

Week of April 6-10, 2020

7th Grade Physical Science

William Sewell

Communication: email: william.sewell@oakland5.org or Google Hangout-Meet

Office hours: Monday and Wednesday: 12:00 to 2:00 p.m., Tuesday and Thursday: 12:00 to 1:00 p.m.

Due Date: All assignments are due 4/13/2020 either by sending a picture of it and turning it into Google Classroom or turning it into boxes located in the Lake Crest foyer.

Assignments: All assignments will be in "Google Classroom" and a paper copy will be provide from the Oakland main office. This week will provide time for everyone to "catch up" on their assignments and provide opportunities for others to move forward. A lot of these assignments are duplicates from what was assigned on 3/16/2020, but a few new. I will have office hours as listed above which we can review the assignments given, and I will help you as much as needed. However, the expectation is the same as it was before. I expect you to have made a serious effort to complete the assignment, before asking for help. You will not learn anything with me just giving you the answers.

Class	Choice 1	Choice 2	Choice 3 (Enrichment)
Physical Science	Chapter 13: Worksheet- p.19-20, 29-30	Chapter 13: Worksheet- p.31-32	Chapter 13: Review Worksheet, p.35-36, and the Chapter Test, p.37-38

4/2/2020

At Home Assignment Week of 4/6/2020

Due Apr 13

Physical Science

7th
grade

At Home Assignment Week of 4/6/2020

10 points 



William Sewell 12:59 PM

You are to choose from the following options:

All of the documents are in the attached file but you will just have to find you page number.

Choice #1: Chapter 13: Worksheet- p.19-20, 29-30

Choice #2: Chapter 13: Worksheet- p.31-32

Choice #3: You may use your notes, book, or other worksheets to complete this test. However, the assumption is that you complete it on your own. Chapter 13: Review Worksheet, p.35-36, and the Chapter Test, p.37-38.

Physical

Name

Date

Class

Sewell Choice #1



Directed Reading for
Content Mastery

Section 2 Energy

Transformations

Section 3 Sources of Energy

Apr 6-10
7th grade
Science

Directions: Read each step. Then put the steps in order from first to last. Write 1 for the first step, 2 for the second step, and so on.

- _____ 1. Fossil fuels are burned. The thermal energy of the burning fuel turns water into steam.
- _____ 2. Over millions of years, the chemical energy in ancient organisms is transformed into the chemical energy of fossil fuels.
- _____ 3. The turbine turns a generator. The kinetic energy of the generator is converted to electrical energy.
- _____ 4. Organisms transform the radiant energy in sunlight into chemical energy.
- _____ 5. The kinetic energy of steam is transferred to a turbine.

Directions: Use the words in the list to fill in the blanks below.

conservation

electrical

hydroelectric

nuclear

nonrenewable

turbine

renewable

photovoltaic

- 6. One problem with using _____ energy is that it produces radioactive waste.
- 7. The _____ of a _____ power plant is turned by moving water.
- 8. A _____ device converts solar energy directly into _____ energy.
- 9. Windmills produce electricity by using a _____ source of energy.
- 10. The law of _____ of energy states that energy cannot be created or destroyed; it can only change form.
- 11. Coal and oil are examples of _____ resources.

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PHYSICAL
#1

Name

Date

Apr. 6-10

Class

Sewell - 7th



Directed Reading for
Content Mastery

Key Terms

Energy and Energy Resources

grade
science

Choice #1, p 2

Directions: Circle eleven terms in the puzzle and then write the terms in the blanks at the left of their definitions.

R T K H E N E R G Y E R
 A E I G T U R B I N E W
 D A N E S A B C A L C L
 I E E N U C L E A R H D
 A L T E R N A T I V E E
 N U I R S T A C E C M L
 T A C A R C E S C R I U
 B P O T E N T I A L C B
 A N H O A T H E R M A L
 N O N R E N E W A B L E

- _____ 1. the ability to cause change
- _____ 2. type of energy stored within an atom
- _____ 3. form of energy also known as light energy
- _____ 4. kind of energy that is stored in bonds between atoms
- _____ 5. another name for a renewable energy source
- _____ 6. form of energy that an object has due to its temperature
- _____ 7. type of energy that an object has because of its movement
- _____ 8. device that converts energy of motion into electrical energy
- _____ 9. type of energy that is stored in an object because of its position
- _____ 10. wheel composed of a series of blades that is used to turn a generator
- _____ 11. type of energy source that will eventually be used up

PHYSICAL
#1

Name _____

Date Apr. 6-10

Class Sewell



Enrichment

Made in the Shade

7th Grade
Science
Choice 1, p. 3

How is electricity generated on a spacecraft? One common way is by using solar panels. These panels are capable of turning radiant energy from the Sun into electrical energy. This energy is then used to power devices such as computers, lights, or radios.

