## [Infosys Sample Number Hunting Puzzles](http://www.careersvalley.com/infosys-sample-number-hunting-puzzles" \o "Infosys Sample Number Hunting Puzzles)

**Question 1** Solution for XY(Z+1)-ZY = XY is

a)X=0,Y=0 b)X=1,Y=1 c)Z=0,Y=1 d)X=1,Z=0

**Answer :** d)X=1,Z=0

Solution:

Simplifying, XY(Z+1)-ZY = XY

we get, XYZ + XY - ZY = XY

=> XYZ - ZY + XY = XY

=> XYZ - ZY = 0

=> XYZ = ZY

=> XZ = Z

=> XZ - Z=0

=> Z(X-1)=0

Above implies that either Z=0 or X-1=0  
In other words, Z = 0 or X = 1

Closest match to the above solution is option d)X=1,Z=0.

**Question 2** Find the digit D

X Y Y X Y Y

+ X Z - X Z

-------- -------

A B C X D Y X

**Answer :** D = 8.

Solution: By mere glancing we can say A=1 because maximum possible carry by adding a three digit number and a two digit number is 1.

From the question it is obvious that the three digit number (XYZ) added to the two digit (XZ) is a four digit number (ABCX). Any three digit number lesser than 900 will not give a four digit number when added even with the maximum 2 digit number. Therefore, the three digit number has to be greater than 900. This means XYZ should be between 901 and 999. This implies that the digit X = 9.

In the same lines, B = 0 because even if the three digit number is 999 and two digit number is 99 we will not get 1100 but a value lesser than 1100. (In other words if a 3 digit number gives a result of 4 digits when added to a 2 digit number then the 4 digit result should be in the range of 1000 to 1099.)

Now we have X=9, A=1 and B=0.

From the 3rd column of addition problem, we have Y+Z=X (in case if Y + Z does not generate a carry) or Y+Z=10+X (in case if Y + Z generates a carry).  
The case Y+Z = 10+X is not possible while X = 9.(since addition of two one digit numbers cannot give a result of 19). So we can consider on the equation :  
Y+Z=X or Y + Y = 9 ...eqn1.

By observing the subtraction problem, from the last column we have Y-Z=X (if Y > Z) or 10 + Y - Z = X (if Y < Z and we borrow 1 from previous digit).  
Since X=9, Y-Z=9 is not possible as two 1 digit numbers when subtracted from each other can never give a 9 as result.  
Then, the correct equation should be 10 + Y - Z = 9  
Or Y-Z = 1 ...eqn2.

Solving eqn1 and eqn2 we have Y=4 and Z=5.

Hence X=9, Y=4, Z=5, A=1 and B=0.

From the given problem,  
(XYY + XZ) = (944 + 95) = 1039.  
(XYY - XZ) = (944 - 95) = 849.

Clearly D = 8.

Hence the answer is D = 8.