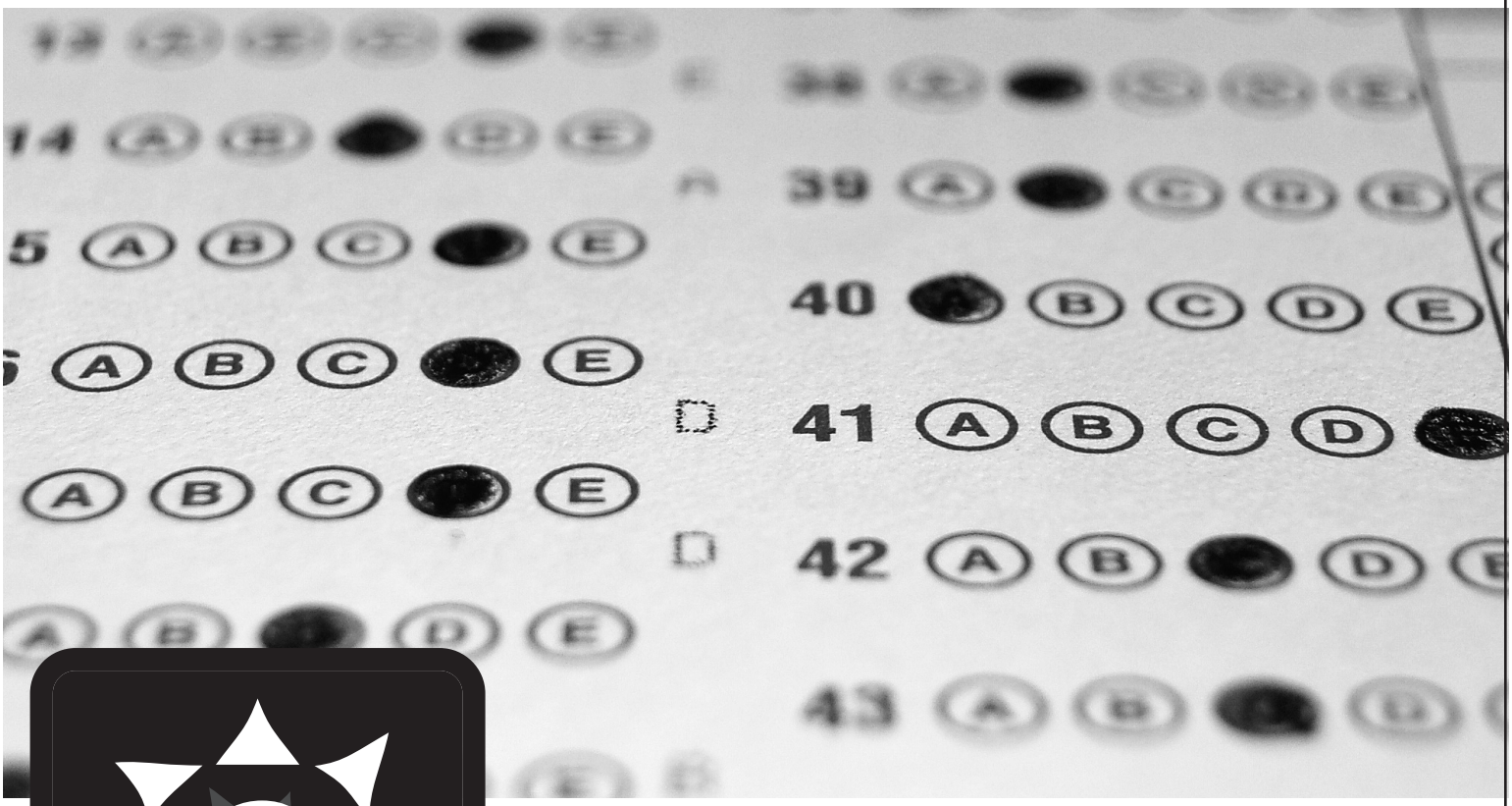
Secondary Energy Poll



Grade Level:

Sec Secondary

Subject Areas:

Science

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National Energy Education Development Project

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NEED Mission Statement

The mission of The NEED Project is to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs.

