Answer the following questions. Show detailed solutions.

1. The following data is collected from customer complaints about service problems at a hotel. Complaint types are coded A-G. Use a spreadsheet to construct a Pareto chart for this data.

|  |  |
| --- | --- |
| **Categories** | **Frequency** |
| A | 5 |
| B | 9 |
| C | 22 |
| D | 5 |
| E | 18 |
| F | 9 |
| G | 7 |

2. In your own words explain principles of lean thinking. Use a logistics related example to show where and how those concepts apply.

3. You are managing an order processing facility where employees pick the customer orders from the warehouse, package, and deliver them to postal services. There are bar-code scanners and conveyors to facilitate finding and moving items through the facility. Deliveries to each state are grouped together as part of your deal with postal services for a lower rate. There are problems in order processing, including orders filled with wrong items, orders with right items but the wrong number of some items, and finding packages being shipped to the wrong state. Prepare a cause-and-effect diagram to show the causes of these problems and explain your solution for each.

4. The following data is collected at a carpet production facility to show the number of flaws per 100 yards of carpet:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **sample #**   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **flaws** |   7   |   5   |   0   |  10  |  12  |   5   |   9   |   4   |   6   |  2 |

Determine a proper control chart. Use a spreadsheet to calculate the upper and lower control limits for the control chart and draw it. Suppose that the next carpet sample of 100 yards has 14 flaws. What can you say about the process? (There are two parts to this problem. Be sure to develop the control chart for the 10 samples. Then develop a control chart with the 11th sample included.)