Post Assessment - Energy

Concept(s)	The sun is a major source of energy on Earth. Solar energy from the sun reaches the Earth mostly as visible light through radiation. Convection currents distribute heat in the oceans and atmosphere. Heat energy is transferred in solids by conduction. Energy can be transferred and transformed between different forms of energy.
Addressed Time	50 minutes
Materials	Individual Prompt
Advance preparation	1. Duplicate prompt for each student

Procedure:

1. Tell students they will have an opportunity to share what they understand about energy in earth systems. .
2. Distribute the prompt to each student and ask him/her to do his/her best work.

Name _____

ENERGY TEST

Multiple Choice

Select the answer that best completes the sentence. Circle your answer.

1. The sun's energy provides Earth with
   a. hot objects
   b. speed of light
   c. light and heat
   d. lightning flashes

2. Which of these **best** demonstrates radiation?
   a. glass of water left standing in the sun
   b. peanut butter cookies baking in the oven
   c. pot of pasta boiling on the stove
   d. thermos of hot chocolate

3. A wind turbine converts
   a. potential energy to electrical energy
   b. kinetic energy to potential energy
   c. chemical energy to kinetic energy
   d. kinetic energy to electrical energy

4. What distributes heat in Earth's atmosphere and waters?
   a. visible light
   b. conduction
   c. radiation
   d. convection currents

Science Reason:

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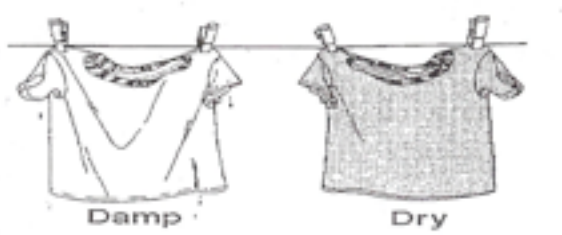
_____

5. Non-Renewable resources
   a. can be replenished in a few years
   b. can take millions of years to form and may not be replaced
   c. can be easily transformed into renewable resources
   d. are plentiful and do not need to be renewed.

6. Which of these is an example of a biomass fuel?
   a. oil
   b. natural gas
   c. wood
   d. coal

7. Renewable energy sources provide what percentage of total U.S. energy consumption?
   a. 1%
   b. 5-10%
   c. 20-30%
   d. 30-40%

8. Manuel went on a camping trip to the desert with his class



He washed a black cotton T-shirt and a white cotton T-shirt. The shirts were hanging side by side on a line to dry in the sun. Which correctly explains why his black T-shirt dried faster than his white T-shirt?
   a. The wind blew the black T-shirt more than the white T-shirt
   b. The T-shirts were washed in two different kinds of detergent
   c. More energy from the sun was absorbed by the black T-shirt than by the white T-shirt
   d. More energy from the sun was absorbed by the white T-shirt than by the black T-shirt

9. Energy of motion is
   a. mass
   b. potential
   c. gravity
   d. kinetic

10. How is heat energy transferred?
   a. from a cold object to a hot object
   b. from a hot object to a cold object
   c. from a hot object to a hot object
   d. from a cold object to a cold object

Science Reason:

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11. What is the result of using fossil fuels more rapidly than they are formed?
    a. The reserves will eventually be used up
    b. The reserves will be refilled more quickly
    c. The reserves will not be affected
    d. The price of fossil fuels will fall

12. The energy in wind comes from
    a. ocean currents
    b. sun's radiation
    c. jet stream
    d. climate change

Science Reason:

_____

_____

_____

_____

13. Substances (peanut) that provide energy as a result of a chemical change are called
    a. fertilizers
    b. reserves
    c. fuels
    d. refineries

14. The three major fossil fuels are coal, natural gas and
    a. wood
    b. oil
    c. uranium
    d. electricity

15. What are the advantages of using solar energy to generate electricity and the disadvantages of using solar energy to generate electricity.

