

Switch on

a) Identify these sources of energy. Match the names and the pictures.

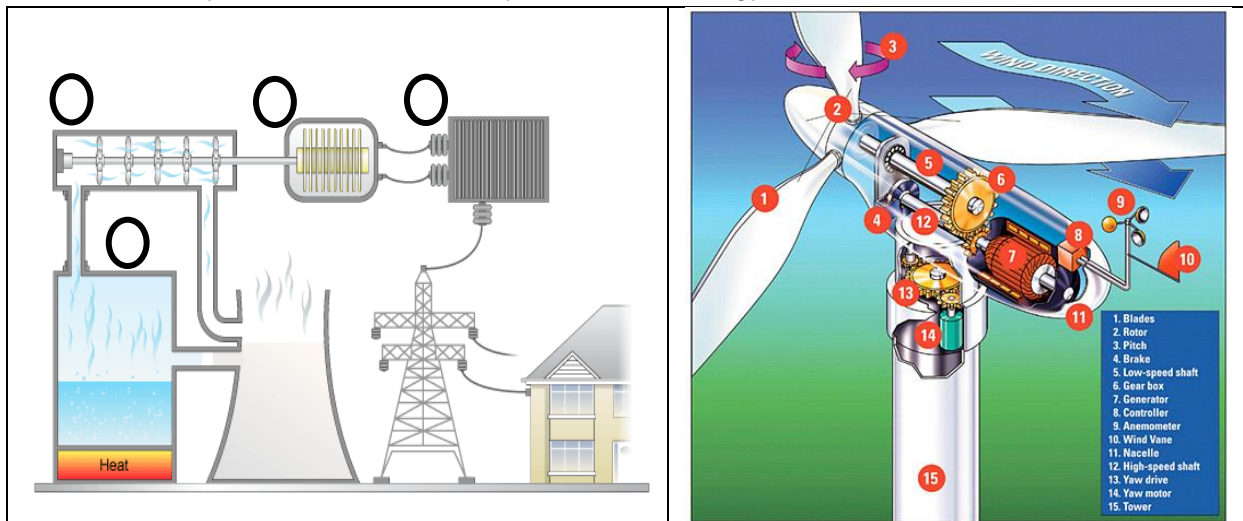


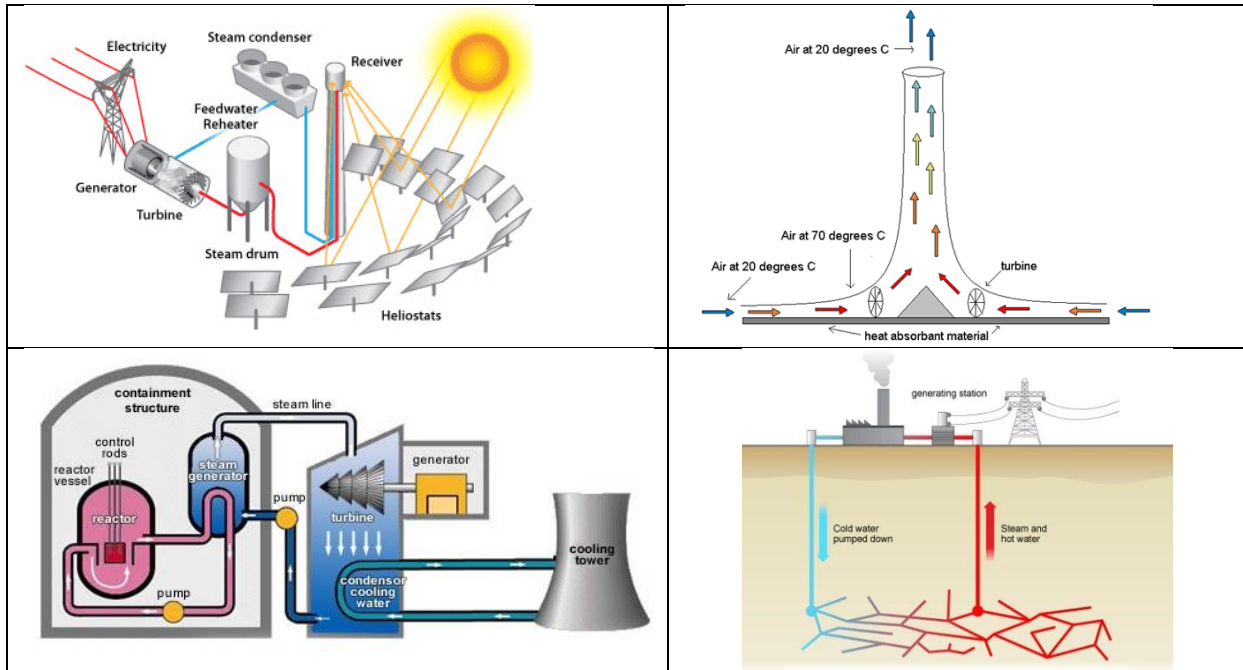
Waves	Coal, gas, oil	sun power	Hot water	Geothermal power
Free running water	Hydroelectric power	Tidal/tides	Wind	Biofuels

b) What are the problems related to the use of oil, gas and coal for energy production?
What are the alternative sources of energy?

Describing a device

Describe how you can make electricity from these energy sources?