Passing Through Shadow

When a spacecraft is circling a planet, however, part of its orbit passes through the planet's shadow. As a result, sunlight does not reach the solar panels during this part of the orbit, and the panels are not able to produce electrical energy.

Thermal Energy Storage

One solution to this problem involves the storage of thermal energy. Canisters filled with certain types of crystals are attached to the spacecraft. One crystal that is often used is called lithium fluoride. During the sunny part of the orbit, the canisters absorb radiant energy. This energy is transformed into thermal energy.

The canisters become so warm that the lithium fluoride inside them melts.

Releasing Energy

Once the spacecraft enters the shaded part of its orbit, the liquid lithium fluoride begins to lose heat, and it eventually freezes. The thermal energy released during this process is captured and used to generate electrical energy. This electricity powers the spacecraft's instruments during the shaded portion of the orbit.

The Cycle Repeats

At about the same time as the lithium fluoride returns to its original temperature and all of its extra thermal energy has been released, the spacecraft moves from the shaded part of its orbit to the sunny part. The solar panels once again begin to convert radiant energy to electrical energy. Meanwhile, the thermal energy of the lithium fluoride crystals begins to increase. This cycle repeats itself during each orbit that the spacecraft makes around the planet.

1. Write the transformation process showing the energy conversions required to turn an electric fan on board a spacecraft during the shaded part of its orbit. Start your process with the radiant energy of sunlight.

2. Could thermal energy stored in lithium fluoride be used to generate electricity on a spacecraft that was always in a planet's shadow? Explain your answer.

3. Do you think that thermal energy stored in lithium fluoride could be used to generate all of the electricity used on Earth at night? Explain your answer. (Hint: On a cloudy day or during the winter, there are more hours of shadow than of sunlight.)

PHYSICAL
#1

Name _____

Date Apr. 6-10

Class Sewell; 7th grade

Science
Choice #1, p. 4

SECTION

3

Enrichment

Fuel Cells

Meeting Individual Needs

A fuel cell is a device that can produce electrical energy directly from chemical energy. Inside a fuel cell, a chemical reaction takes place between hydrogen and oxygen gas. This reaction generates an electric current. In the future, power plants that rely on fuel cells may come to replace many that rely on fossil fuels. Fuel cells may also be used to power cars that run on electricity.

Wet and Dry Cells

Fuel cells aren't the only devices that convert chemical energy directly into electrical energy. Wet cells (such as those in automobile batteries) and dry cells (such as flashlight batteries) can do so as well. However, the chemicals used to generate electricity from wet and dry cells are present in fixed amounts. Once these amounts are used up by the chemical reaction, the cells can no longer generate electrical energy.

Refueling Fuel Cells

Fuel cells, by contrast, can be refueled. When a continuous supply of hydrogen and oxygen is pumped into a fuel cell, it can produce electricity almost indefinitely. The supply of reacting chemicals won't be used up because it is constantly being replaced.

Fuel cells have several advantages over fossil fuels. One is that fuel cells produce much less pollution than the burning of fossil fuels does.

In fact, the only "waste" products of a fuel cell that uses hydrogen gas are water and heat.

Fuel Cell Disadvantages

Sometimes, however, hydrogen gas is not practical or affordable to use as a fuel. In such cases, a carbon-based fuel, such as methanol, can be used as a starting material. The carbon-based fuels are broken down in the fuel cell to produce hydrogen gas and carbon dioxide (a greenhouse gas). The hydrogen then reacts with oxygen to produce electric current. The amount of carbon dioxide produced from these types of fuel cells is much less than what would be produced by a power plant that burns fossil fuels.

A second advantage of fuel cells is that they can generate electrical energy from chemicals that are renewable. Hydrogen gas and methanol, for example, can be produced from chemicals that are not fossil fuels. Some fuel cells even run on gases produced by decaying garbage in landfills.

Fuel Cell Uses

Today, small fuel-cell power plants are being used to provide electricity for some hospitals and hotels. Early models of fuel-cell-powered cars and buses are also being tested. It is likely that everyday uses of fuel cells will grow as supplies of fossil fuels continue to diminish.

1. Hydrogen-oxygen fuel cells are often used to provide electrical power on human-piloted spacecraft. What is one advantage of using this energy source on such missions?

