

# Section1:Primer

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## 1 q1

The answers are m and 3 since the 4th letter of the 3rd to last element of the list b is m and the first entry in a is 3.

## 2 q2

The while loop multiplies fac by i returning it to itself then prints fac and i then increments i by one until i reaches 10. Essentially printing a pattern where the right number is multiplied by the number on the next row on the left to find the next number on the right side. Hence

1	1
2	2
3	6
4	24
5	120
6	720
7	5040
8	40320
9	362880

Since i reaches 10 before it is multiplied by fac the while loop ends and a row with i as 10 does not get printed.

## 3 q5

$y^2$  and x converge, however, due to imprecise float calculations, python does not see them as equal, therefore the condition for the while loop never arrives causing an infinite loop.

## 4 q6

a	b
3.3333199098706245e-06	3.3333333333703703e-06
3.3333199098706245e-06	3.3333111112962948e-06
3.333290806040168e-06	3.3332888895185097e-06
3.333261702209711e-06	3.3332666680370083e-06
3.3332325983792543e-06	3.3332444468517854e-06
3.3332325983792543e-06	3.3332222259628356e-06
3.3332034945487976e-06	3.3332000053701526e-06
3.333174390718341e-06	3.3331777850737303e-06
3.333145286887884e-06	3.3331555650735625e-06
3.333145286887884e-06	3.333133345369644e-06

## 5 q7

when truncating each step in a() we get a result of 0.01  
however when using b() and truncating each step we get a value of  $5.00 \times 10^{-3}$ ,  
which is more accurate since the result from a() has a lower resolution.