earth's magnetic field is $5.50 \times 10^{-5}$ $Wb/m^2$. What force will be exerted on the wire by this component of the Earth's magnetic field?

13. Each of two long parallel conductors carries a current of 4.75 A. The currents are in the same direction. What force per meter do the conductors exert upon each other when the distance between them is 0.0250 m? Do the conductors attract or repel each other?

14. A beam of electrons moving at $2.0 \times 10^8$ m/s is at right angles to a uniform magnetic field of 4.25 $Wb/m^2$. What force acts on each electron in the beam? What is the radius of the circle produced by this force?

15. A proton moves at right angles to a magnetic field of 1.75 $Wb/m^2$ in a circular path of radius 0.455 m. What is the speed of the proton?