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Teacher Advisory Board

In support of NEED, the national Teacher Advisory Board (TAB) is dedicated to developing and promoting standards-based energy curriculum and training.

Energy Data Used in NEED Materials

NEED believes in providing teachers and students with the most recently reported, available, and accurate energy data. Most statistics and data contained within this guide are derived from the U.S. Energy Information Administration. Data is compiled and updated annually where available. Where annual updates are not available, the most current, complete data year available at the time of updates is accessed and printed in NEED materials. To further research energy data, visit the EIA website at www.eia.gov.

NEED
National Energy Education Development

1.800.875.5029
www.NEED.org

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Secondary Energy Poll Guide

Grades: 9-12
Time: 20 Minutes

A Quick Look At The Energy Poll

The *Secondary Energy Poll* can be used to assess students' basic energy knowledge, as well as their opinions about energy before and after your classroom energy unit.

Make one copy of the poll for each student. If you prefer, you can project the poll and have students answer the questions on a piece of paper. In either case, keep the results of the pre-poll so that students can compare their answers after your energy unit is completed.

✓Procedure

- Direct students to take the poll as honestly as possible and not to make wild guesses. Explain that the poll will be an important assessment tool to show what they have learned and how their attitudes have changed.
- Once you have administered the poll, go over the answers with the class. As a supplemental activity, discuss and chart the answers to the opinion questions. Collect the answers and save them to use after your energy unit is completed.
- Polls can be sent to NEED for analysis. We would love to see what your students are learning.
- If you are able, share your students' poll results with us at NEED by sending them to the address below via mail, fax, or email:

The NEED Project
8408 Kao Circle
Manassas, VA 20110
info@need.org
Fax:1-800-847-1820

Secondary Energy Poll Answer Key

1.	A	11.	B
2.	C	12.	D
3.	C	13.	B
4.	B	14.	A
5.	A	15.	B
6.	B	16.	B
7.	D	17.	C
8.	C	18.	D
9.	C	19.	C
10.	D	20.	D

Secondary Energy Poll

Science of Energy

1. What is the nuclear reaction that takes place inside the sun's core?

- Ⓐ Fusion
- Ⓑ Activation
- Ⓒ Fission
- Ⓓ None of these

2. Most of the energy consumed in the U.S. is stored in which form of energy?

- Ⓐ Kinetic
- Ⓑ Thermal
- Ⓒ Chemical
- Ⓓ Motion

3. Which form of energy is converted to chemical energy during photosynthesis?

- Ⓐ Chemical
- Ⓑ Electrical
- Ⓒ Radiant
- Ⓓ Thermal

4. Which type of chemical reaction absorbs thermal energy?

- Ⓐ Activation
- Ⓑ Endothermic
- Ⓒ Exothermic
- Ⓓ Fusion

5. As the thermal energy in a substance increases…

- Ⓐ Molecular motion increases
- Ⓑ Molecular motion decreases
- Ⓒ Mass increases
- Ⓓ Mass decreases

Sources of Energy

6. Photosynthesis produces the energy in which of the following sources?

- Ⓐ Hydropower
- Ⓑ Biomass
- Ⓒ Geothermal
- Ⓓ Wind

7. Which sector of the U.S. economy consumes the most petroleum?

- Ⓐ Residential
- Ⓑ Commercial
- Ⓒ Industrial
- Ⓓ Transportation

8. Global climate change focuses primarily on an increase in which atmospheric gas?

- Ⓐ Ozone
- Ⓑ Sulfur dioxide
- Ⓒ Carbon dioxide
- Ⓓ Nitrous oxide

9. Which two elements are present in all fossil fuels?

- Ⓐ Nitrogen and hydrogen
- Ⓑ Carbon and oxygen
- Ⓒ Hydrogen and carbon
- Ⓓ Carbon and nitrogen

