FLINN SCIENTIFIC

Name_____

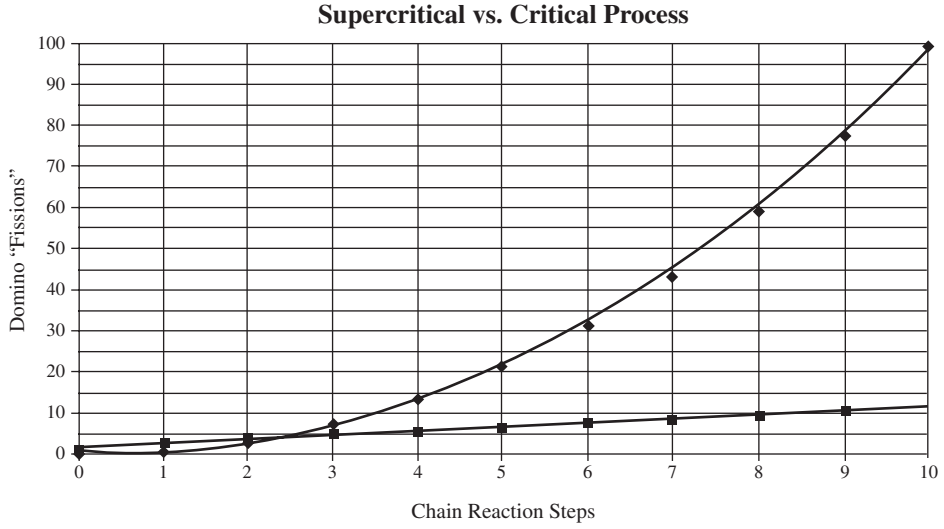
Nuclear Fission Data Table

Chain Reaction Type	Number of Tiles	Reaction Elapsed Time (sec)	Tiles/second
Critical Process	100		
Supercritical Process	100		

Questions

1. If each tile that is knocked down represents a fission reaction of uranium-235, calculate the energy released per second for each chain reaction process. (The energy released by each fission is 3×10^{-11} J.)

2. The graph below represents the total number of tile "fissions" that have occured for both processes after the first ten chain reaction steps. What happens to the rate of fusion for each process as the chain reaction steps increase?



3. In the combustion reaction of $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

   the energy released per mole of methane is 212.8 kcal $\times \frac{4184 \text{ kJ}}{1 \text{ kcal}} = 890$ kJ.

   Calculate the energy released by the fission reaction of 1 mole of uranium-235. How does this compare to the combustion of methane?