



Société Française
de Physique
COMMISSION JEUNES



4TH French Physicists' Tournament

3 & 4 FÉVRIER 2017

École normale supérieure, Paris

Captains' fight

Captains' fight n°1 : Question

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

Captains' fight n°1 : Question

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How many Olympic swimming pools would be filled by one year of rain in metropolitan France ?

Captains' fight n°1 : Answer

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The average height of rain in France is $h \simeq 800$ mm, for a surface of $S \simeq 650\,000$ km². The corresponding volume of water is

$$V = h \cdot S \simeq 800 \cdot 10^{-3} \cdot 650 \cdot 10^9 \simeq 5 \cdot 10^{11} \text{ m}^3.$$

The average volume of an Olympic swimming pool is 3 000 m³ (50 m \times 25 m \times 2,5 m). The required number of such pools is

$$N \simeq \frac{5 \cdot 10^{11}}{3 \cdot 10^3} \simeq \boxed{1,6 \cdot 10^8}. \quad \log_{10} N = 8,20$$

You want more?

You want more?

Really?

You want more ?

Really ?

Quick : 1min

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

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 : 22 orders of magnitude.