
The Chapter Problem—Controlling Non-Native Plant Populations: Questions

Section 1.1

- CP1.** How many of the original 100 knapweed seeds will germinate?
- CP2.** How many knapweed seeds will be added to the seedbank?
- CP3.** Of the seeds that do germinate, how many will grow to maturity in the first year?
- CP4.** How many new seeds will the mature plants add to the seedbank?
- CP5.** Use your answers for questions 1 to 4 to complete the table.

Year	Number of Seeds in the Seedbank	Number of Seeds that Germinate	Number of Remaining Seeds	Total Number of Plants	Number of New Seeds Produced
0	100	4	96	1	1000
1	1096				
2					
3					
4					
5					

- CP6.** Describe any pattern in the Total Number of Plants column.
- CP7.** Describe any pattern in the Number of Seeds in the Seedbank column.

Section 1.3

- CP8.** Recall that the knapweed plant lives for five years and that the seeds of the plant are viable in soil for eight years. Use this information to extend the table on page 25 to include years 6 to 10.
- CP9.** Write a recursive formula for the sequence of the total number of plants in each year.
- CP10.** Write a recursive formula for the sequence of the number of seeds in the seedbank each year.

Section 1.6

- CP11.** Is the plant sequence you found in CP9 arithmetic? Explain.
- CP12.** Is the seed sequence you found in CP10 arithmetic? Explain.

Section 1.7

- CP13.** Are either of the plant or seed sequences you found in CP9 and CP10 geometric? Explain.
- CP14.** Find the general term for the plant sequence.
- CP15.** Find the general term for the seed sequence.

Section 1.9

- CP16.** Use your model to predict the number of plants present after 5 years.
- CP17.** Use your model to predict the number of seeds present after 2 years 3 months.
- CP18.** What factors make question CP17 unreasonable for this situation?

Section 1.11

- CP19.** Use your model to predict the number of plants and seeds that exist after ten years.
- CP20.** How do the values in question CP19 compare with those in the table? Explain the similarities or differences.
- CP21.** Use your model, along with graphing technology, to determine when the number of plants exceeds 500 trillion.
- CP22.** If the site will support 105 mature knapweed plants per square metre, how many hectares would be affected after ten years? (1 ha = 10 000 m²)