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| **Objective/Question:** | **Text Location:** | **Website(s):** | **Vocabulary Terms:** | **Notes:** |
| ***Forms of Energy*** |  |  |  |  |
| **1. [Define** and **identify** energy according to its function]: What are the two main forms of energy? How are they alike? How are they different? | Text: 598-602  WB: p. 250-251 #1-15 and p. 252-253 | <https://www.youtube.com/watch?v=Zq3EFJ05fec> (An Introduction to Energy Literacy, 6:46) | 1. work  2. energy  3. potential energy  4. kinetic energy | \*Energy is the ability to do work or to make a change in something  \*Work is measured by multiplying the force used by the distance the force was applied  \*When work is done on an object, the amount of energy it has changes  \*A force must be applied over a distance in order to qualify as work  \*The two main forms of energy are potential and kinetic  \*Potential energy is energy that is stored in the position, or structure of an object  \*Kinetic energy is the motion of waves, electrons, atoms, molecules, substances, and objects. |
| **2. [Define** and **identify** energy according to its function]: What are the four main types of potential energy? What are the five main types of kinetic energy? Compare TWO forms of potential energy and TWO forms of kinetic energy. |  | <http://www.eia.gov/Kids/energy.cfm?page=about_forms_of_energy-basics> | 5. Four potential energy forms  6. Five kinetic energy forms | \*Main forms of potential energy: chemical, mechanical, nuclear, gravitational  \*Main forms of kinetic energy: radiant (includes light, x-ray, gamma ray, and radio waves), heat, mechanical, sound, electrical |
| **3. [Explain** how the transfer of energy occurs]: How does energy transform from potential to kinetic? From kinetic to potential? |  | https://www.youtube.com/watch?v=LrRdKmjhOgw (Law of Conservation of Energy-A Roller Coaster Demo)  http://kids.britannica.com/comptons/art-167499/Energy-cannot-be-created-or-destroyed-but-it-can-change | 7. law of conservation of energy | \*Energy is neither created nor destroyed  \*If an object has energy of motion (kinetic), that energy started as a form of potential energy  \*Energy is typically changing forms from potential to kinetic as well as from kinetic back to potential  \*Machines will usually have a way to covert energy form to allow for functioning  \*Examples: car engine changes chemical potential energy to mechanical and heat energy; a blender changes electrical energy to mechanical and heat energy; a tree changes light energy to chemical energy |
| **4. [Identify** and **describe** alternative energy resources]: What are the top three energy consuming countries? What are the top three energy producing countries? What are the top three countries in carbon dioxide emission? |  | https://yearbook.enerdata.net/ |  |  |
| **5. [Identify** and **describe** alternative energy resources]: What two facts stand out regarding renewable energy statistics? What are the five main types of renewable energy? | Pages 332-335 | http://energy.gov/science-innovation/energy-sources/renewable-energy |  | \*The five main types of renewable energy are: solar, wind, water, geothermal, and bioenergy |
| **6. [Define** nuclear energy and **research** how it can be used today]: How is nuclear energy created? Where is nuclear energy used and why? |  | https://c03.apogee.net/contentplayer/?coursetype=kids&utilityid=pseg&id=16182  <https://www.youtube.com/watch?v=rcOFV4y5z8c> (Nuclear Energy Explained: How Does it Work? 5:17)  <https://www.youtube.com/watch?v=HEYbgyL5n1g> (Three Reasons Why Nuclear Energy is Terrible 4:09)  <https://www.youtube.com/watch?v=pVbLlnmxIbY> (Three Reasons Why Nuclear Energy is Awesome 4:20) |  | \*Nuclear energy has the advantage of not burning any fuel so there are no pollutants released into the air.  \*Nuclear energy is energy that is stored in the **nucleus** or center core of an atom. The nucleus of an atom is made of tiny particles of protons (+ positive charge) and neutrons (no charge). The electrons (- negative charge) move around the nucleus. Nuclear energy is the force that holds the nucleus together in an atom.  \*Fusion is a way of combining the atoms to make a new atom.  \*Fission is the term for splitting an atom into two smaller atoms. The two smaller atoms don't need as much energy to hold them together as the larger atom, so the extra energy is released as heat and radiation.  \*Nuclear power plants use the heat released from fission to make electricity.  \*By splitting **uranium** atoms into two smaller atoms, the extra energy is released as heat.  \*Uranium is a mineral rock, a very dense metal found in the ground, and it is non-renewable. Non-renewable means we cannot make more of the substance. Currently, it is a cheap and plentiful fuel source. |