Advantages:_____

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Disadvantages:_____

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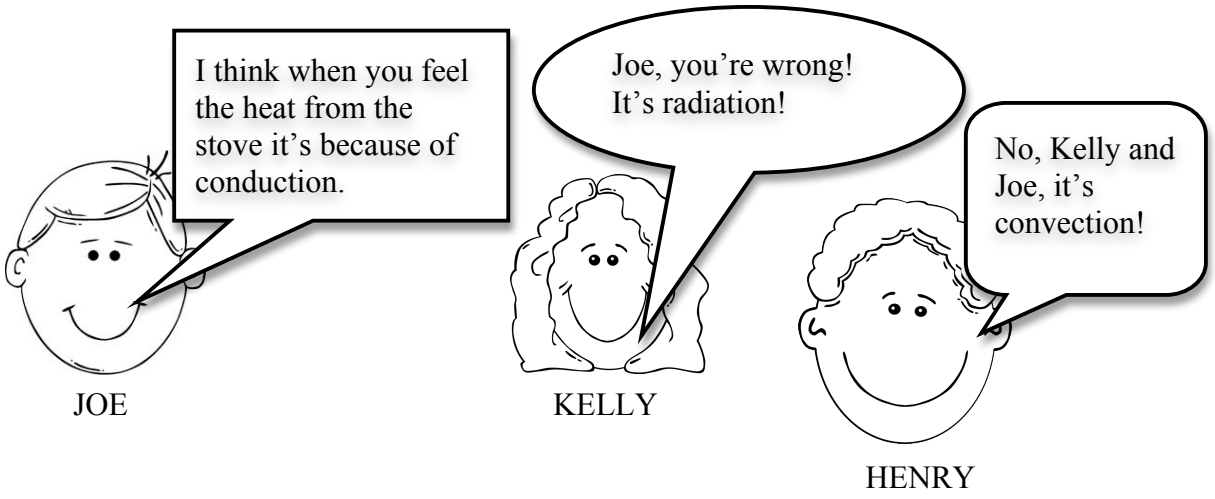
_____



16. Three friends, Joe, Kelly and Henry, are arguing about why you feel heat from a fireplace when you stand near it. Which friend is correct? Explain why or why not.

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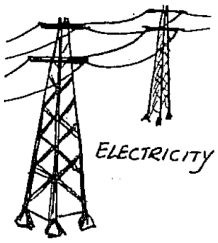
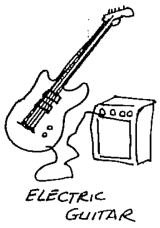
17. Label the use of energy from the sun to windmills on earth. Determine if it is a transfer or transformation of energy between each type. Describe how the windmill turns wind energy into electricity.

SOLAR ENERGY

Describe:

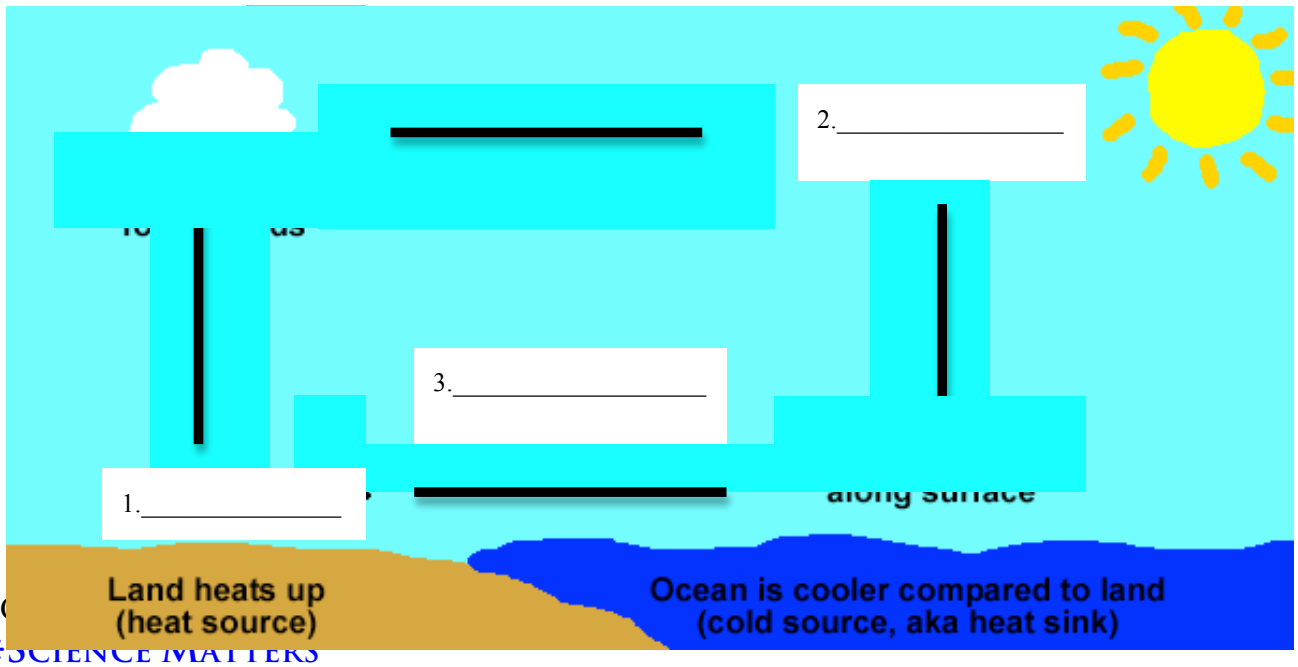




18. In the diagram below, put points on the arrows to show the direction of air movement. Use the word bank to label each movement in the numbered blank spaces.