Vocabulary in action

<p>1. A liquid fuel that was formed from the ancient remains of sea plants and animals is</p> <p>A. natural gas B. petroleum C. geothermal D. coal</p>	<p>2. Energy from heat inside the earth is</p> <p>A. natural gas B. geothermal C. terrathermal D. petroleum</p>	<p>3. Energy from moving air is called</p> <p>A. solar power B. hydropower C. wind power D. aeropower</p>
<p>4. What does renewable mean?</p> <p>A. It is a resource that is produced by the earth B. It is a resource that is replaced at the same rate that it is being used. C. It is a resource that is formed at a rate that is much slower than the rate at which it is being used D. It is a resource that is made by humans</p>	<p>5. Which is a list of renewable resources?</p> <p>A. petroleum, geothermal, wind B. biomass, geothermal, hydropower C. natural gas, wind, biomass D. hydropower, solar, coal</p>	<p>6. Energy from wood, waste, and garbage is called</p> <p>A. trash power B. biothermal C. biomass D. human power</p>

Steam:
Turbine:
Renewable energy:
Blades:
Gears:

Transformers:
To spin:
To boil:
A generator:

Numbers in action

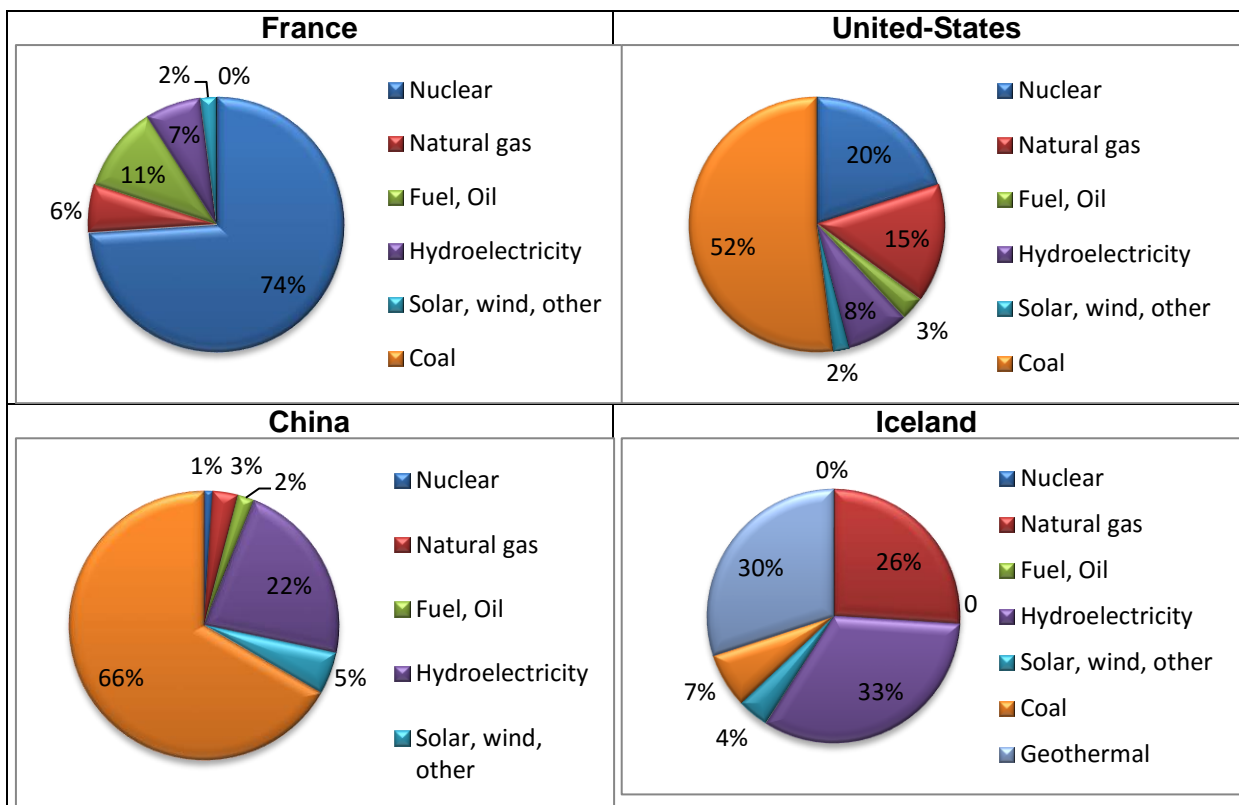
Write the following numbers:

Three	
Sixteen	
Ninety seven	
Seven percent	
One hundred	
Twenty point one	

Forty five	
Fifty four	
Nineteen	
Eighty nine	
Twelve percent	
Seven point four six	

Numbers in action

Compare the electricity generation fuel mix of these different countries



- 1- What country has the more environmentally harmful energy mix?
- 2- What country has the more environmentally friendly energy mix?

Before reading the text, answer these questions

- a) What do you think a gas-fired power station produce?
- b) What do you think is the role of a chief engineer?

Read the text and answer the following questions:

- a) What powers the generators in Jeff's station?
- b) What two things does Jeff like the most about his work?
- c) What's the plant's biggest environmental challenge?
- d) Would you like to do Jeff's job? Why/why not?

Hello; My name's Jeff.
I'm Chief Engineer in a gas-fired power station



I work in a gas-fired power station. We have two gas turbines and a steam turbine. It's known as a CCGT plant, Combine Cycle Gas Turbine; that way we get as much useful heat from burning the gas as possible.

The gas turbine operates at around 1400°C. The exhaust gases from the gas turbine are fed into the steam turbine; we don't want to waste any heat from the burning gas.

We generate up to 700 megawatts of electricity. That's enough to supply over 500 000 homes.

At university, I studied mechanical engineering. In my final year, I specialized in thermodynamics. I visited several power stations for my final project.

I joined the company ten years ago. They had just demolished an old coal-fired station here and I came in when the new plant was being built as a commissioning engineer for startup.

I really like the idea that I'm contributing to the local community, keeping everybody warm in winter and cool in summer; I also enjoy training and mentoring our three engineering apprentices.

In order to protect the environment, my company's main concern is cooling water; the water in the cooling towers leaves at around 30°C into ponds to cool naturally before going back to the river.