



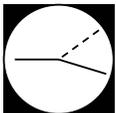
1 minute



5 minutes



4½ minutes



7 minutes



10 minutes



1½ minutes



6½ minutes



1½ minutes



7½ minutes

**Science Organization:** Teacher takes attendance

The students stand by their desks and the teacher gives them permission to sit. She takes attendance.

**Whole-Class Seatwork:** Class reviews what they did in their previous lesson

The teacher announces the goal for today's lesson, which is "to learn how to measure electrical current" including symbols or units. Before they start with new material the class reviews information about current. She asks the class questions and various students raise their hands to respond. They talk about electric circuits, direction of current, etc. The class then prepares to take a "short test" consisting of two problems. Students read aloud the problems; the teacher instructs them to write directly on the handout.

**Independent Seatwork:** Students take test

After having read the problems aloud, students work individually on completing the test. They draw two circuits with specific components, including arrows to indicate the direction of current flow.

**Whole-Class Practical Work:** Class develops new content information about measuring electrical current in circuits

The teacher calls on a student to come to the front of the classroom and build a simple circuit. The teacher emphasizes the lit bulb is an indication that there is current running through the circuit. She then goes on to talk about instruments that measure current. She shows different examples of ammeters and talks about amperes as the unit for measuring current. She tells the class that the ammeter can be used to measure the current anywhere along the circuit; she then demonstrates this at the front of the class and summarizes the information.

**Whole-Class Seatwork:** Class discusses current units and ammeters

The teacher instructs the class to take out their notebooks. Students title their notes as, "Measuring an electrical current and its units." They copy information that the teacher writes on the board. For example, the symbol for electrical current is I and the unit for electrical current is A. They discuss smaller units of measurement (i.e., milliampere and microampere) and the formula for calculating current. A student draws a simple circuit on the board; another student adds an ammeter in the schematic. The teacher emphasizes that the ammeter can be placed anywhere along the circuit (e.g., between the cell and a switch, between a light bulb and a switch, etc.).

**Independent Seatwork:** Students draw circuits in their notebooks

Students work individually on drawing a circuit with an ammeter in their notebooks.

**Whole-Class Practical Work:** Teacher demonstrates the use of ammeters

The teacher sets up a circuit with an ammeter. She asks the class what would happen if the battery was switched around. A student responds that the current will run in the opposite direction. The teacher switches the battery and confirms this claim. She defines an electrical current that moves in one direction as a "direct current." She writes this on the chalkboard and students copy the information in their notebooks. The teacher also talks about the usability of the instruments stating that the ones they have in the classroom are good as teaching tools, but in real life they use more sophisticated measuring instruments. She shows the class an ammeter and talks about the clamps and the different increment scales. The teacher says that measuring current by using an ammeter might be difficult for some students; they will try it in the next lesson.

**Whole-Class Seatwork:** Class reviews information about current

The teacher calls on students to answer questions about the material they learned today and in previous lessons (e.g., How is an electrical current formed? How to measure electrical current? What's the symbol for electrical current?)

**Independent Seatwork:** Students work individually on completing assignment in textbook

Students turn to their textbooks on page 37, part B, exercise #3. They draw a table and fill in the values for current. The teacher walks around the room checking students' work and providing guidance. She checks the work of the first four students who completed this assignment in class and announces their grades out loud.