




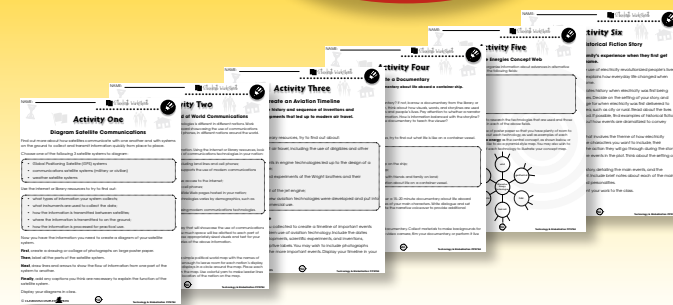


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Energy Technology

1. a) Use a dictionary to look up the word RESOURCE. Write the definition on the spaces provided.

The definition of **resource** is:

b) Use a dictionary to look up the word RENEWABLE. Write the definition on the spaces provided.

The definition of **renewable** is:

c) Based on the above definitions, what do you think a renewable resource is? Write your response on the spaces provided.

d) Based on the above definitions, what do you think a nonrenewable resource is? Write your response on the spaces provided.

2. Write each term beside its meaning. You may use a dictionary to help you.

electromagnetic **accessible** **gasoline** **extract**

- a) easily found; available
- b) to take out of something
- c) a product of petroleum oil commonly used to power engines in automobiles
- d) a kind of energy that travels in waves



Energy Technology

Transportation and communications technologies share a common need for energy sources. Therefore, the development of energy technologies has also been an important factor in globalization.

The development of steam engines in the 19th century led to advances in transportation such as railroads, automobiles, and steam ships. To create steam, water was most often heated by burning coal. Coal, along with petroleum oil and natural gas, is a fossil fuel. **Fossil fuels** were formed from the remains of plants that lived millions of years ago and were buried beneath layers of rock. Fossil fuels are considered a **nonrenewable** natural resource because there is a limited supply. The process of making fossil fuels takes millions of years so they cannot easily be replaced once they are used up.



What is a fossil fuel?

Advances in Fossil Fuel Technology

Coal was an accessible fossil fuel because it could be mined with simple technology for digging into the earth. Liquid fossil fuels buried beneath thick rock layers required more technology to extract. In the second half of the 19th century, technology was developed for pumping petroleum oil. In the early 20th century, engines that could directly burn oil, or internal combustion engines, were being used in automobiles. As automobiles quickly gained popularity, gasoline—a petroleum product—became the preferred fuel and the demand for petroleum oil quickly increased.



Offshore oil rig

Some of the technologies used to pump petroleum oil are also used to extract natural gas, which is often found in the same deposits as petroleum oil. Natural gas is often used as a heating source for homes. It is also an efficient alternative to gasoline for use in vehicles, and produces less pollution.



Energy Technology

1. Answer each question with a term from the list below.

fossil fuels **nonrenewable** **resource** **alternative**
pollution **greenhouse gases** **global warming** **electricity**

- a) The increase in what component of the atmosphere causes a rise in Earth's average temperature?
- b) What energy sources are made from the remains of plants that lived millions of years ago?
- c) What is the name for harmful materials put into the environment by people?
- d) What is something from nature that people or other living things need in order to stay alive?
- e) What is another word to describe the increase in Earth's average temperature in recent decades?
- f) What form of energy is commonly used to power devices in homes and other buildings?
- g) What is a word that describes sources of energy that are renewable and cause less pollution than burning fossil fuels?
- h) What word describes a source of energy that cannot easily be replaced once it is used up?

2. Fill in the table with sources of energy.

| Nonrenewable | Renewable |
|--------------|-----------|
| | |



Activity Three

Design a Transportation System

International business travelers and tourists need transportation around major cities and tourist locations. Imagine you are a regional planner for a popular travel destination. Plan a system that will allow people to move between international airports and common destinations in and around cities, such as:

- business districts
- universities
- tourist sites
- industrial areas
- natural landmarks

Do Your Research

First, use library and internet resources to research a major city and its surrounding region. Find a map of the region and mark the locations of 10-12 destinations above. Find out about current transportation technologies that use alternative energy sources. Use that information to design a modern transportation system for your region.

Plan Your Transportation System

Overlay a piece of tracing paper or Mylar on your map. Draw lines to show the routes of different parts of your transportation. Use different colors to represent different means of travel. Draw a key to help viewers interpret the transportation system.