Word Bank		
Warm air rising	Cool air descending	Sea breeze

Convection Currents



ENERGY TEST
Answer Key

Multiple Choice
Select the answer that best completes the sentence. Circle your answer.

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   c. radiation
   d. convection currents

Science Reason *Liquids and air flow and transfer heat by warm liquids or air expand and rise while cold liquids or air are more dense and flow to the lower parts of oceans or atmosphere.*

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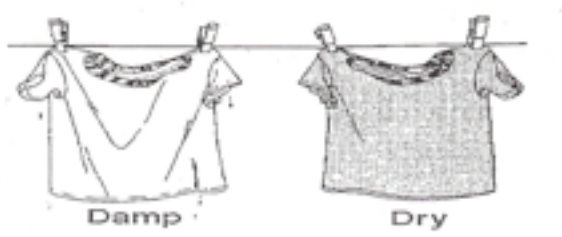

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Science Reason:

_____

Heat energy is stored in hot objects and will flow to colder objects until both objects reach the same temperature. Cold means there is an absence of heat.

11. What is the result of using fossil fuels more rapidly than they are formed?
    e. The reserves will eventually be used up
    f. The reserves will be refilled more quickly
    g. The reserves will not be affected
    h. The price of fossil fuels will fall

12. The energy in wind comes from
    e. ocean currents
    f. sun's radiation
    g. jet stream
    h. climate change

Science Reason:

_____

The sun radiates solar energy evenly but energy is conducted differently in various solids producing uneven heating. Liquids and the atmosphere transfer the sun's energy mixing air and liquids causing convection currents that result as wind.

13. Substances (peanut) that provide energy as a result of a chemical change are called
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14. The three major fossil fuels are coal, natural gas and
    e. wood
    f. oil
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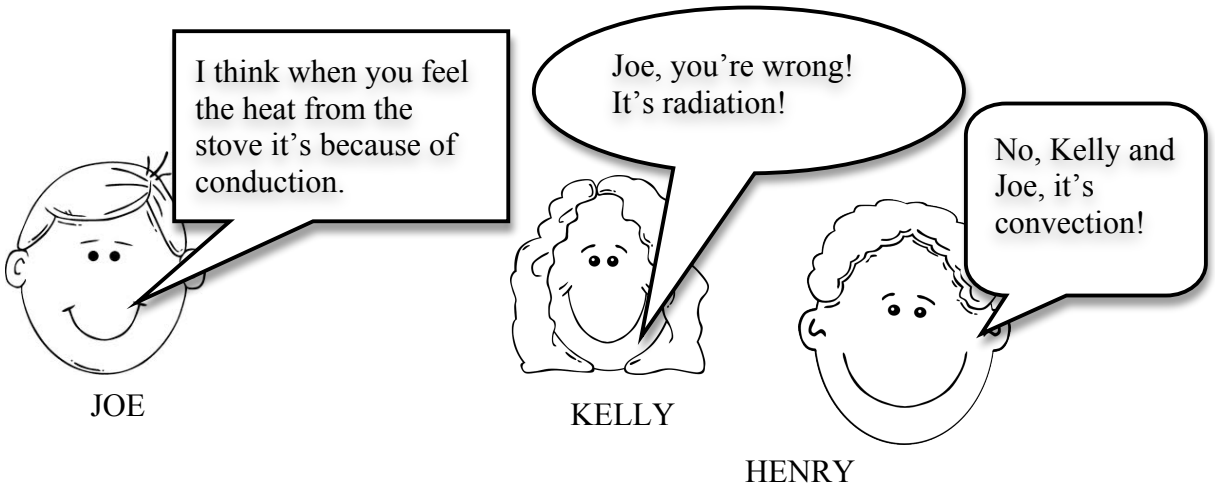
    h. electricity

15. What are the advantages of using solar energy to generate electricity and the disadvantages of using solar energy to generate electricity.

Advantages Solar energy is renewable as the sun will continue to radiate energy. The energy from the sun is free.

