Ques 3: The most detailed grain is the combination of individual supplier, individual product, and date.

1. Franchise: 350
2. Products:
3. Merchandise: 500
4. Service category: 20
5. Events: 1
6. Total: 521
7. Customer:
8. Members: 50000
9. Customers from spreadsheet = 150\*200 = 30000
10. Total: 80000
11. Fact table size:
12. Contain rows: 450000 py
13. Service Purchase rows: 100000 py
14. From spreadsheet: 300\*200 = 60000 py
15. Total: 610000 py
16. Sparsity estimate:
    1. 1 - ( fact table size / product of dimensions )
    2. (1 – ( 610000 / (521\*80000\*350\*365) ) = 0.999
    3. The data cube has mostly missing cells with slightly more than 1% of cells with non zero values.