**Chapter 2 test problems**

1. What data type is each of the following?

|  |  |
| --- | --- |
| 5 |   |
| 5.0 |  |
| 5 > 1 |  |
| '5' |  |
| 5 \* 2 |  |
| '5' \* 2 |  |
| '5' + '2' |  |
| 5 / 2 |  |
| 5 // 2 |  |
| [5, 2, 1] |  |
| 5 in [1, 4, 6] |  |
| math.pi |  |

2. Write (and evaluate) Python expressions that compute:

1. The product of 1111111 with itself.
2. How often does 81 go into 1000?
3. What is the remainder when 1000 is divided by 81?
4. You scored 90/100, 95/100 and 87/100: what is your average score on these three exams?
5. You scored 90/100, 46/50, 55/60 and 66/70: what is your best score on these four exams?
6. You scored 90/100, 46/50, 55/60 and 66/70: what is the lowest score?
7. The sum of the numbers 1 to 10.
8. The product of the numbers 1 to 10.
9. A Kb (kilobyte) is really 1024 bytes, where 1024 is 2 raised to the power 10: how many bytes are there in a gigabyte (2 raised to the power 30)?
10. The number of different encodings using 32 bits.

3. Write Python expressions or assignments as specified:

1. Assign x to be 5, y to be 10, and z to be 8.
2. Write an expression that evaluates to the average of x, y and z.
3. Write an expression that evaluates to the largest value among x, y, and z.
4. Write an expression that evaluates to the median value among x, y, and z (Hint: the median of a, b, and c is a+b+c - max{a,b,c} - min{a,b,c}.)

4. Write (and evaluate) Python expressions that answer these questions:

1. How many letters are there in 'Supercalifragilisticexpialidocious'?
2. Does 'Supercalifragilisticexpialidocious' contain 'ice' as a substring?
3. Which of the following words is the longest: Supercalifragilisticexpialidocious, Honorificabilitudinitatibus,  or Bababadalgharaghtakamminarronnkonn?
4. Which composer comes first in the dictionary: 'Berlioz', 'Borodin', 'Brian', 'Bartok', 'Bellini', 'Buxtehude', 'Bernstein'. Which one comes last?

5.

1. Write an expression creating a new list called roman, containing the strings 'Julius', 'Augustus', 'Brutus', and 'Cassius'.
2. Write an expression creating a list called english, containing the strings 'Dickens', 'Austen', 'Henry', and 'Elizabeth'.
3. Now write an expression creating a list called rulers, containing the first two elements of roman and the last two elements of english. Use list manipulation expressions; do not just copy the data manually.

6. Write (and evaluate) Python expressions that answer the below questions regarding a list lst of scores of 15 deliverables:

[94, 86, 85, 81, 86, 96, 91, 85, 86, 83, 89, 81, 86, 98, 84]

1. What are the lowest, highest, and average score?
2. What is the median score?
3. What is the range of the scores?
4. How many of the scores are 85?

7. Assume you already have a list defined, called name, containing three strings: a person’s first, middle, and last name, in that order. Write an expression that produces a string consisting of the person’s last name followed by a comma and space, then the first name and a space, then the person’s middle initial followed by a period. So, for example, if name is equal to ['John', 'Phillip', 'Sousa'], your expression will produce the string 'Sousa, John P.'

8. Assume you already have a list defined, called numbers, containing only numeric values. Write an expression that finds the product of the largest and smallest values in the list. For example, if the list is [4, 1, 0.5, 10, 6], your expression would find the product of 0.5 and 10.

9. Assume you already have a list defined, called numbers, containing only numeric values. Write code (you may need more than one expression, or to manipulate the list in some way) that finds the sum of the second-largest and second-smallest values in the list. For example, if the list is [4, 1, 0.5, 10, 6], your code would find the sum of 1 and 6.