

## **Lesson Reflection**

### **Top 3 Key Points**

- Dictionaries store data values in key-value pairs for efficient lookup
- Sets are unordered collections of unique elements useful for math operations
- Keys, set elements, and values can be strings, numbers, or other objects

### **5 Reflection Questions**

1. When would you want to use a dictionary versus a list or set?
2. How are dictionaries and sets similar and different in Python versus Bash?
3. What real-world data would be best modeled using dictionaries or sets?
4. What set operations would be useful for comparing arrays of genome data?
5. How can you iterate through and access all values in a dictionary or set?

### **5 Challenge Exercises**

1. Create a phone book as a dictionary with names and numbers
2. Build a set of unique words from a long input string
3. Compare arrays of numbers using set intersections and differences
4. Sort a dictionary by key and by value
5. Create histograms of word counts using dictionaries

```

1  # Function to demonstrate dictionary and set concepts
2
3  def dictionary_set_examples(input_list):
4
5      # Create dictionary with list values as keys
6      data = {} # create empty Dictionary
7      for item in input_list:
8          data[item] = input_list.count(item) # count unique item
9
10     print(f"Dictionary from list: {data}")
11
12     # Convert dictionary keys to a set only key
13     unique_items = set(data.keys())
14     print(f"\nUnique items: {unique_items}")
15
16     # Find set difference
17     orig_set = {"A", "B", "C", "D"}
18     diff_set = orig_set - unique_items
19     print(f"\nSet difference: {diff_set}")
20
21     # Create histogram dictionary
22     hist = {} # create empty dictionary
23     for item in data:
24         hist[item] = "*" * data[item] # value
25
26     print(f"\nHistogram:")
27     for item in hist:
28         print(f"{item} {hist[item]}") # contains keys : values
29
30 input_list = ["A", "B", "C", "B", "A"]
31 dictionary_set_examples(input_list)

```

Dictionary from list: {'A': 2, 'B': 2, 'C': 1}

Unique items: {'A', 'C', 'B'}

Set difference: {'D'}

Histogram:

```

A **
B **
C *

```