

FIGURE 32.2 Response of compass needles to a current in a straight wire.

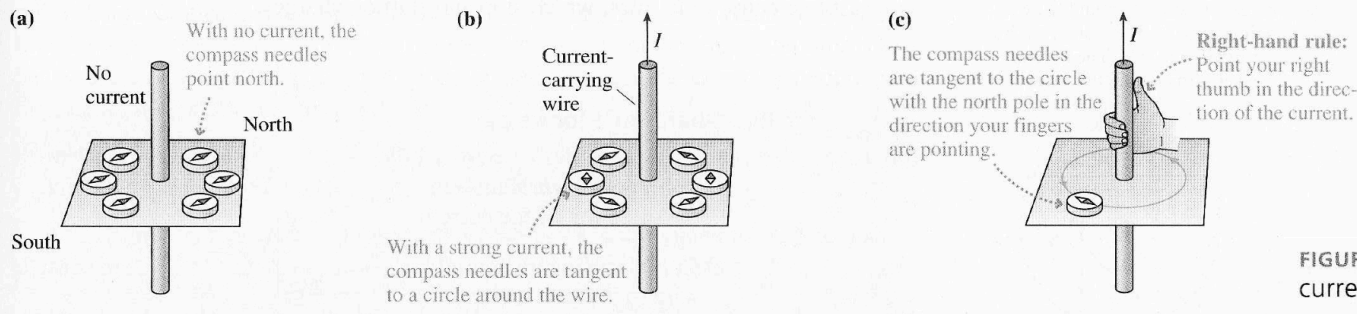


FIGURE 32.3 The notation for vectors and currents perpendicular to the page.

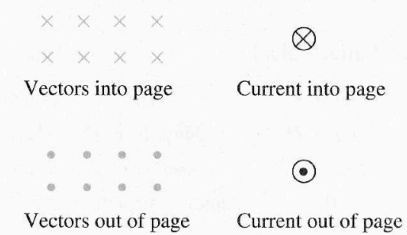


FIGURE 32.4 The orientation of the compasses around a current is given by the right-hand rule.

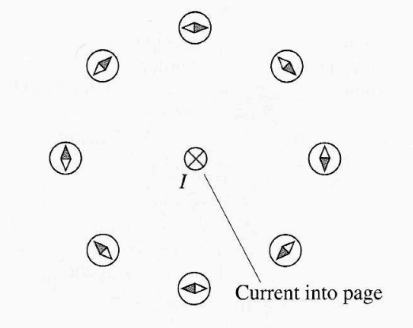
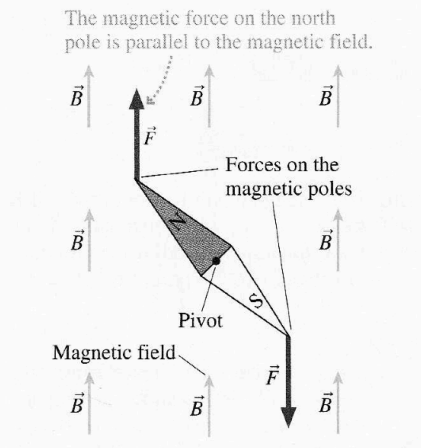


FIGURE 32.5 The magnetic field exerts forces on the poles of a compass, causing the needle to align with the field.



TACTICS BOX 32.1 Right-hand rule for fields

- 1 Point your *right* thumb in the direction of the current.
- 2 Curl your fingers around the wire to indicate a circle.
- 3 Your fingers point in the direction of the magnetic field lines around the wire.

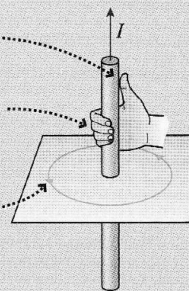
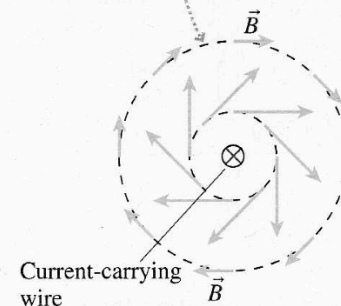


FIGURE 32.6 The magnetic field around a current-carrying wire.

- (a) The magnetic field vectors are tangent to circles around the wire, pointing in the direction given by the right-hand rule. The field is weaker farther from the wire.



- (b) Magnetic field lines are circles.

