1. Say True or False for the below statements:

• Prescriptive Analytics used to predict the future outcomes?

Answer.: **True.**

• Base R packages installed automatically?

Answer.: **True.**

2. What is Recycling of elements in a vector?

Answer.:

When applying an operation to two vectors that requires them to be the same length, R automatically recycles, or repeats, elements of the shorter one, until it is long enough to match the longer Vector.

*Recycling* occurs when vector arithmetic is performed on multiple vectors of different sizes. R takes the shorter vector and repeats them until it becomes long enough to match the longer one.

3. Give an example of recycling of elements.

Answer.:

Example 1:  
Suppose we have two Vectors c(1,2,4) , c(6,0,9,10,13), where the first one is shorter with only 3 elements. Now if we sum these two, we will get a warning message as follows.  
> c(1,2,4) + c(6,0,9,10,13)  
[1]  7  2 13 11 15  
Warning message:  
In c(1, 2, 4) + c(6, 0, 9, 10, 13) :  longer object length is not a multiple of shorter object length  
  
Here R , Sum those Vectors by Recycling or repeating the elements in shorter one, until it is long enough to match the longer one as follows..  
  
> c(1,2,4,1,2) + c(6,0,9,10,13)  
[1]  7  2 13 11 15