Long Multiplication : (Ex : 382 x 46)

1) Write the numbers one below the other alligned to the right side :

Ex :
$$\begin{array}{r} 382 \\ \times\ 46 \\ \hline \end{array}$$

2) a) Multiply the upper number digit by digit to the lower number digit by digit starting from the right and moving towards left for both the top and the bottom number.

b) Carry over the ~~remainder~~ tenth part if you get a two digit number on multiplying 2 digits and write the single digit below as a result.

Ex
$$\begin{array}{r} 382 \\ \times\ 46 \\ \hline 2 \end{array}$$

c) ~~write~~ After multiplying all the digits of the number at the top to one of the digits below start with the next one but write is result by leaving one space in the right hand side

41
Ex 382
46
2292
X

3) Repeat the process for as many times as their are digits in the lower number

Ex 382
46
2292
15280

4) Finally add all the results obtained in the correct alligment.

Ex 382
46
2292
15280
17572

5) Voila! You have obtained your answer

The algorithm works correctly if you carry each step to perfection as it uses basic multiplication of 2 single digits once for a row and then for the columns and by using an allignment method for the different places correctly you get the final answer