

Understanding: Electricity

Name: _____

This worksheet goes with the movie *Understanding: Electricity*

1. Even the King has to obey the laws of _____ . 00:15
2. Current flows into the Earth where there are _____ and flows out where there are _____ 02:19
3. There is a 200 – 300 volt difference between our _____ and our _____ . 02:29
4. Ben _____ originated the terms positive charge and negative charge. 03:09

Striking Discoveries

5. The rockets are used to direct lightning to hit simulated _____ and _____ lines. 03:43
6. If Ben's kit had indeed been hit by lightning, what would be the likely outcome? 04:07
7. The wire attached to the rocket provides a _____ for the lightning to follow. 04:21
8. The rocket wire is disintegrated into a green vapour by the _____ amps of current in the lightning bolt, as compared to the _____ amps of current in a wall electrical outlet. 05:12
9. The temperature of the lightning is about _____ or six times hotter than the surface of the _____. 05:20
10. It is the _____ that are torn from atoms to create electricity. 05:47
11. The _____ between the charge is measured in volts. 06:10
12. Electrons flow from _____ to _____. 06:17
13. Copper has a lot of _____ held electrons so it is a good _____. 06:50
14. Clay and rubber are good insulators because their electrons are _____ bound to their atoms. 06:56
15. Electromagnetism: Electricity can make _____ and magnetism can make _____. 07:17

Electricity in Space

16. What was produced in space on Feb. 25, 1996? _____ 08:14 – 08:19
17. The experiment was based on the principle that if you move a _____ through a magnetic field, _____ start to flow. 08:37
18. The resulting electrical current can flow through a _____. 08:43
19. The wire (or cable,) was _____ long! 08:52
20. The motion of the wire was due to the space shuttle _____ the Earth. 09:12
21. The moving wire generated _____ volts! 09:18
22. The tether eventually broke because a _____ burned through the wire. 10:42
23. Utilities have to _____ their lines. 12:57

A High-wire Act

24. The web of power lines is called a _____. 13:12
25. The power lines carry _____ volts! 13:24
26. Mixing aviation with _____ is dangerous! 13:50
27. Spider's suit is made of lightweight stainless-steel thread. This suit provides a _____ for electric current so that the electricity _____ though his body. 14:46
28. If the helicopter gets too close between a power line and a tree, the current may flow (arc) _____ the helicopter and the tree and _____ out the power line. 16:10

29. The metal wand provides a _____ path for electricity when the helicopter gets close to the wire. 17:53
30. What is of greater concern, a half million volts or the current flow? _____ 18:47
31. It only takes _____ of current to stop a human heart. 19:03
32. Water pressure is like _____ while the amount of water flowing is like _____. 19:30
33. Electrical measurements are based upon _____ of _____. 19:37
34. One amp of current has sixteen quintillion electrons moving through a wire in _____. 19:46

Generating the Juice

35. The Hoover Dam converts the _____ of falling water into electrical _____. 20:58
36. Write the equation involving volts, amps, and watts: _____ 22:16
37. One _____ is equal to one thousand watts. 22:22
38. Each generator produces _____ volts. 22:50
39. "Volts of alternating current"? Is this correct? YES / NO 22:50
40. The falling water spins a _____. The turbine spins a _____ inside a coil of wire. This spinning magnet causes _____ to move in the wire. An electrical current is produced. 23:17
41. Direct current flows without any _____. 23:27
42. Alternating current: The electrons flows to the _____ and then back to the _____. 23:53
43. The 16,500 V of electricity are boosted to _____ volts for transmission over long distances. 24:14
44. When the electricity arrives at your home, it is "stepped down" to _____ volts. 24:21

Lighting the Night

45. A light bulb lights because it's filament offers _____ to the flow of _____. 29:02
46. The resistance of the tungsten filament causes it to heat up to _____. This releases _____. 29:34
47. What is the greatest threat to the Fremont Street Experience? _____ 30:00
48. Neon and fluorescent lights use electricity to _____ atoms, thus producing _____. 30:39

Electric Eden

49. What is "Electric Eden"? _____ 31:01
50. Who created this Electric Eden? _____ 31:12
51. _____ was introduced at _____. 31:42
52. The electric motor that drives the Cyclone roller coaster has been in service for _____ years! 32:35
53. An electric motor is simply a _____ in reverse. It turns _____ into _____. 32:51
54. Who saw the connection between lightning and muscle movement in frog's legs? _____ 34:36

The Beating Heart

55. A heart beats because electrical _____ spread through the heart, triggering and co-ordinating movement. 35:28
56. Electricity in our bodies is created by _____ reactions between cells. 35:55