

Display Ideas

Help visitors of all ages explore $E=mc^2$ with these display themes.

For Children (ages 6–12)

Who Are Scientists? People Like You!

Some scientists are old, some are young. Some scientists work in labs with chemicals or microscopes. Others work outdoors on boats or in jungles. Not all scientists liked science when they were growing up. Scientists have families, pets, and hobbies. Scientists are people—just like you.

Display Materials:

- Book jackets or photos of scientists such as Albert Einstein, Lise Meitner, Michael Faraday, and Shirley Ann Jackson
- Photos and articles about school-age scientists, such as local science fair winners or participants from contests such as TOYchallenge (www.toychallenge.com) and Odyssey of the Mind (www.odysseyofthemind.com)
- Copies of *Who Was Einstein?* handout (p. 18)
- Books (see children's listings from *About Einstein* and *E=mc²: Scientists Connected to the Equation* resource lists, pp. 5–6)

Explore Energy

You probably use the word *energy* a lot. You might have too much energy to sit still. Or you might have too little energy to take out the trash. In science, energy means being able to move something or cause a change. Explore some forms of energy: light, heat, chemical, electricity, and magnetism.

Display Materials:

- *One Powerful Equation* display sheet (p. 9)
- Props, such as flashlight and mirror; assorted magnets; glow stick or instant heat pack; toy car and ramp; wind-up toy
- Copies of *Magnet Maze* activity sheet (p. 21)
- Books (pull titles on magnet and energy activities)

For Young Adults (ages 13–17) and Adults (18 and over)

These themes can appeal to both young adults and adults. To customize a display for each audience, choose age-appropriate books from the resource lists.

Get to Know $E=mc^2$

You can probably recite this equation, but do you know what it means? Written in 1905 by Albert Einstein, this short equation represents a revolutionary idea: Energy and mass are not distinct, but are two forms of the same thing. To arrive at this deceptively simple statement, Einstein built on the innovative thinking of other scientists. How did $E=mc^2$ come to be, and where is it taking us today? Find out with these resources.

Big Ideas

$E=mc^2$ has a human story. Science is a process of inquiry and synthesis. Science is influenced by society. The legacy of $E=mc^2$ continues.

Ready-to-Use Materials

Dress up any display with materials provided in this guide.

- **Theme Statement**
Make a large, colorful theme banner and include a short statement about the specific theme (see statement suggestions below each display theme title, such as Get to Know $E=mc^2$).
- **Poster and Display Sheets**
Use the full-color poster (see center of guide) and tear-out display sheets (pp. 9–14) for eye-catching centerpieces.
- **Reproducibles**
Include a basket or box with photocopies of the resource lists (pp. 5–7), handouts (pp. 18–20) and activity sheets (pp. 21–23) when appropriate.
- **Web Site Markers**
Place Web site markers (p. 8) near computers and at other highly visible areas to invite visitors to learn more at NOVA's Einstein's Big Idea Web site. If possible, create a link from your homepage to the site.
- **Magnet/Sticker Template**
Make $E=mc^2$ magnets and stickers (p.15) to use as giveaways.



Beginning as a poor bookbinder, Michael Faraday (Stephen Robertson, at right) went on to lay the groundwork for the modern scientific concept of energy.

Einstein on Thinking

“Imagination is more important than knowledge.”

“The important thing is not to stop questioning.”

“Why is it that nobody understands me, and everybody likes me?”

“Do not worry about your difficulties in mathematics—I can assure you, mine are still greater.”

“Common sense is the collection of prejudices acquired by age eighteen.”

All quotes drawn from *The Expanded Quotable Einstein*, collected and edited by Alice Calaprice. Princeton University Press, 2000.

Display Materials:

- Large letters/symbols for the equation
- Photos of images related to the equation and its symbols: (e.g., the sun or stars, a mushroom cloud, a nuclear power plant, a beam from a headlight or lighthouse)
- Poster (see center of guide)
- *One Powerful Equation, What Does It Mean?*, and *What Has It Done for You Lately?* display sheets (pp. 9–14)
- Copies of *E=mc² Explained* handout (p. 19) and *E=mc² Puzzle* activity sheet (p. 22)
- Images of scientists such as Albert Einstein, Lise Meitner, Michael Faraday, and Shirley Ann Jackson
- *E=mc²* cartoons (for those of scientific cartoonist Sidney Harris, visit www.sciencecartoonsplus.com for terms of use)
- Books (see young adult and adult listings from *About Einstein, E=mc²: Scientists Connected to the Equation*, and *The Legacy of E=mc²* resource lists, pp. 5–7)

Who Was Einstein?

When you think of Albert Einstein, do you picture an old man with wild white hair and a flair for the eccentric? In 1905, when Einstein wrote five papers (four of which revolutionized our understanding of light, time, and space), he was a handsome 26-year-old clerk who couldn't get a job promotion in a government patent office. When he was 60, Einstein's letter to President Franklin Roosevelt about a possible Nazi nuclear program helped initiate the successful U.S. effort to build the first nuclear weapon—something Einstein regretted for the rest of his life. Learn more about Einstein and his role in history with these resources.

Display Materials:

- Einstein poster (a wide variety can be found at www.amazon.com by searching on “Einstein poster”). Include images of Einstein at age 26.
- Magazine covers (e.g., *Time*, February 19, 1979, vol. 113, no. 8: “Rediscovering Einstein: His Centennial Year”)
- Book jackets or cartoons (for those of scientific cartoonist Sidney Harris, visit www.sciencecartoonsplus.com for terms of use)
- Props, such as a compass, clock, toy train cars
- Books (see young adult and adult listings from *About Einstein* and *The Legacy of E=mc²* resource lists, p. 5 and p. 7)

Tap into Your Inner Einstein

Quick—name a scientist. Like most people, you probably named Albert Einstein, the most recognizable scientist of the modern era. But who exactly are scientists and what do they do? In some ways, scientists are like detectives, piecing together clues to discover and explain how the natural world works. Scientists are human, too. Many great scientists have struggled to find acceptance for themselves and their ideas. Social class, gender, religion, race—or just having an idea that is *too* different—are all obstacles many scientists have had to overcome. Learn more about how scientists work—then tap into *your* inner Einstein with these resources.

Display Materials:

- Images of scientists such as Albert Einstein (young and old), Lise Meitner, Michael Faraday, James Clerk Maxwell, and Shirley Ann Jackson
- Poster (see center of guide)
- Einstein quotations (see list at left)
- Copies of *Some Outstanding Women in Nuclear Physics* handout (p. 20)
- Books (see young adult and adult listings from *About Einstein* and *E=mc²: Scientists Connected to the Equation* resource lists, pp. 5–6)