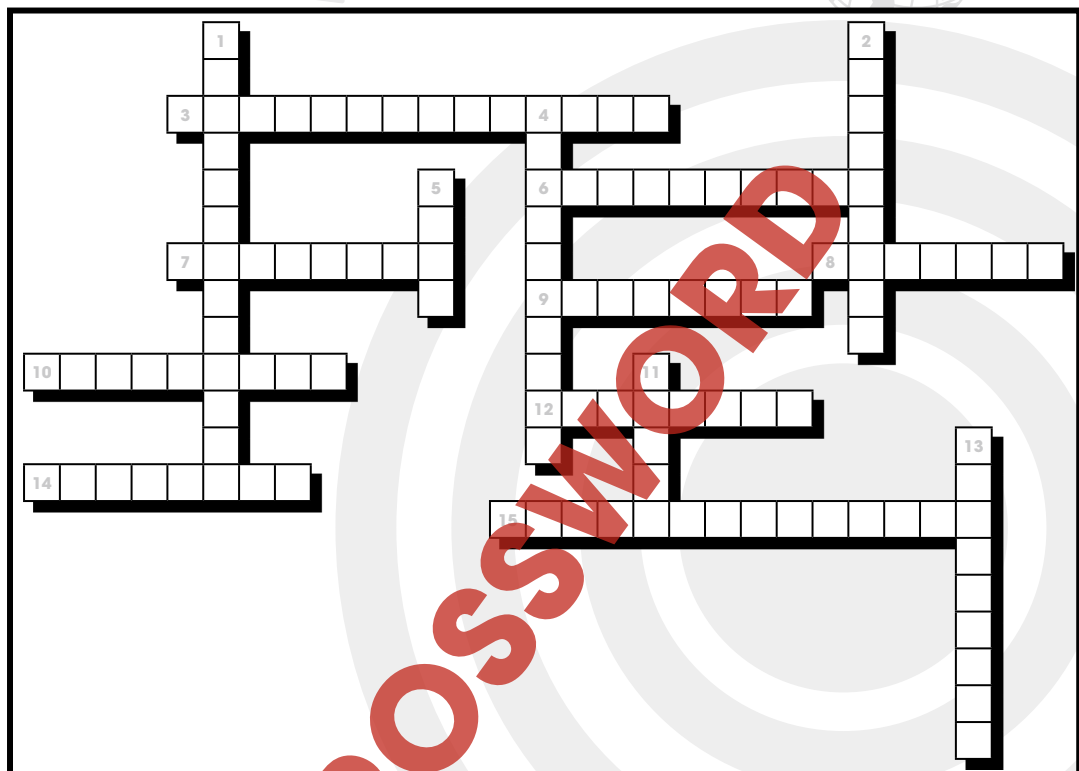
Design a Brochure

Create a brochure that travelers can use to get information about your region's transportation system. Be sure to include the following information:

- what transportation technologies are used in different parts of the system;
- where travelers are picked up and dropped off;
- what alternative energy sources are used to power different vehicles in your transportation system;
- what modern technologies and amenities your transportation system uses to accommodate the needs of international travelers.



Crossword Puzzle!



Across

- 3. _____ technology helps people exchange information
- 6. a nation that is undergoing industrialization
- 7. able to read
- 8. increased greenhouse gas concentration leads to global _____
- 9. fabrics, such as cotton and wool
- 10. harmful substances that people put into the environment

Down

- 1. the movement of people, ideas, and goods around the world
- 2. a 19th century invention using codes to send messages along wires
- 4. related to the use of manufacturing and machines

- 5. petroleum gas is a fossil _____
- 11. greenhouse _____ trap heat in the atmosphere
- 13. a source of energy that can be used again and again or does not run out

