Electricity Breakthroughs

Read how discoveries changed the ways people make and use electricity.

P.4.6A.5 "Use informational text and technology resources to communicate technological breakthroughs made by historical figures in electricity (e.g., Alessandro Volta, Michael Faraday, Nicola Tesla, Thomas Edison, incandescent light bulbs…"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each historical figure's name. Circle the invention or discovery linked to that person so you can explain each breakthrough.

From Sparks to Light

1. In 1800, Alessandro Volta stacked disks of zinc and copper with damp material between them. His stack, called a voltaic pile, made a steady flow of electric current. Earlier experiments with static electricity often produced only quick sparks. Volta's invention was an early battery, so scientists could test electricity for longer stretches of time. Imagine trying to study a flowing stream instead of a single splash.

2. A battery stores chemical energy, but where could a town get a large supply of electricity? In 1831, Michael Faraday found that moving a magnet near a coil of wire could make electric current flow. His discovery helped lead to generators, machines that use motion to make electricity. Faraday's work offered a way to produce electricity for many homes and businesses, not just one experiment.

3. Thomas Edison and his team worked on a practical incandescent light bulb in the late 1870s. Electric current heated a thin filament until it glowed inside a glass bulb. Edison also helped build a system to deliver electricity to lamps in buildings. Today, light-emitting diodes, called LEDs, use a material called a semiconductor to make light. They use less electricity than incandescent bulbs to make the same amount of light.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did Volta's pile make studying electricity different from using static electricity?

2. A museum label says Faraday invented the battery. Correct the label using the passage.

3. How could Faraday's discovery help supply electricity to Edison's lamps?

4. Write a caption comparing Edison's bulb with an LED. Tell how each makes light and which uses less electricity.

3 YOUR TURN

Your own words

Write a four-sentence script for a museum audio stop. Name two historical figures from the passage, explain each one's breakthrough, show how their work connects, and include a search phrase a visitor could type into a web browser to learn more.

ANSWER KEY

Electricity Breakthroughs

GRADE 4 · P.4.6A.5

PART 1 · READ AND MARK

Underline each historical figure's name. Circle the invention or discovery linked to that person so you can explain each breakthrough. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did Volta's pile make studying electricity different from using static electricity?	**The pile made a steady current, while static electricity often produced only quick sparks. Scientists could test electricity for longer stretches of time.**
2	A museum label says Faraday invented the battery. Correct the label using the passage.	**Volta made an early battery; Faraday discovered that moving a magnet near a coil of wire could make electric current flow.**
3	How could Faraday's discovery help supply electricity to Edison's lamps?	**Faraday's discovery helped lead to generators that make electricity. That electricity could be delivered to lamps in buildings.**
4	Write a caption comparing Edison's bulb with an LED. Tell how each makes light and which uses less electricity.	**Edison's incandescent bulb makes light by heating a filament until it glows. An LED makes light using a semiconductor and uses less electricity for the same amount of light.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Alessandro Volta's voltaic pile used zinc, copper, and damp material to make a steady current. Michael Faraday found that moving a magnet near a wire coil could also make a current. Volta's battery helped with long experiments, while generators based on Faraday's discovery could supply electricity to many buildings. To learn more, search the web for "how Faraday's generator works."

Accept accurate explanations in students' own words. For the audio script, check for four sentences, two named figures with correct breakthroughs, a clear connection, and a relevant web search phrase.