

## SCIENCE SCENARIO

**Directions:** Use the information presented on pages 25 and 26 to answer questions 13 through 16.

### C.2.1.3

13. Which sequence correctly shows the energy conversions that allow the testing device to attract a metal weight with magnetic properties?
- A battery (chemical to heat) → wire coil (heat to magnetic) → metal weight (magnetic to frictional)
  - B battery (chemical to electrical) → wire coil (electrical to magnetic) → metal weight (magnetic to mechanical) \*
  - C battery (electrical to magnetic) → wire coil (magnetic to heat) → metal weight (heat to mechanical)
  - D battery (electrical to mechanical) → wire coil (mechanical to magnetic) → metal weight (magnetic to gravitational)

- A *Heat is not a useful form of energy in this sequence, so it does not play a role in this setup.*
- B *Key: Chemical energy from the battery is converted into electrical energy, which moves through the wire; the electrical energy is converted to magnetic energy in the electromagnet, which in turn, pulls and holds the cube to the rod.*
- C *Heat is not a useful form of energy in this sequence, so it does not play a role in this setup.*
- D *There is no direct transformation from electrical energy to mechanical energy in this setup.*