

Magnets and Motors Concept Storyline

Unifying Concept

Certain materials have magnetic properties. These properties may be used to construct motors, generators, magnets, and other devices.

Unit Concept

The magnetic properties of select materials may be used to generate electricity and make motors work.

Grade-Level Concept

Magnets and magnetism have many useful properties.

Subconcept 1

Magnets have distinctive properties.

Lesson 1: Pre-Unit Assessment: Getting Started
Students discuss what they know about magnets and motors.

Lesson 2: What Can Magnets Do?
Students investigate the properties of magnets.

Lesson 3: How Can You Find Out What Magnets Can Do?
Students use their knowledge of magnetism to test different objects.

Lesson 4: Measuring Magnets
Students design controlled experiments to determine the strength of different magnets and their combinations.

Subconcept 2

Magnets have opposite poles that may be used to determine direction.

Lesson 5: Building a Compass
Students discover the properties of a magnetic compass and discuss its uses.

Lesson 6: Using a Compass: Which Way Is Which?
Students examine magnetic poles and think about other ways in which magnets can create motion.

Subconcept 3

Magnetism is one property derived by electricity flowing through a circuit, and may be used to make an electromagnet.

Lesson 7: Creating Magnetism through Electricity
Students examine the effects of an electric circuit on a magnet.

Lesson 8: Making Magnets with Electricity
Students discover that a coil of conducting wire has magnetic properties.

Lesson 9: Designing an Experiment to Test the Strength of an Electromagnet
Students design a controlled test to determine the variables that affect the properties of an electromagnet.

Lesson 10: Testing an Electromagnet
Students carry out the investigations they designed in Lesson 9.

Lesson 11: Showing Others What You Have Learned
Students share the results of their investigations.

Subconcept 4

The magnetic properties of an electromagnet may be used to make a motor and generate electricity.

Lesson 12: Making a Motor
Students use electromagnetism to make a compass rotate and begin to explore electric motors.

Lesson 13: Building a Spinning Coil Motor
Students assemble a simple circuit to perform as a motor.

Lesson 14: What Is Inside an Electric Motor?
Students study the relationship between magnets, electromagnets, and motors.

Lesson 15: How Does a Motor Work?
Students use their knowledge to analyze how an electric motor works.

Lesson 16: Generating Electricity
Students discover how motors generate large amounts of electricity.

Lesson 17: Post-Unit Assessment: Sharing What We Know about Magnets and Motors
Students discuss and reflect on what they have learned.