

## **Instruction for using a computer to simulate dart-throwing process to estimate pi value**

1. Open a new Excel file in your computer.
2. In the first row, input "table of contents".
3. In the cell of A2, insert "random function" by choosing "RAND" from the menu. Do the same for the cell of B2.
4. In C2, insert and type formula " $=a2^2$ ", then hit "Enter" key. Do the same for D2.
5. In E2, insert "sum" function, the sum of C2 and D2
6. In F2, from the menu, find and insert the function of "ROUNDDOWN". In the first row of the dialog box, input "E2" and input "0" in the second row.
7. Fill the first column with 100 (you can also fill with 200,500,1000,10000... as you want) data, you can put the cursor in A2, then drag the cursor down to A101. Do the same for the other 5 columns.
8. Get the sum of the numbers in the last column (F column). You can put the cursor in F102, insert the function of "sum", sum of the numbers from F2 to F101. The result in F102 is the value we want to estimate pi value.

You will understand better if you download and watch the video of the demonstration steps for computer operation. The video can be downloaded under the category of "for teachers"