extension

Integrating Technology

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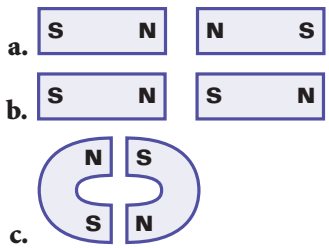
Keyword HF6MAGX

Earth's core. These currents occur because the temperature in Earth's liquid core is not evenly distributed. Charged ions or electrons circling in the liquid interior of Earth could produce a magnetic field. There is also evidence that the strength of a planet's magnetic field is related to the planet's rate of rotation. For example, Jupiter rotates at a faster rate than Earth does, and recent space probes indicate that Jupiter's magnetic field is stronger than Earth's is. Conversely, Venus rotates more slowly than Earth does and has been found to have a weaker magnetic field than Earth does. Investigation into the cause of Earth's magnetism continues.

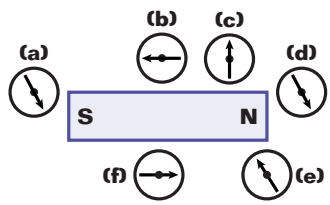
SECTION REVIEW

1. For each of the cases in the figure below, identify whether the magnets will attract or repel one another.



2. When you break a bar magnet in half, how many poles does each piece have?

3. Interpreting Graphics Which of the compass-needle orientations in the figure below might correctly describe the magnet's field at that point?



4. Critical Thinking Satellite ground operators use the feedback from a device called a magnetometer, which senses the direction of Earth's magnetic field, to decide which torque coil to activate. What direction will the magnetometer read for Earth's magnetic field when the satellite passes over Earth's equator?

5. Critical Thinking In order to protect other equipment, the body of a satellite must remain unmagnetized, even when the torque coils have been activated. Would hard or soft magnetic materials be best for building the rest of the satellite?