SONLIGHT

Science E

4-DAY

INSTRUCTOR'S GUIDE

SONLIGHT

E

Ages 9–12
Grades 4–7

Science (4-Day)

Electricity, Magnetism, and Astronomy

By The Sonlight Team

"The heavens declare the glory of God; the skies proclaim the work of his hands."

Psalm 19:1 (NIV)

Sonlight Curriculum® "Intro to the World: Cultures" (5-Day) Instructor's Guide and Notes, Twenty-Ninth Edition

"Do to others what you would have them do to you" (Matthew 7:12).

"The worker is worth his keep" (Matthew 10:10).

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2 Schedule, Notes and Activity Sheets

- A Weekly SCHEDULE for Science
- ACTIVITY SHEET ANSWER KEYS

Science E

Days 1–4: **Date:** _____ **to** _____

Week Overview																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

Week 1

Date:	Day 1	Day 2	Day 3	Day 4
Electricity and Magnetism	p. 3	pp. 4-5	pp. 6-7	
Activity Sheet Questions	#1-2	#3-7	#8-13	
Optional Experiments in *Electricity and Magnetism*			"Testing for static charges"	
***Discover & Do Level 4* DVD**			Optional: Tracks #32, 33	Science with Magnets Tracks Introduction, #35
TOPS #33: Magnetism				#1 "Is It Magnetic?"
Do Together			Bending Water	Energy Survey
Supplies for Optional Experiments in *Electricity and Magnetism*	You provide: running tap water, plastic ruler, sweater, wooden spoon, coin.			
Shopping/Planning List for Optional Experiments	For next week: running tap water, plastic ruler, sweater, wooden spoon, coin, bar magnet, 2 thick pieces of paper (regular weight), bowl of water, cork.			
Supplies N	**We provide: ESK**—aluminum foil, straight pins, paper clips, washers, magnets. **You provide:** thread, copper pennies.			
Shopping/Planning List	**For next week:** scissors, thread, pencil.			
Additional Subjects:				

Electricity and Magnetism

Day 2 | pp. 4–5

As the book notes, the origin of the word "watt" is James Watt (1736–1819), a Scottish scientist. Watt coined the term *horsepower* in reference to the power of an engine. Horsepower is still used today to refer to how much power car engines have, for example.

In recent years LED bulbs have garnered some attention. LED (light-emitting diode) bulbs are much more energy efficient than traditional incandescent bulbs, but currently they cost a lot more than regular bulbs.

Photosynthesis is the term for what the book describes as plants transferring "light energy into food…"[pp. 4–5]

On "millions of years" see our note in the Introduction.

The bicycle is probably the most energy-efficient means of self-powered transportation around, with some estimates claiming it is more than ninety percent efficient. This means that ninety percent or more of the energy of the person riding the bike makes it go.

N Parental Notes

Science E: Week 1 Activity Sheet

Electricity and Magnetism

1. What form of electricity do we use? (p. 3)

current electricity **static electricity**

2. What type of electricity is found naturally? Give two examples. (p. 3)

(static)

(lightning)

3. List seven forms of energy. (p. 4)

(kinetic) *(electricity)*

(heat) *(light)*

(mechanical) *(nuclear)*

(chemical)

4. Name two ways we produce electricity. (p. 4)

(by burning fossil fuels)

(by breaking unstable atoms, which is what nuclear energy is)

5. What is energy measured in? (p. 4)

- ☐ watts
- ☒ joules
- ☐ grams
- ☐ degrees

Science E: Week 1 Activity Sheet

6. What are two problems with using fossil fuels? (p. 5)

(they can cause pollution)

(the supplies are limited—once they are used up, they are gone)

7. List five alternative energy sources. (p. 5)

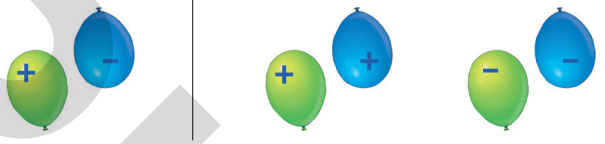
(wind) *(waves)*

(water) *(solar)*

(geothermal)

8. Add (+) and (-) signs to the balloons below. Give one example of charges that attract and at least one example of charges that repel. (p. 6)

Attract **Repel**



9. What causes static electricity? (p. 6) *(extra electrical charges build up)*

10. Does more static electricity build up in a dry or damp climate? Circle the correct answer. (p. 6)

dry **damp**

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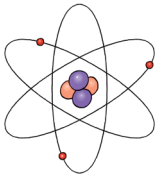

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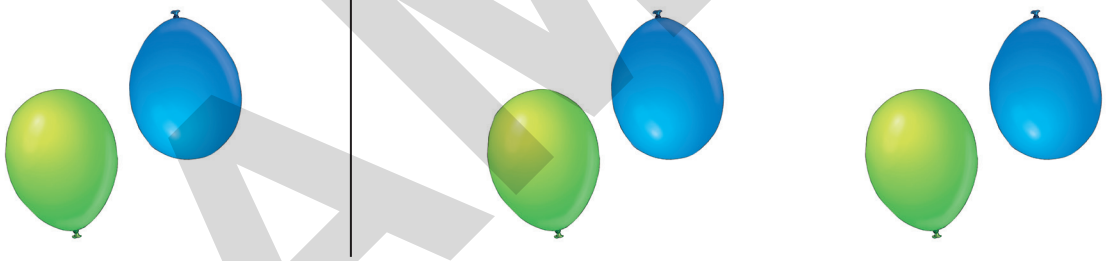

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