12.3. Assuming the sun generates its energy to 2/3 by the proton-chain and the rest by the CNO cycle, what would the expected solar neutrino flux be at the center of the earth?

In exercise 12.2 the energy flux at the earth is given as 1.353 kW/m^2. By computing the number of neutrinos per kW it is possible to obtain the neutrino flux at he earth surface. Neglect the radius of the earth beacuse the flux is almost parallel due to the long distance to the sun. The number of neutrinos from both reaction cycles are the same, i.e. 2 neutrinos per 26.7 MeV produced.

$$MeV := 1.60217733 \cdot 10^{-19} \cdot 10^{6} \cdot joule \qquad P := 1.353 \cdot \frac{kW}{m^2}$$

But 2 neutrios is equal to 26.7 MeV, hence 1 neurino is produced per 26.7/2 MeV

$$Flux := \frac{P}{\left(\frac{26.7}{2}\right) \cdot MeV} \qquad Flux = 6.326 \cdot 10^{14} \cdot m^{-2} \cdot sec^{-1}$$