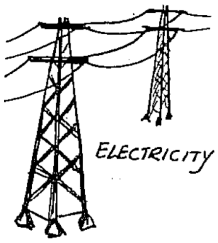
Disadvantages The solar collector panels are expensive to install. Cost recovery may take many years.

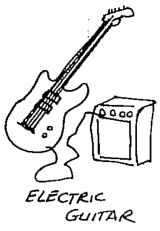


16. Three friends, Joe, Kelly and Henry, are arguing about why you feel heat from a fireplace when you stand near it. Which friend is correct? Explain why or why not.

Kelly is correct because the heat you experience is radiating out from the fireplace. Most of the heat is convection but it is going up out of the chimney and you cannot feel it. Conduction only occurs when you touch something hot or your clothes get hot from the radiant heat.

17. Label the use of energy from the sun to windmills on earth. Determine if it is a transfer or transformation of energy between each type. Describe how the windmill turns wind energy into electrici





Sun to the wind is a transformation of radiant to convection in the air. Wind to the windmill is a transfer of moving air to moving a windmill, The windmill to electricity is a transformation to electricity. Electricity to make sound is a transformation.

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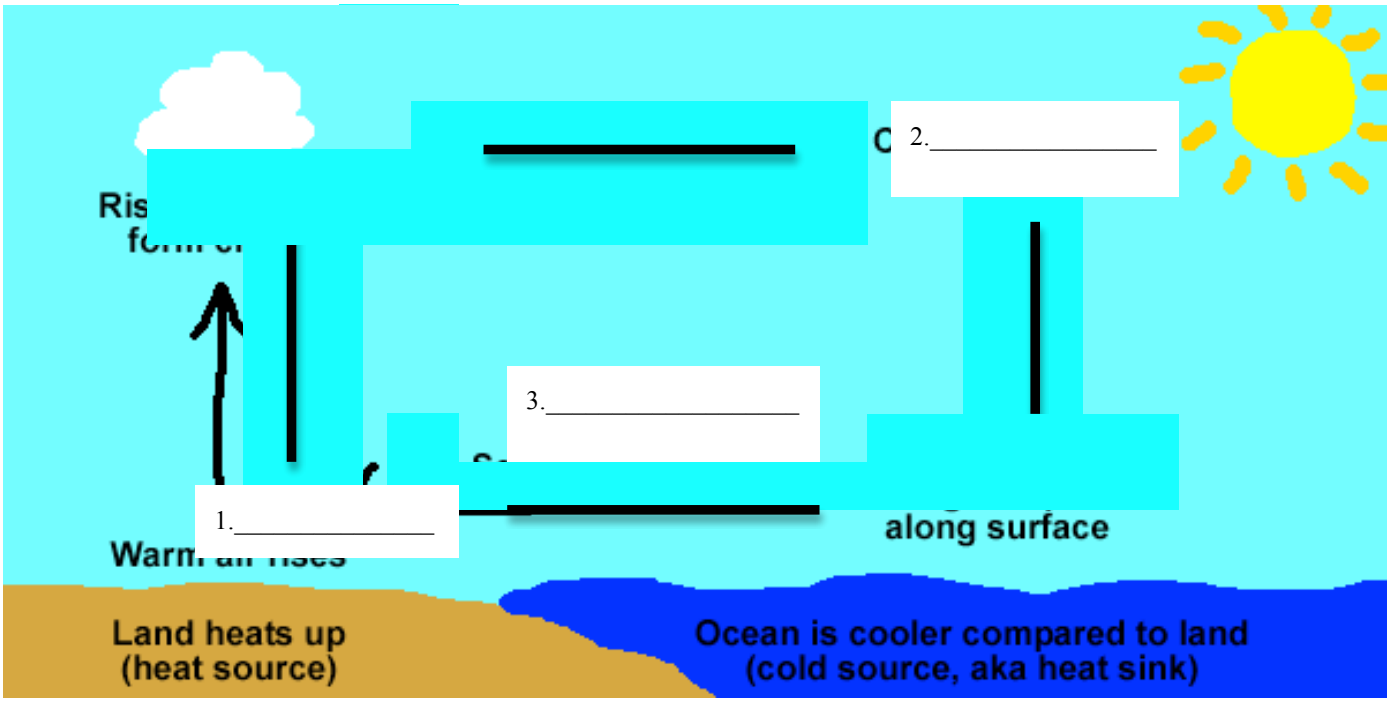
Convection Currents



1. Warm air rising (arrow up)
2. Cool Air Descending (arrow down)
3. Sea Breeze during the day (arrow goes towards land)