1. Create the variable aim="We are learning Python for scientific computing". Use slicing to extract:
   (a) Python
   (b) We ar
   (d) Wa ai tnoseicoun
   (e) cmui

2. Compute the following mathematical expressions (you may need to import the math module: import math).

   (a) $4\pi r^2$, where r=3.5.
   (b) $\sqrt{a(\cos(1.5\pi)) + b\sin(5\pi/2)}$, where $a = 5$ and $b = 7$.
   (c) $\frac{2(y_1-y_2)^3+x_1^2}{x_1^2-2(x_2-x_1^3)}$, where $y_1 = 3.15$, $y_2 = 5$, $x_1 = 7$ and $x_2 = 2.15$.

3. Consider the following matrix.

$$A = \begin{pmatrix} 10 & 7 \\ 7 & 11 \end{pmatrix}$$

   Construct a nested list named x from the elements of A such that x[0][0]=10, x[0][1]=7, x[1][0]=7, and x[1][1]=11.

4. Set y=x, where x is the nested list created in (3) from the matrix A. Change y[1][0] to 0.5. What happens to x?

5. Initialize a list containing [1,2], 3,"Hello", "ITU". How could you:
   (a) Delete 3 from the list.
   (b) Add [2.5, 1+3j],"ITU" to the list.
   (c) How can the list be reversed?
   (d) In the extended list, how can you count the occurrence of "ITU"?

6. Create a dictionary with the keyword-value pairs: "University" and "ITU"; "gamma" and 3; 99 and "beta".
   (a) How can you retrieve the value of gamma?
   (b) How can you remove the keyword-value pair 99:"beta" from the dictionary?
   (c) How can you change the value of gamma to 0.5?
   (d) How can you add a new entry with the keyword-value pair "zeta":6?