



SOLUTIONS

This booklet will review the solutions to the various assignments by theme. It also provides brief background information. As a teacher, you can use this information to answer students' questions or offer tips when they get stuck.





1 Energy on location

Lots of possible answers for this one.

Encourage your students to give a lot of different answers
Below are some examples:

- Rooftops are very good to place solar panels
- Green waste can be used in a biomass plant
- Wind turbines can be built in several places
- Heat released by industrial activities, can be used again or the steam can be converted to electricity
- ...

2 points

2 A lot, more, most

In **1,6 seconds** the Port of Antwerp uses as much energy as the average family.

$$\frac{3500 \text{ kWh}}{70\,000\,000\,000 \text{ kWh/year}} = 0,00000005 \text{ year}$$

$$\begin{aligned} &\times 365 \\ &= 0,00001825 \text{ days} \end{aligned}$$

$$\begin{aligned} &\times 24 \\ &= 0,00438 \text{ hours} \end{aligned}$$

$$\begin{aligned} &\times 60 \\ &= 0,02628 \text{ minutes} \end{aligned}$$

$$\begin{aligned} &\times 60 \\ &= 1,5768 \text{ seconds} \end{aligned}$$

3 points

3 Elektriciteit for sale!

Energy doesn't always cost the same amount because production and consumption are not constant.

- The explanation behind this, is a typical economical model of demand and supply
 - supply > demand ► cheap energy
 - supply < demand ► expensive energy
- Most energy is produced by nuclear power plants
 - They operate constantly, 24/7, and therefore consistently deliver the same amount of energy. However, demand isn't constant; people use more energy during the day than at night. Energy from a nuclear power plant will therefore be cheaper at night because demand is lower then.
- The production of solar and wind energy isn't constant.
 - Supply is greater when there's a lot of sun or wind. At those times, supply exceeds demand, making energy cheaper.

2 points

4 Mini-quiz

1C ► There is no good solution yet to store the waste (uranium)
Nuclear waste is harmful to humans and the environment; currently, it cannot be neutralized. It can only be stored until a permanent solution is found..

2C ► 200 m
The highest point of the wing is approximately 200 m high, which is about the same size as two Atomiums stacked on top of each other.

3A ► Wind energy
Nearly half of the sustainable energy generated in the port comes from wind energy.

4B ► 19%, a mix of wind, solar and biomass
So we have about 1/5 sustainable energy in the port.

4 points: *1 point per correct answer
0,5 point at second attempt