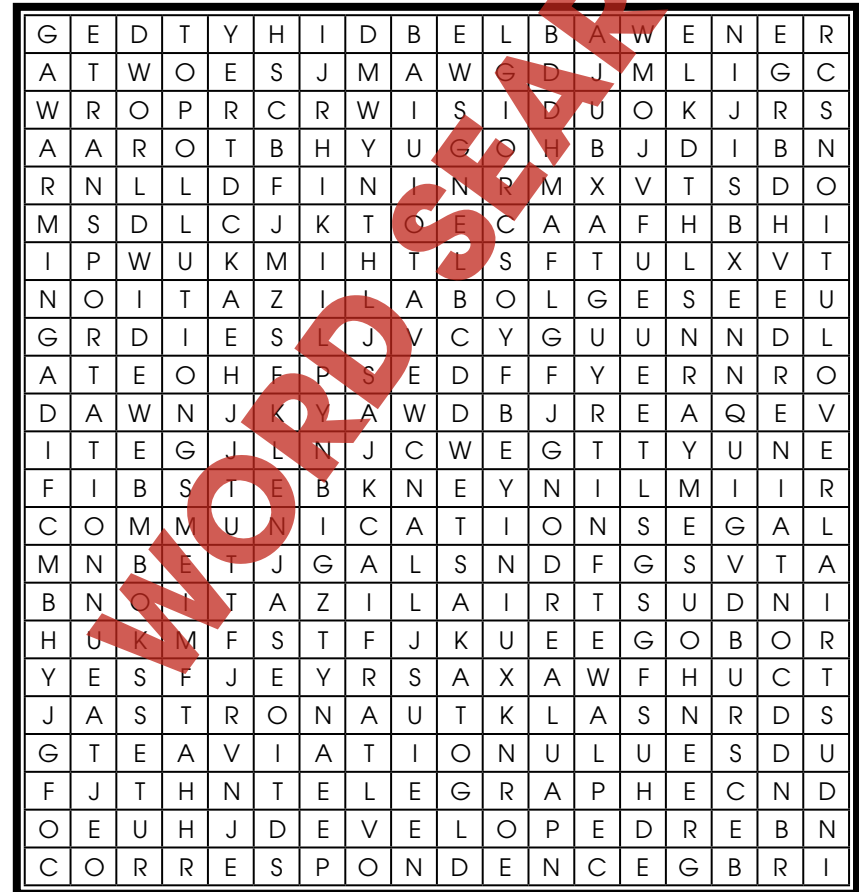
Word List

aviation
communications
developing
fuel
gases
globalization
industrial
internet
literate
pollution
renewable
telegraph
textiles
transportation
warming

Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

- | | | | |
|----------------|-----------------------|-----------|----------------|
| astronaut | energy | literate | space |
| aviation | fuel | migrate | technology |
| communications | globalization | nation | telegraph |
| container | greenhouse | ocean | textiles |
| correspondence | Industrial Revolution | orbit | transportation |
| developed | industrialization | pollution | warming |
| digitize | internet | renewable | World Wide Web |



Comprehension Quiz

Part A

Circle TRUE if the statement is TRUE or FALSE if it is FALSE.

- 1. In the first millennium B.C.E., humans were trading goods and technologies over long trade routes with the aid of domesticated animals.
TRUE FALSE
- 2. The period from 1900-1950 in the United States is known as the Industrial Revolution.
TRUE FALSE
- 3. The telegraph was invented in the early 18th century.
TRUE FALSE
- 4. The World Wide Web was developed in the latter part of the 20th century.
TRUE FALSE
- 5. Natural gas is a renewable energy resource.
TRUE FALSE
- 6. By the late 1950s, jet aircraft outpaced steam ships for use in international travel.
TRUE FALSE
- 7. Telephones depend on the use of electromagnetic technology.
TRUE FALSE
- 8. Cargo airplanes are the most efficient way to transport goods from the places where they are made to the places where they are sold.
TRUE FALSE

Part B

On the spaces provided, give an example of a technological development in each field and explain how that development affects globalization.

Transportation _____

Communications _____

Space _____

Communications Technology Timeline



NAME: _____

After You Read 



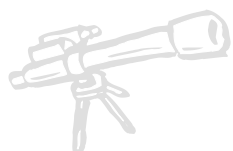
Energy Technology



3. a) Describe the problems of depending on fossil fuels for sources of energy.

b) Explain how the development of electricity revolutionized people's lives.

Research



Create a Timeline

4. Find out more about the technological developments that led to the use of electricity as a source of power in homes around the world. Using the internet or library resources, try to find out:

- how developments in the understanding of electromagnetic energy and static electricity led up to Benjamin Franklin's ideas and experiments;
- how Benjamin Franklin's experiments advanced scientists' understanding of electricity and electrical currents;
- what technologies needed to be developed to generate current electricity and distribute it to homes and other buildings;
- what new electrical machines and devices were invented that made use of electricity in the home;
- what new technologies are used to provide electricity in homes and other buildings.

Use this information to create a timeline of important events that led up to people's ability to use electricity in their homes and other buildings. Include the dates of technological developments, scientific experiments, and inventions, along with short descriptive labels. You may wish to include photographs representing some of the more important events. Display your timeline in your classroom.

3.

a) Answers will vary but may include, air pollution, global warming, limited supply.

b) Answers will vary but may include, it allowed people to use machines for everyday tasks and was essential for the development of communications technologies.



EASY MARKING ANSWER KEY