

ACTIVITY: Investigating conductors

■ ATL

- Critical-thinking skills: Gather and organize relevant information to formulate an argument
- Creative-thinking skills: Make guesses, ask 'what if?' questions and generate testable hypotheses

In pairs or in groups: You will design and carry out an investigation to determine the factors affecting the resistance of a metal conductor.

Inquiry question: What factors affect the resistance of a metal conductor?

Electrical systems need high-quality conductors with low resistance to work efficiently – otherwise electrical energy is wasted when it is transformed, due to resistance in the conductors. Computer network cabling systems are an example of an electrical system where this is very important.

Research what conductors are used in computer network cabling systems. Using what you have learned, **design** an investigation to find out what factors affect the resistance of this kind of metal conductor.

Using the findings of your investigation, write a report for your school on the best kinds of network cabling to use. **Outline** the problem that the cabling must overcome, and **describe** the characteristics that the cables should have. Research some of the materials used in real computer network cabling, and so **suggest** some of the limitations of the cabling you have chosen and how these might affect the choice of conducting material to use.

In your report, be sure to use the scientific terminology you have learned in this chapter accurately. **Document** any sources of information you used for research in line with your school's research guidelines.

◆ Assessment opportunities

- ◆ This activity can be assessed using Criterion B: Inquiring and designing, Criterion C: Processing and evaluating, and Criterion D: Reflecting on the impacts of science.