

Energy's Sun Trail

Trace how energy from the Sun reaches many Earth resources.

6.4.a "the sun is important in the formation of most energy sources on Earth;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Circle each of the 10 energy-source terms in the final sentence. Then underline the words in the earlier sentences that tell whether each source's energy chain begins with sunlight.

Following Energy Backward

- ① Energy reaches Earth mainly as sunlight. Green plants capture sunlight during photosynthesis and store it as chemical energy in sugars. People and animals can get energy by eating plants or animals that ate plants. Wood and other plant fuels release stored chemical energy when burned. Coal, oil, and natural gas formed from ancient organisms that were buried and changed underground over millions of years. Their energy was first captured from sunlight by long-ago plants.
- ② Several modern energy sources also begin with sunlight. Solar energy uses sunlight directly in panels that make electricity or in heaters that warm water. Wind energy begins when the Sun heats Earth's surface unevenly, causing moving air. Hydroelectric energy depends on the water cycle. Sunlight evaporates water, and water later falls at higher elevations. Flowing water turns turbines at dams. Biomass energy comes from recently living plant material, so its stored energy also came from sunlight.
- ③ Not every source starts with sunlight. Nuclear energy comes from energy stored in atoms, usually uranium, and geothermal energy comes from heat inside Earth. These sources can provide energy without an energy chain that begins with sunlight. Tidal energy is driven mostly by the gravitational pull of the Moon. The Sun also affects tides, but its role is smaller. In this passage, the named energy sources are coal, oil, natural gas, solar, wind, hydroelectric, biomass, nuclear, geothermal, and tidal.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Trace the energy in coal back to the Sun. What captured the energy first?

2 How does sunlight help make hydroelectric energy possible?

3 Which two named energy sources can provide energy without a chain that begins with sunlight?

4 Why is biomass energy connected to sunlight?

3 YOUR TURN _____ Your own words

Choose two named energy sources whose chains begin with sunlight. In 4 sentences, explain how each source connects to the Sun, and state whether each connection is direct or indirect.

PART 1 • READ AND MARK

Circle each of the 10 energy-source terms in the final sentence. Then underline the words in the earlier sentences that tell whether each source's energy chain begins with sunlight. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Trace the energy in coal back to the Sun. What captured the energy first?	Long-ago plants captured sunlight. Their remains became coal after being buried and changed over millions of years.
2	How does sunlight help make hydroelectric energy possible?	Sunlight evaporates water. The water later falls at higher elevations, and flowing water can turn turbines at dams.
3	Which two named energy sources can provide energy without a chain that begins with sunlight?	Nuclear energy and geothermal energy.
4	Why is biomass energy connected to sunlight?	Biomass comes from recently living plant material. Plants stored energy they captured from sunlight.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Solar energy uses sunlight directly in panels that make electricity. Its connection to the Sun is direct. Wind energy begins when uneven heating by the Sun causes moving air. Its connection to the Sun is indirect.

Accept any two passage-named sources whose energy chains begin with sunlight, including coal, oil, natural gas, solar, wind, hydroelectric, or biomass. Students should accurately identify solar as direct and the other listed sources as indirect.