1) Which of the following skus has greatest claim to storage in the fast pick area?

<table>
<thead>
<tr>
<th>Sku</th>
<th>caseL</th>
<th>caseW</th>
<th>caseH</th>
<th>unitsPerCase</th>
<th>unitsSold</th>
<th>Picks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24</td>
<td>8</td>
<td>4</td>
<td>24</td>
<td>109</td>
<td>87</td>
</tr>
<tr>
<td>B</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>12</td>
<td>136</td>
<td>122</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>12</td>
<td>3</td>
<td>9</td>
<td>65</td>
<td>60</td>
</tr>
</tbody>
</table>

a. (6 Points) Suppose that a shelf in the fast pick area has become available and you decide to store sku A and B there. What fraction of that space should be allocated to each?

b. (4 Points) As more sku’s are squeezed into the fast-pick area, each sku gets less space. At what volume does sku i begin to lose money by being in the fast-pick area? (Hint: use, \( vi \): volume allocated to sku i in fpa, \( cr \): cost of restocking, \( fi \): flow of sku i, \( s \): savings per pick, \( pi \): picks of sku i.)

Homework 13B (As Exercise)

2)

a. Suppose you load a forward pick area with n skus and store them in Equal Space allocations. Subsequently you re-slot, adding another n new skus to the original population and re-adjusting quantities, again to Equal Space allocations. Which of the following claims are most nearly correct?

1- The total number of restocks of each sku i will double.

2- The total number of restocks of each sku i will increase but may not double.

3- The total number of restocks to all skus will more than double.

4- The total number of restocks to all skus will increase only if the new skus each have as much flow as the original skus.

5- The total number of restocks to all skus might actually decrease, depending on the flows of the new skus.

6- It is impossible to say how the total number of restocks will change.

b. How would your answer to the above change if, when adding the additional skus, the storage strategy is changed to Equal Time allocations?
3)

a. In stocking a fast-pick area of volume V with small parts: What volume should be allocated to sku i under a policy of Equal Time Allocation?

b. In stocking a fast-pick of volume V area with small parts: What volume should be allocated to sku i under a policy of Optimal Allocation (that is, a policy of minimizing restocks)? How does this change if the allocation for sku i must include volume si for safety stock?

4) An initial layout of an area with 4 departments is given as follows:

```
A   D
A   B   C
B   B   C
```

The centroids of the departments are: A(1, 2.5), B(1.67, 1.33), C(3, 1.5), D(2.5, 3). If the activity relationship scores between departments are as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>D</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

A-B: 2
A-C: 12
A-D: 6
B-C: 0
B-D: 2
C-D: 2

Draw the activity relationship chart and determine a new layout that will improve the score which is defined as the sum of rectilinear distances between departments times the importance level (centroid evaluation). Also determine the new score. (Hint: you first have to determine the current rectilinear distances)

5)

a. What are the four basic warehouse processes? Which is most labor intensive?

b. Why is putaway such an important process for a warehouse?