1) A filing cabinet contains files on n people. The files are in no particular order, but do appear in succession: one, then the next, then the next, ...

When given one of the names on file, the clerk opens the cabinet, checks one name at a time, starting at the beginning, until he finds the file in question.

(a) In the <u>worst case</u>, how many files will the clerk consider before finding the desired file?

The worst that could happen is that he is looking for the last file. This would require considering all (n) files.

(b) In the <u>average case</u>, how many files will the clerk consider before finding the desired file?

$$\frac{1+2+3+\cdots+n}{n} = \frac{\frac{n(n+1)}{2}}{n} = \frac{n+1}{2}$$