PCW CS110 Session 1.2
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1234 * 5678

1) Split number 2 (5678) into individual digits
2) Multiply each individual digit by 10^n (starting with n=1 from the right)
3) Multiply 1234*8
4) 1234*70
5) 1234*600
6) 1234*5000

2a). 6 steps
b) A step is a mathematical operation
c) The number of steps in a given algorithm is a good metric of it's efficiency. It tells us how fast the algorithm is (in terms of how many steps it takes to reach a solution) as well as how much memory (space complexity) it occupies.
d) Yes you may use a while loop (condition being related to the length of the second number to be multiplied i.e. 4 digits so while count < 5, multiple y*10^n where y=digit). And a recursive method may also be used whereby the function calls upon itself (say function = y*10^n*1234) and the base case can be again the length of the number itself (4 digits) which when reached the algorithm may stop multiplying.