10. The energy in which of the following is a result of photosynthesis?

- Ⓐ Coal
- Ⓑ Petroleum
- Ⓒ Natural gas
- Ⓓ All of the Above

Secondary Energy Poll

11. Renewable energy sources provide what percentage of total U.S. energy consumption?

Ⓐ <1%
Ⓑ 5-15%
Ⓒ 20-30%
Ⓓ 40-50%

12. Which energy source is NOT a result of radiant energy from the sun?

Ⓐ Hydropower
Ⓑ Biomass
Ⓒ Wind
Ⓓ Geothermal

Electricity

13. Which energy source is responsible for generating the largest amount of electricity in the U.S.?

Ⓐ Hydropower
Ⓑ Natural Gas
Ⓒ Uranium
Ⓓ Wind

14. Why is alternating current used instead of direct current in a power system?

Ⓐ It can be transported longer distances economically.
Ⓑ It is cheaper to produce.
Ⓒ It has more power per kilowatt-hour.
Ⓓ It is safer to use.

15. In the core of a nuclear reactor…

Ⓐ Iron atoms combine and give off heat.
Ⓑ Uranium atoms are split apart and release thermal energy.
Ⓒ Uranium atoms are burned and release thermal energy.
Ⓓ Iron isotopes are burned and release thermal energy.

16. What does it mean if a power plant is 35% efficient?

Ⓐ For every 100 units of energy going into a plant, 35 units are lost during energy transformations.
Ⓑ For every 100 units of energy that go into the plant, 35 units are converted into usable energy.
Ⓒ For every 35 units of energy that go into the plant, 100 units are produced.
Ⓓ For every $100 invested in the production of energy, $35 is made in profit.

Secondary Energy Poll

Efficiency /Conservation

17. In the summer, when is most likely the peak energy demand?

Ⓐ 12:00 am to 6:00 am
Ⓑ 6:00 am to noon
Ⓒ Noon to 6:00 pm
Ⓓ 6:00 pm to 12:00 am

18. The shorter the payback period of an energy-efficient appliance…

Ⓐ The more energy you save.

Ⓑ The less energy you save.

Ⓒ The longer you need to use the appliance to save money.
Ⓓ The sooner you start to save money.

19. An incandescent bulb converts 10% of the energy it uses into light and 90% into which form of energy?

Ⓐ Radiant
Ⓑ Potential
Ⓒ Thermal
Ⓓ Chemical

20. What device can control the indoor temperature of a home according to time of day?

Ⓐ Boiler
Ⓑ Ventilator
Ⓒ Thermometer
Ⓓ Programmable thermostat

Secondary Energy Poll

Opinion

Fill in the number that represents your opinion of the statement.

1. There are a lot of ways to save energy.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

2. I would consider a career that involves energy.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

3. I know a lot about energy.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

4. Energy is essential to our country's economy.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

5. Learning about energy can be interesting.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

6. I want to learn more about how to save energy.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

7. Learning about energy is important.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

8. Energy is a complex topic.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

9. It is best to use a mix of energy sources.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

10. I know how to find information about energy issues.

Strongly Disagree — Strongly Agree

① ② ③ ④ ⑤

Secondary Energy Poll

Leadership

Below are some activities you may do at school. Fill in the number that represents how comfortable you are doing them.

1. Organizing students to conduct a school activity.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

2. Making a presentation to students in your class.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

3. Making a presentation to teachers at your school.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

4. Making a presentation to people in the community.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

5. Planning a lesson for other students.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

6. Leading a discussion on a topic such as energy.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

7. Teaching other students to conduct a learning activity.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

8. Clearly communicating your ideas to other students.

Not Comfortable — Very Comfortable

① ② ③ ④ ⑤

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National Renewable Energy Laboratory
NC Green Power
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New Mexico Oil Corporation
New Mexico Landman's Association
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North Shore Gas
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