**APES Review Worksheet #4**

1. Completely label the following diagram of a sewage treatment plant and list the items removed at each step.



1. In the box to the right, list the ranks of coal in order from highest to lowest energy content. (indicate the direction in the box.)
2. List three air pollutants that are emitted during the burning of coal.

 1) 2) 3)

1. List 7 products that are derived primarily from crude oil:

1. The acronym OPEC refers to the \_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ and it is important because:

1. Fracking is short for \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and it is a concern because…

1. Explain what the Deepwater Horizon was, where it went, and why it is significant.

1. The acronym ANWR refers to the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ and it is important because:

1. Perform the following calculations: (Show all of your work in a logical progression to the final answer.)
	1. A family has a total of 1500 Watts of light bulbs throughout their house, if they replace them all with LED light bulbs, which use 90% less energy, the family will now use \_\_\_\_\_\_\_\_\_\_\_\_\_ Watts of electricity.

 Show work:

* 1. A space heater operates at 1500 Watts, if it is used for 10 hours each day for one week and the cost of electricity is 20 cents per kilowatt-hour, it will cost \_\_\_\_\_\_\_\_\_\_\_\_\_ to operate the heater for the week.

 Show work:

1. The acronym CAFE refers to the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ and it is important because:

1. List four things you could do to conserve energy.

 1)

 2)

 3)

 4)

1. State where Chernobyl is located and explain what happened there.

1. Complete the following chart.

|  |  |  |
| --- | --- | --- |
| Mining Technique | Description | Environmental consequences |
| Open-Pit mining |  |  |
| Subsurface mining |  |  |
| Strip mining |  |  |
| Mountaintop removal |  |  |
| Drilling |  |  |

1. Strengthen this weak statement: “Mining causes pollution that may disrupt the environment.”

1. Match each of the following elements with its ore:
	1. aluminum galena
	2. iron quartz
	3. uranium bauxite
	4. lead hematite
	5. silicon pitchblende
2. Explain what happened at Three Mile Island, and why it is significant.

1. Explain how thermal pollution is produced by power plants.

1. Explain what happened at Fukushima Daiichi and why it is significant.

1. Perform the following calculation. Show all of your work. A radioactive cloud may contain Iodine-131, which has a half-life of 8 days. If the waste must decay to a concentration of less than 0.1% to be considered safe, it will take approximately \_\_\_\_\_\_ days to reach safe levels.

 Show work:

1. List three species that may be threatened by the construction of a solar power tower in the California Desert.

 1)

 2)

 3)

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the active element in most photovoltaic cells.
2. Perform the following calculation. (Show all of your work in a logical progression to the final answer.) A family has a 75 m2 solar array on their house, which has an efficiency of 10%. If the average insolation on their array is 6 kWh/m2/day and their average cost of electricity is 20 cents per kilowatt-hour, the family has the capacity to produce \_\_\_\_\_\_\_\_\_ worth of electricity every day, and \_\_\_\_\_\_\_\_\_ every year, from the sun.

 Show work: