Chapter 4 Honors Study Guide

**Know:**

What are resources?

What are the three types of fossil fuels?

What is oil shale?

What is ore?

If we can grow it, it is a resource. If we mine it, it is usually a

resource.

The two main categories of energy are and .

What is efficiency? It is always less than

in accordance with the Law of

Name 3 renewable resources:

Name 3 non-renewable resources:

**Understand:**

The main benefits of alternative energy resources are they do not produce and with the exception of , they are renewable.

As grows, so does demand on resources and even renewable resources may become

. Resources like sunlight are not affected by human consumption and are considered perpetual, while resources like fresh water and crops are affected by human consumption and are considered conditionally renewable.

Recycling helps maintain a resource but does not make it , because at some point we will still run out and it cannot be replaced.

Why isn’t oil shale a good replacement for fossil fuels?

Electricity is created in the same way regardless of its source (with the exception of solar). Explain this process:

When you here that we have 400 years of coal left in this country, **at current rates of consumption**, why is this misleading and really mean that we have much less than 400 years?

Describe the Law of Conservation of Energy and relate it to the electrical energy that enters a light bulb:

According to the rule of 70, if coal consumption increases steadily at a rate of 3.5% per year, how long would it take before we are using 4x as much coal as we are presently?

**Do:**

Choose an alternative energy source and compare and contrast the pros and cons with coal.

Make an argument of why one alternative energy fuel is better for replacing fossil fuels than another and support your argument with facts.

The world population is currently a little over 7 billion and growing at about 1.2% per year. When will world population reach 14 billion? (use the rule of 70)

Determine the energy transformations, step by step, that take place in the production of electricity

Coal water to steam steam spins turbine turbine spins generator electricity

Map out the energy transformations that occur when dropping a tennis ball:

Map out the energy transformations that happen on a rollercoaster from the top of the first big hill:

Why isn’t it possible to completely replace fossil fuels with wind and solar power?

**In addition to this study guide, refer to the Energy Info-book questions and Energy Chart**