2. Which do you think is more efficient at generating electrical power: a fossil-fuel power plant or a fuel-cell power plant? Explain your answer. (Hint: In general, the more energy transformations that occur, the less efficient a power plant will be.)

3. The ideas behind fuel cells were developed in 1839. Scientists began using fuel cells in the space program in the 1960s. Why do you think that fuel cells are only recently coming into widespread use?

**Note-taking
Worksheet****Energy****Section 1 What is energy?**

- A. _____ is the ability to cause change.
- B. Energy from motion is _____ energy.
1. Kinetic energy increases as an object moves _____.
 2. Kinetic energy increases as the _____ of an object increases.
- C. Energy stored in an object due to its position is _____ energy.
- D. Energy comes in different _____.
1. Energy that increases as temperature increases is _____ energy.
 2. _____ energy—energy stored in chemical bonds
 3. _____ energy—light energy
 4. Energy from electricity is _____ energy.
 5. The nucleus of an atom contains _____ energy.

Section 2 Energy Transformations

- A. Energy is constantly _____ from one form to another.
- B. Law of _____—energy is never created or destroyed; it merely changes form.
- C. Energy can be _____ from kinetic to potential energy and back to kinetic.
- D. _____ transform energy from one form to another.
1. Chemical energy can be _____ to kinetic, radiant, thermal, or electrical energy.
 2. _____ energy can be transformed to kinetic, chemical, electrical, or thermal energy.
 3. Unlike other forms of energy, thermal energy is not easy to _____.
- E. A turbine's kinetic energy is converted to electrical energy by a _____ at a power plant.

PHYSICAL #2

Name _____

Date

Apr. 6-10

Class

Sewell, 7th grade

science

choice 2, p. 2

Note-taking Worksheet (continued)

Section 3 Sources of Energy

- A. Energy comes from either the _____ or from radioactive _____ in Earth.
- B. _____ include oil, natural gas, and coal.
 - 1. Fossil fuels contain _____ from the Sun's radiant energy via photosynthesis.
 - 2. _____ resources such as fossil fuels are used up faster than they can be replaced.
- C. _____ energy comes from the nuclei of uranium atoms.
- D. _____ from the potential energy of water is a **renewable resource**.
- E. _____ of energy may be safer for people and the environment.
 - 1. _____ energy can be captured in thermal collectors or **photovoltaic** collectors.
 - 2. _____ energy—thermal energy contained in hot magma
 - 3. _____ generate electricity without polluting the environment.
- F. _____ energy will help prevent energy shortages and allow fossil fuels to last longer.

Meeting Individual Needs

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PHYSICAL
#3



Chapter Review

Energy and Energy Resources

7th grade

Choice 3, p. 1

Part A. Vocabulary Review

Directions: Place the letters of the words defined on the spaces provided. When you are finished, the letters in the vertical box spell out the answer to question 14.

Crossword puzzle grid with 13 numbered starting points for words.

- 1. Energy sources that are in limited supply are _____ resources.
2. device with blades that uses kinetic energy to turn a generator
3. a device that directly converts solar energy into electricity
4. energy of hot objects
5. energy from separation of positive and negative charges
6. device that converts kinetic energy into electrical energy
7. resource that is constantly being replenished
8. Energy stored in the bonds between atoms is called _____ energy.
9. Energy sources other than fossil fuel are _____ resources.
10. energy of light
11. energy due to position
12. energy due to motion
13. the ability to cause change
14. What is the energy stored in the bonds between protons in the nucleus?

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Chapter Review (continued)

*7th grade
choice 3, p 2*

Part B. Concept Review

1. Number the steps for converting nuclear energy into electrical energy in the correct order in the blanks provided.

- _____ a. kinetic energy turns turbine
- _____ b. nuclear energy converted into thermal energy
- _____ c. kinetic energy produces electricity
- _____ d. thermal energy boils water
- _____ e. kinetic energy turns generator

Directions: Circle the term or phrase in parentheses that best completes each statement.

- 2. As the mass of an object moving at a given speed decreases, its kinetic energy (increases, decreases, remains the same).
- 3. As the velocity of a falling object increases, its potential energy (increases, decreases, remains the same).
- 4. A feather floating in the air has (kinetic energy, potential energy, both kinetic and potential energy).
- 5. Hydroelectric energy can generate electricity because of the initial (potential, radiant, kinetic) energy of the water.
- 6. A photovoltaic collector turns radiant energy into (thermal, chemical, electrical) energy.
- 7. If you put a book up on a shelf, you increase its (potential, kinetic, both potential and kinetic) energy.
- 8. Wind turbines convert (potential, kinetic, thermal) energy into electrical energy.

Directions: Answer the following questions on the lines provided.

9. What is a renewable resource? What is a nonrenewable resource?

10. When you drop a book on the floor, what happens to its original potential energy?

*PHYSICAL
#3*

PHYSICAL #3

Name _____

Date Apr. 6-10

Class Sewell



Energy and Energy Resources

7th grade
choice 3, p. 3

I. Testing Concepts

Directions: Fill in the blanks with the type of energy being described.

- _____ 1. energy of hot objects
 - _____ 2. energy from separating charges
 - _____ 3. energy stored in the bonds between atoms
 - _____ 4. energy stored in the nucleus of an atom
 - _____ 5. energy of motion
 - _____ 6. energy of light
 - _____ 7. energy of position
8. State the law of conservation of energy. _____

Directions: Fill in the blank with the word that best completes the following statements.

- 9. Resources that will eventually be used up are _____.
- 10. Resources other than fossil fuels used to generate energy are called _____.
- 11. A _____ is a device that changes kinetic energy into electrical energy.
- 12. Energy resources that are continually being replenished are called _____.
- 13. A device with blades that turns a generator is a _____.
- 14. A _____ transforms sunlight directly into electricity.

II. Understanding Concepts

Skill: Classifying

Directions: Match the type of energy from the list on the right with the item on the left. Some types of energy will be used more than once. List all of the appropriate types of energy for each item.

- | | | |
|----------------------------------|---|----------------------|
| _____ 1. flame of a candle | _____ 7. bonds between protons | a. kinetic energy |
| _____ 2. lamp | _____ 8. heated oven | b. potential energy |
| _____ 3. wall socket | _____ 9. mug of hot chocolate
on a table | c. radiant energy |
| _____ 4. moving ball | _____ 10. food | d. chemical energy |
| _____ 5. an object about to fall | _____ 11. fossil fuels | e. thermal energy |
| _____ 6. electric mixer in use | _____ 12. an airplane taking off | f. electrical energy |
| | | g. nuclear energy |

PHYSICAL
#3

Name _____

Date Apr. 6-10

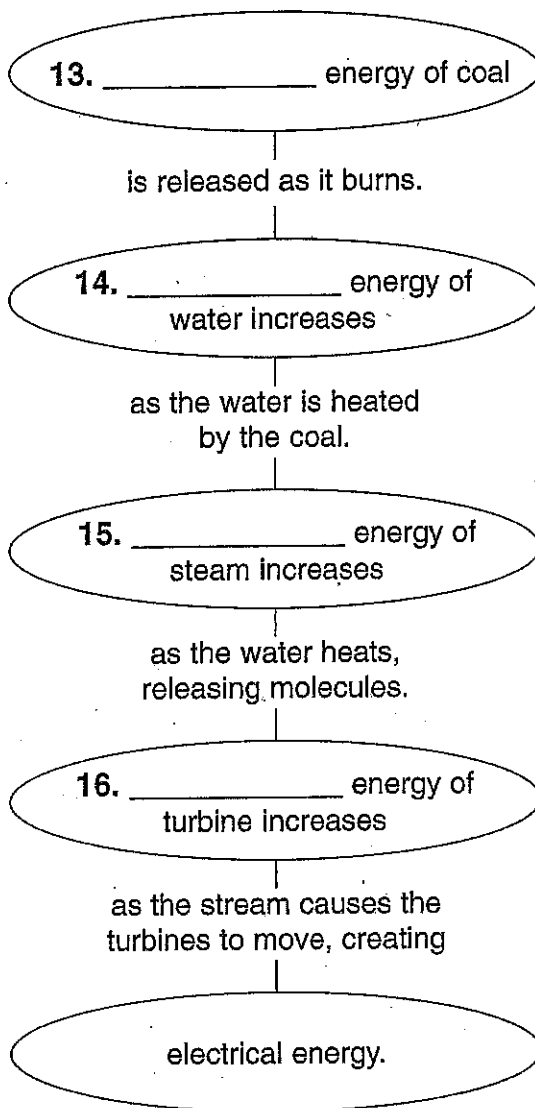
Class Sewell

Chapter Test (continued)

7th grade
Choice 3, p. 4

Skill: Concept Mapping

Directions: Fill in the following events chain for getting energy from coal.



Assessment

III. Applying Concepts

Directions: Answer the following question on the lines provided.

1. When a piece of clay falls from the table to the floor, what happens to the potential energy it had while it was on the table?

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