

5.5: Exercises

Behavioral and ecological factors influence dispersion. Uniform patterns of dispersion are generally a result of interactions between individuals like competition and territoriality.

1. In ecology a uniform distribution of an organism may result when the organism exhibits territorial behavior that keeps most organisms. In one study, a portion of a field was divided into a 20×20 grid and a count made of the number of organisms in each unit of the grid giving the results seen below.

number of organisms in plot	frequency
2	58
3	51
4	60
5	64
6	54
7	52
8	61

Create a plot similar to that in 5.4.1 and comment on your results.

2. Chlorine has two isotopes, ^{35}Cl (75.8% abundance) and ^{37}Cl (24.2% abundance). Create a plot similar to that in Figure 5.4.2 for the molecule PCB 77, a chlorinated compound with the formula $\text{C}_{12}\text{H}_6\text{Cl}_4$ and comment on your results.

3. A radioactive decay process has a background level of 3 emissions per minute and follows a Poisson distribution. The number of emissions per minute was monitored for one hour giving the following results

emissions per minute	frequency of event
0	3
1	9
2	13
3	16
4	9
5	5
6	3
7	1
8	1
9	0
10	0

Use this data to create a plot similar to that in Figure 5.4.3 and comment on your results

4. Using the penny data from Exercise 3.4.5, create a plot similar to that in Figure 5.4.4 using all pennies minted after 1982 and comment on your results.

5. Use this [link](https://chem.libretexts.org/@go/page/219091) to access a case study on data analysis and complete the first four investigations included in Part IV: Ways to Model Data.

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