



ZAC NEWTON INVESTIGATES Extraordinary Electricity

Zac and friends learn about electricity through visits with Benjamin Franklin, Luigi Galvani, Alessandro Volta, Nikola Tesla, Michael Faraday, and Samuel Morse.

What did you learn?

QUESTIONS

- Lightning can carry a charge of how many volts?
 - 100 million
 - 300 million
 - 30,000
 - 100,000
- Electrons have what type of charge?
 - Positive
 - Negative
 - Neutral
 - None of the above
- _____ is the creation of electric current when two different metals are placed in a moist environment.
 - Franklinism
 - Voltaction
 - Breakerism
 - Galvanism
- Thomas Edison invented the ...
 - Telephone
 - Flashlight
 - Light bulb
 - Steam engine
- Can you describe how a worker fixes a power line?
- Can you describe how Samuel Morse made his first model of the telegraph?

TRUE OR FALSE?

- | | |
|--|---|
| _____ 1. Under a tree is one of the worst places to be when there's lightning. | _____ 4. Luigi Galvani's work led to the creation of the battery. |
| _____ 2. The ancient Egyptians discovered electricity about 6,000 years ago. | _____ 5. Nikola Tesla discovered electromagnetism. |
| _____ 3. The electricity in power lines is much more powerful than that in a lightning bolt. | _____ 6. Samuel Morse developed Morse code. |

ANSWERS

- 1. a. 100 million.** According to page 11, we know that lightning “can carry a charge of about 100 million volts.” So, the correct answer is A.
- 2. b. Negative.** According to page 25, we know that, “Electrons have a negative charge.” So, the correct answer is B.
- 3. d. Galvanism.** According to page 43, we know that, “Galvanism is the creation of electric current when two different metals are placed in a moist environment.” So, the correct answer is D.
- 4. c. Light bulb.** According to page 79, we know that, “Thomas Edison was a famous American inventor. We know him as the inventor of the light bulb ...” So, the correct answer is C.
- 5.** According to pages 35 and 36, we know that, “If it’s a downed power line, the worker opens the breakers, cutting off the power to the line that needs repair. Once the power is cut, the worker can safely touch the power line to repair it. Then the worker closes the breakers, and the current flows again.”
- 6.** According to page 64, we know that, “He didn’t have a lot of money to spend on scientific equipment. Instead, he used things he already had here in his art studio to build a model.”

TRUE OR FALSE? ANSWERS

- 1. True.** According to page 9, we know that, “Under a tree is one of the worst places to be when there’s lightning.” So, the correct answer is True.
- 2. False.** According to page 22, we know that, “The ancient Greeks discovered electricity about 2,500 years ago.” So, the correct answer is False.
- 3. False.** According to page 34, we know that, “The electricity in the lightning bolt is much more powerful than that in the power lines.” So, the correct answer is False.
- 4. True.** According to page 38, we know that Luigi Galvani’s work “led to the creation of the battery.” So, the correct answer is True.
- 5. False.** According to page 93, we know that, “Michael Faraday (1791-1867), an English physicist, discovered *electromagnetism*, the combined effect of electricity and magnetism. So, the correct answer is False.
- 6. True.** According to page 93, we know that Samuel Morse’s “development of the telegraph and Morse code allowed people to communicate more quickly and easily.” So, the correct answer is True.