Captains' fight

Captains' fight n°2 : Question

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You have **3 minutes** to answer the following question :

Captains' fight n°2 : Question

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How many soda cans is it necessary to drink to get as much energy as the supply of a nuclear plant during one year ?

Captains' fight n°2 : Answer

1. https://www.iaea.org/pris/

Captains' fight n°2 : Answer

A standard soda can gives approximately 150 *kcal*, yielding ($1\ cal = 4{,}18\ \mathrm{J}$)

$$E_{\mathrm{cola}} \simeq 5{\cdot}10^{5}\ \mathrm{J}.$$

The mean power of a nuclear reactor is $880\,\mathrm{MW}$ [1], so the energy produced during one year is

$$E_{\mathrm{nucl}} = 880{\cdot}10^{6} \cdot 3600 \cdot 24 \cdot 365 = 2{,}7{\cdot}10^{16}\ \mathrm{J} \tag{1}$$

Hence, one needs

$$N = \frac{E_{\mathrm{nucl}}}{E_{\mathrm{cola}}} = \boxed{5{\cdot}10^{11}} \quad \log_{10} N = 11{,}7 \tag{2}$$

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You want more ?

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Really ?

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Quick : 1min

Question : How many orders of magnitude are there between the highest and lowest artificially obtained temperatures ?

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Really ?

Quick : 1min

Question : How many orders of magnitude are there between the highest and lowest artificially obtained temperatures ? **Answer**

You want more ?

Really ?

Quick : 1min

Question : How many orders of magnitude are there between the highest and lowest artificially obtained temperatures ? **Answer**

- Hottest temperature : quark and gluon plasma at LHC : 5×10^{12} K
- Lowest temperature : adiabatic demagnetization : 5×10^{-10} K
- Thus : $\boxed{\text{22 orders of magnitude}}$.