APES Study Guide 10

**Renewable Energy Sources**

This unit of APES surveys the alternatives to fossil fuel use as an energy source.

**Textbook Reference**

Miller, *Living in the Environment,* 16th edition: Chapter 16, Supplement 21 (S56-64) (p384-416) (32 pages)

**Outside Reading**

TBA

**Other Materials**

TBA

**Vocabulary (33)**

|  |  |  |
| --- | --- | --- |
| energy conservation  energy crisis  peak oil  energy efficiency  super insulation  weather stripping  multi-paned windows  strawbale house  compact fluorescent lightbulb  LED lightbulb  green roof | tankless hot water heater  passive solar energy  active solar energy  photovoltaic solar cell  solar power tower  solar thermal plant  CAFE standards  hybrid vehicle  plug-in hybrid vehicle  hydrogen fuel cell  wind power | ethanol fuel  switchgrass  hydroelectric power  biodiesel  biogas  geothermal energy  geothermal heat pump  cogeneration  biomass energy  tidal energy  NIMBY |

**Study Guide Questions (SGQs)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. Identify and describe five actions you can take around your house that will cost no money and conserve energy.  2. If you could spend the money to change one thing about your house to make it more energy efficient describe the change you would make and explain why you would make that change.  3. Describe how passive solar energy can be used to reduce the costs associated with conventional energy use. Describe one use of passive solar energy that could be implemented at your house and how that change would reduce energy consumption.  4. Describe the operation of a photovoltaic solar cell and list three environmental advantages and three environmental disadvantages to their use.  5. List and describe various methods that can be used to collect and utilize solar energy. Like any utilization of the environment, solar energy is associated with some adverse impacts. Discuss these impacts and describe measures that can be taken to minimize these impacts. | | | | 6. Describe two methods of generating electricity from water, and for both methods, list two environmental disadvantages.  7. There is controversy over the use of ethanol as a replacement for gasoline, write an argument supporting the use of ethanol and write an argument opposing the use of ethanol as an alternative to gasoline.  8. Wind power is sometimes considered a form of solar energy. Explain why this is true, and list two environmental disadvantages to the use of wind power.  9. Consider a law that will add a fee to the purchase of large SUVs and other low mileage vehicles, and then pass the money along to the buyers of economy cars. Write arguments supporting both sides of this issue.  10. There is a direct relationship observed between a country's standard of living and national energy consumption per capita. Explain the nature of this relationship and its implications for future environmental problems around the world. | | |
| ***Monday***  ***February 11*** | ***Tuesday***  ***February 12*** | ***Wednesday***  ***February 13***  ***Report Cards*** | | ***Thursday***  ***February 14*** | ***Friday***  ***February 15*** | |
| **In Class:**  Video clip   * Major sources of energy used   **HW:**   * read 5 pages * finish vocabulary | Quiz **In Class:**  **Video clip**   * advatntages and disadvantages of oil   **HW:**   * read 5 pages | **In Class:**   * advatntages and disadvantages of natural gas * video   **Handout:**   * Energy Use Inventory   **HW:**   * read 5 pages * finish vocabulary | | **In Class:**   * advatntages and disadvantages of coal * video clip   **HW:**   * read 5 pages * finish vocabulary | **In Class:**   * advatntages and disadvantages of nuclear energy * video clip   **SGQs #1-5 due**  **HW:**   * read 5 pages * finish vocabulary | |
| ***Monday***  ***February 18*** | ***Tuesday***  ***February 19*** | ***Wednesday***  ***February 20*** | | ***Thursday***  ***February 21*** | ***Friday***  ***February 22*** | |
| **School Closed**  **Handout:**   * Work on Energy Use Inventory   **HW:**   * read 15 pages * 10 vocabulary | **Energy Use Inventory Due**  **In Class:**   * Fossil Fuels   **HW:**   * read 5 pages | **In Class:**   * Radioactivity & Nuclear Energy * Modern Marvels   **HW:**   * Finish reading | | **In Class:**   * Review Unit * Modern Marvels   **HW:**   * Prepare for Test | Unit 9 Test **Unit 9 Vocabulary List Due**   * **SGQs 6-10 Due** | |
| ***Monday*** February 25 | ***Tuesday***  ***February 26*** | ***Wednesday***  ***February 27*** | | ***Thursday***  ***February 28*** | ***Friday***  ***March 1st*** | |
| **In Class:**   * Efficiency of Important energy * Cut energy waste   **HW:**   * read 10 pages | **In Class:**   * Advantage and disadvantage of solar energy & electricity from water cycle   **HW:**   * read 10pages | **In Class:**   * Advantage and disadvantage biomass as energy & electricity from wind   **HW:**   * read 10pages | | **In Class:**   * Advantage and disadvantage of geothermal energy & hydrogen energy   **HW:**   * Prepare for Test | Unit 10 Test **Unit 10 Vocabulary List Due**   * **SGQs 1-10 Due** | |